Database Marketing Management Strategies
for Agricultural Lenders

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(ABSTRACT)

This study examines the use of databases to improve marketing techniques and customer segmentation in lending institutions. Specifically, this study examines the use of products and services by agricultural customers, and then determines the relationship between the use of those products and services with farm business characteristics. Information is also obtained on the interest rate sensitivity of the producers and correlated with farm business characteristics. The importance of technology and strategic alliances and other influences in the decision making process are determined after survey analysis.

The survey was sent to producers who had some type of loan. Respondents from this study used an average of 3.2 loan products and 7.6 services for a total of 10.8 loans and services. Only 1 percent of the respondents indicated that they did not have a personal checking account. Twelve percent of the respondents indicated that they did not use a credit card. Only 16 percent of the respondents indicated that they used leasing services. Investment products did not have a high percentage of use. Thirty-three percent indicated they were using certificates of deposit, while only 21 percent indicated the use of money market funds, and 30 percent indicated the use of mutual funds. Thirty-seven percent indicated they were using IRAs. However, most of the respondents were using some form of insurance. Three-fourths of the respondents were using life insurance, while only 21 percent indicated that they did not possess disability insurance. Other services were also analyzed in this study. Only 15 percent of the respondents indicated that they were utilizing estate planning services, despite the 67 percent of respondents who were greater than age 41 and the 58 percent of respondents with greater than $500,000 in assets. Seventeen percent of the respondents were using an appraisal service.

Due to the lower levels of usage for the investment products, this study focused on the relationship between farm characteristics and the investment products. This study showed that a relationship existed between farm and non-farm income with IRA usage.

Only farm income had a relationship with money market fund usage and mutual fund usage. While, the use of estate plans was related to asset level.

The analysis on interest rate sensitivity was determined by the amount an interest rate would have to decrease for a producer to switch lending institutions. The producers who were found to be less interest rate sensitive were those who had lower farm and non-farm incomes, lower asset levels, lower education levels, higher debt-to-asset ratio, and those who owned a computer. This implies that these are the more loyal customers to an institution or perhaps these producers have fewer opportunities to switch institutions.

Producers in this study indicated that when selecting a lender/service provider, a competitive interest rate (76 percent of respondents) and the institution being a dependable source of credit (75 percent) was important. Knowledge of agriculture was also very important (69 percent of respondents). Internet banking and educational seminars rated as the characteristics that were least important, 3 percent and 9 percent, respectively. However, in the decision making process, lenders (69 percent of respondents), accountants (53 percent), and veterinarians (38 percent) were shown to be very important. The spouse/partner has considerable influence also on decision making. Sixty-seven percent of the respondents indicated that the spouse/partner had a considerable influence on investment decision, while sixty-one percent of the respondents indicated that the spouse/partner had a considerable influence on credit decisions.

Five specific recommendations were made to the institutions following this study. These recommendations include: use of technology, institutional use of databases, use of influencers, and targeting and segmenting the marketplace.

ACKNOWLEDGEMENTS

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Chapter 1: Introduction

1.1   Introduction

Lenders need to know how to target their customers to be able to efficiently and effectively market their services. Many lenders are strategizing the marketplace to become a multi-service organization to attract customers and either maximize or minimize "share of wallet" per customer depending upon credit risk and profitability of alternative services. "Share of wallet" refers to the number of products/services the institution has of the total number of products/services the customer utilizes. There are three strategies for expanding customer relationships. The penetration strategy focuses on only credit and loan products and a minimal amount of related services. The differentiation strategy centers on offering a wide range of in-house loans and financial services. The leverage strategy focuses on using strategic alliances and expanding relationships in loans and related services with the industry and/or customers. The strategy that an institution chooses to expand customer relationships depends on the goals of the institution. Expanding customer relationships leads to obtaining more products/services per customer. Recent published data suggest a lender has a better chance for retaining a customer as it increases its number of products/services per customer. This means obtaining more than one product/service from each customer. Studies on relationship lending have shown when customers have a stronger relationship with their lending institution, it is difficult for a competitor to utilize an interest rate or service advantage in a competitive marketplace to court the customer.

Increases in the number and the competitiveness of non-traditional lenders to agriculture, such as equipment dealers and insurance companies, has contributed to the need for emphasis on marketing by traditional lenders. There has also been increasing competition from brokerage houses for financial services. Marketing strategies have had to be altered to expand the financial services opportunities. Due to the dramatic changes in the agricultural sector (technology, structural, and globalization), lenders have an important role to serve their customers. An institution must be able to obtain services from the customer which allow the lender to encourage the customer to establish and

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maintain a relationship with the lender's institution. Needs assessment can lead to loyalty if the lender anticipates the potential use of a product/service. Financial institutions must evaluate the need for expanding into investments and tax planning services. "Unless a financial institution has both the operational and technical capability to provide all types of investments and investment counseling accounts as well as alternatives that can be structured to achieve tax-advantaged returns, clients' assets and loyalties will not remain over time." (Lahman 1997)

Relationship selling is more important than ever. Many institutions are selling or emphasizing the service and giving away the product. Retention of customers can help a bank increase its efficiency and profitability per customer. Customer loyalty has been decreasing. A survey conducted by Doane Agricultural Services Company in September 1995 found that the 1995 average length of a relationship with a lender was 14.3 years versus the 1990 average of 19.0 years. The study reported that 40 percent of those surveyed found that their relationship with the lender was somewhat different or very different compared to five years ago. Almost 70 percent had a very favorable or somewhat favorable opinion of agricultural lenders they had worked with. On a 3.0 scale (3.0 being extremely important), the respondents rated the lender as the most important person with whom to have a strong relationship (2.7). The following services were found to have the most importance: dependable source of credit (2.9), competitive interest rates (2.8), a good understanding of agriculture (2.7). The most frequent reason for changing primary lenders in the past five years was because it was easier to obtain credit with the new lender (47 percent). This evidence supports the importance to farmers/ranchers of having a strong relationship with their lender. Through strong relationships, the lender can have more in-depth knowledge of the customer, using database marketing to target this customer for other services the bank can offer. This can be compared to the "Wal-Mart principle", make the lending institution a one- stop-shop for all of the financial needs for the customer. Customers will be less likely to want to visit more than one bank, if they can obtain all their services at one place.

There has been a consolidation of agriculture and agricultural debt. Thirteen percent of the producers generate 75 percent of the revenue. (USDA, Farm Structure)

These producers have nearly 60 percent of the debt, also. Rate changes are more important to larger producers due to a larger loan size. A 1 percent rate change can equal a 6 to 8 percent change in net farm income. A ½ percent rate change on a $500,000 loan will have more of an impact than a ½ percent rate change on a $50,000 loan. It is expected that, as farm debt levels increase, the producers will be more interest rate sensitive. If this is not the case, then there must be a reason that producers are staying with the same institution, continuing to utilize loans with a higher interest rate.

One way for lending institutions to improve their relationship with customers is to use databases. It is a relatively new concept for lenders to market by customer segmentation, especially using database marketing to mine individual customer information and total portfolio. Database analysis allows lending institutions to strategically target customers with the right product at the right time. In the past, many lenders have focused on credit and loan products. The expanding opportunity for lending institutions to offer financial products and services or to create strategic alliances with those who do offer them, helps improve relationships with new and existing customers by offering a wide array of products/services.

1.2   Problem Statement

Due to changes in the banking industry and increasing competition from non-banks, there is an increasing need for lenders to become more than loan providers and be an active player in all forms of investments and financial planning. Changes in the banking industry include consolidation of lenders, shrinking markets, increasing financial services, increasing technology, increasing cross-sell opportunities, consolidation of debt, bank mergers, more information accessibility (Internet), and less employee loyalty. All of these changes indicate that lending institutions will be challenged to maintain a personal relationship with their customers. There have been changes in farm structure, including age and other farm demographics, as well as changes in the competitive structure of agricultural businesses. Institutions need to know who their customers are, what credit/loan products and financial services they are using (with them or their competition) and be able to examine all the information in a systematic approach. The institution then can use socio-economic, demographic, and financial information to efficiently target

customers with loans and services they are more likely to use. The process of targeting every customer with every service is time consuming and inefficient. The application of databases can be used to capture the customer at the point of anticipation rather than the point of sale.

Target marketing and database analysis will be more cost efficient and the bank will have a higher probability of reaching customers who will use a product/service. With a computer database, customers can be treated differently. The value of a customer determines the level of time that a firm can allocate its resources to improve either the customer's loyalty or to improve the share of that customer's business.

> Bank data indicate that a strong positive relationship exists between profitability and net non-interest income (non-interest income less non-interest expense). One strategy for increasing non-interest income is to transform a bank into a broad-based financial service company. Under this model banks are managed as financial service businesses where bankers know their customers and use this knowledge to 'cross-sell' products. (Jeffrey Stensland and Glenn Pederson, 1995)

The availability of information in a database allows bank personnel access to a complete history on any customer at any time. Therefore, anyone from a teller to the bank manager is in a selling position, capitalizing cross-selling opportunities.

"The (Supreme) Court said that bank customers cluster their purchases because of a cost advantage or a 'settled consumer preference' for joint consumption, and therefore, only institutions offering the full cluster of bank services - including demand deposits and commercial loans - belong in banking markets." (Elliehausen et al., 1990) This implies that, as banks offer more products/services, they are more likely to retain their customers internal to the organization. If there is a loan officer or staff turnover in an organization, a new employee has a better opportunity for developing a relationship with the customer since the information on the customer is maintained in the database. Bank research from Citizens National Bank (Evans City, Pennsylvania) found that there is an opportunity to market IRAs and packages of private banking services to compete with non-banks. Today people are looking for assistance in financial problem solving. Many times this implies taking a value-added approach in the bank. Banks are able to

offer their products at a premium by offering value-added services such as financial planning, retirement planning, and tax assistance. Bank research from First National Bank of Bemidji, Minnesota, found that, to maintain and grow its customer base, it strengthened its certificate of deposit (CD) and individual retirement account (IRA) marketing. The bank extended hours at two off-site offices and installed officers to make real estate and consumer loans at a convenient mall location. In addition, they established a much greater emphasis on cross-selling products, because customers were unaware of some of their products and services.

By using databases, banks will be able to develop a more advanced customer knowledge system, overcoming the challenges of staff turnover, which will allow the bank to segment its customer base and target market resources to the segment that has the highest probability of using a product/service. This reduces unnecessary marketing efforts to many customers and saves the bank time and money. Information on the customers allows the institution to understand what products/services are currently being used, and who is using them.

1.3   Objectives

Changes in the agricultural marketplace along with the changes in the banking industry merit an examination of a more effective and efficient way of extending credit and related services. The literature review suggests that virtually no work has been done comparing farm and personal characteristics to the use of products and services and marketing attributes. Further, little research has been conducted on loan product and service penetration by customer and portfolio. The objectives of this study are to:

1   determine data inadequacies in one of the participating institutions' financial and marketing database,

2   determine customer use, individual and portfolio, of products and services,

3   determine the correlation between the use of products and services and farm business and personal characteristics,

4   determine the correlation between interest rate sensitivity and farm business and personal characteristics,

5   determine the importance of technology and strategic alliances and other

influences in the decision making process, and

6   develop strategic marketing implications and recommendations to agrilenders and

producers.

1.4   Economic Theory and Hypotheses

Role of Economic Theory in Problem Definition and Research Approach

There has been minimal academic research on database mining and analysis. A majority of the work has been in specific career journals or magazines, such as *Target Marketing* or *Bank Marketing*. Utility theory and the market clearing model as it applies to the financial capital markets are the underlying theory of this study. Utility theory underlies lenders' attempts to determine how to maximize and/or optimize their return by cross-selling products/services. Cross-selling involves any bank personnel selling a product/service at the time a transaction is being made by a customer, or potential customer. Lenders have to determine which customers should be targeted to increase the number of products/services.   This determination is based on the institution's goals and profitability measures. Many lenders are increasing the number of products/services per customer by targeting and bundling their services. After determining the demand by the consumer for various products and services, they are able to bundle less demanded products/services (i.e. safe deposit boxes) with a product/service that is in high demand, i.e. checking or saving accounts.   The market clearing model assumes that the financial markets clear at an equilibrium real interest rate. It also assumes perfect market conditions, including complete information, no agglomeration economies, zero transaction costs, and perfect mobility. In other words, customers have complete information on their institution and competitive institutions, and it is just as easy to use one institution as another.

This study will evaluate the use of products and services by agricultural producers. It will be important to see how the customer chooses an institution and the motivation for staying with that institution. It will focus on the importance of interest rates to agricultural producers when initially choosing and/or staying with a loan or

service provider. Interest rate elasticities will be correlated with farm and producer characteristics.

Theory does not always apply in the real world, however. Many lenders continue to measure profitability by other means, i.e. return on assets within the institution limiting product and service use. There are not perfect market conditions, either. Customers rarely have complete information; often customers do not know the vast array of products/services offered by their institution. They rarely know all of the products/services offered by institutions everywhere. Zero transaction costs is a concept of the past for banks. Almost all of their services include a charge for use, many times only waived if using another product/service at the institution.

Hypotheses

The following hypotheses will be tested:

1. A relationship exists between the personal characteristics of the agricultural producer and his/her use of products and services.
2. A relationship exists between the characteristics of the farm and the producer's use of products and services.
3. A relationship exists between interest rate sensitivities and the use of products and/or services.
4. A relationship exists between interest rate sensitivities and the personal characteristics of the agricultural producer.
5. A relationship exists between interest rate sensitivities and the characteristics of the farm.
6. Producers at lower income levels have less of a choice when choosing a loan/service provider.
7. The use of technology influences financial and credit decision making.
8. The spouse and lender have considerable influence on the producer's financial and credit decisions.

Examples of some specific hypotheses tested in this study are the following:

- As the age of the owner/operator increases, the probability for using estate planning services increases. (Use of products/services)

- As the number of services that a customer uses at a bank increases, a greater change in interest rates is required before the customer will switch provider institutions. (interest rate sensitivities)

- As debt levels increase, the customer will be willing to switch lenders for lower interest rate changes. (farm business characteristics)

- As the customer's use of the Internet increases, the customer will be willing to switch lenders for lower interest rate changes. (technology)

There are some hypotheses that will be important that are not directly testable by this study, but information is provided that can lead to a conclusion.

- As a bank increases its number of products/services per customer, it is more likely to retain that customer (not testable by this study).

- Most customers are not aware of all the services offered by their institution (not testable by this study).

1.5   Procedures for Obtaining Data

Random samples of borrowers from three different institutions were chosen to receive a mail survey. In addition, the case study approach was used at two industry seminars. One of the participating institutions is a Farm Credit Services. The other institutions ranged from small community banks to large regional and mega-banks. Approximately 1,500 agricultural producers received the survey. There were six agricultural producers surveyed from the Commonwealth of Virginia to evaluate and pretest the survey, to determine if the survey questions were correctly phrased. The survey was mailed out to the recipients using a cover letter with the lending institutions' letterhead. A stamped envelope was included for return of the survey. Two participating institutions in Virginia and one institution in Wisconsin mailed the surveys to producers. Almost four hundred seventy surveys were mailed to producers at participating institutions in Virginia. There were five hundred surveys mailed to producers from the

participating institution in Wisconsin, with 250 going to producers with less than $50,000 in outstanding loan debt at the institution, and 250 going to producers with greater than $50,000 in loan debt at the institution. Surveys were distributed to farmers at agricultural financial management workshops in Iowa (60) and Minnesota (100). One of the workshops was sponsored by a bank and the other by a farm management association. The surveys were distributed and completed at the beginning of the seminar so that the seminar material would not bias responses. These surveys were not designed to be a true random sample and the data collected from them cannot be used to generalize information for any areas or producers other than those surveyed.

The response rate for mail surveys range from 20 to 50 percent. "Incentives for filling out a survey can increase response by as much as 90 percent." (Brooks & White) A drawing for a $50 cash prize incentive was offered by each of the participating institutions.

One institution allowed their database to be evaluated for missing information needs. They were interviewed on what information they felt was important to obtain from a customer. "Information on age, income, home ownership, cars owned, occupation, number of children, buying habits, type of credit cards used, and lifestyle data on interests … helps banks better understand consumers and their buying habits." (Morrall 1996) The main focus of the survey is to determine what products and services the agricultural producer is using, interest rate sensitivity, and the importance of the relationship with the lender and other influential people in the life of the agricultural producer. The survey obtains personal information, financial information, and demographic characteristics of the producer. The survey is 4 pages, front and back. After developing the survey, a meeting was held with one of the institutions to evaluate and edit the survey. A copy of the general survey is provided in the Appendix. Surveys were made specific to the institution when sent out by participating institutions, i.e. including the institution's name in questions rather than the general commercial bank.

Chapter 2: Review of Literature

2.1   Introduction

The review of literature has four facets due to the multiple objectives of this study. Section 2.2 examines literature that deals with opinions of and relationships at lending institutions. Section 2.3 discusses current efforts in marketing products and services by successful businesses or lending institutions. The use of databases and customer information is a relatively new concept in marketing at lending institutions. Previously, lending institutions concentrated on profitability, efficiency, and rate of return measures. Section 2.4 analyzes the methods used to construct the survey.

2.2   Opinions of and Relationships at Lending Institutions

A survey conducted by Doane Agricultural Services Co. in 1995 was used to design questions in the survey and to compare results generated in this study. The Doane's survey was conducted in both 1990 and 1995, therefore this study is able to compare time differences in the answers. However, it is important to remember that each survey had different respondents. The purpose of the Doane's survey was to obtain the attitudes and opinions of the agricultural lenders who are supplying farmers' and ranchers' credit needs. The Doane's 1995 survey had a 15.2 percent response rate. Their survey was conducted across the United States. Doane's found that the lender, accountant, fertilizer and chemical representative, and farm machinery dealer were the most important people with whom to have a strong relationship. They found that it was important for the lender to be a dependable source of credit, have competitive interest rates, have a good understanding of agriculture, and to be flexible. Almost 50 percent of the respondents, who had changed primary lenders in the past five years, did so because it was easier to obtain credit with the new lender. The second highest reason was lower interest rates.

"Farm real estate, machinery, and equipment, and breeding livestock dominate the asset structure of the US agricultural sector." (Moss et al. 1997) The result is a capital intensive, low debt, and low liquidity sector. Moss found that there is a trend toward

large, commercial-scale farms that will control most of the sector's debt capital. Small, part-time or hobby (lifestyle) farms and larger industrialized units involved in vertical coordination are growing sectors. The use of debt capital in the agriculture sector grew after World War II up until the 1980's, when the farm crisis reduced total farm debt. The 1990's have seen an increase in farm debt. In 1997, the Farm Credit System and commercial banks had approximately the same percent of total dollars of U.S. farm real estate debt, 16.2 percent and 15.3 percent respectively. However, commercial banks had almost three times the amount of non-real estate debt. (ERS 1998) "Nontraditional lenders are now competitive participants in the non-real estate farm lending market, such as agribusinesses and trade firms that provide credit services along with their merchandizing activities." (Moss et al, 1997) Federal government lending (i.e. Farm Service Agency) has been decreasing since the mid-1980's. Much of the farm debt is still provided by smaller agricultural banks, defined as those whose ratio of farm loans to total loans exceeds the national average ratio. However, there is the threat of mergers and acquisitions. "Continued consolidation could lead to a reduction in the availability of credit to farmers." (Gilbert and Belongia 1988)

Many studies have found that the customer's relationship with the lender/institution can be more important than interest rates. Hanson, Robison, and Siles (1996) observed in a recent study that the success and profitability for a bank to build customer relationships depends directly on the loyalty that customers develop through a good relationship with their banker. They found that an interest rate margin of 74 basis points (nearly 3/4 percent) would be required to change lenders when the relationship was described as "friendly". Gwin and Lindgren (1986) found that personal relationships and the quality of customer service in retail banking are often of greater importance to customers than interest rates, fee structure, innovations, and convenience.

Elliehausen and Wolken (1992) researched the use of financial services by households. They found that more than three-fourths of all households use commercial banks. Checking accounts are the financial service most frequently used by households. They found that the mean number of accounts used per household at local and nonlocal financial institutions was 4.1. They found that local depository institutions are the

principal suppliers of financial services to households. Except for trust accounts, at least 75 percent of households' financial institutions are thirty miles or less from home or work. They found that 24.2 percent of households had an IRA or Keogh, 19.5 percent were using a certificate of deposit, and 21.8 percent had a money market account. Multiple product use is concentrated at local depository institutions, particularly at households' main checking and primary institutions. The products usually include checking and another liquid asset account or a bank credit card.

AT&T has realized the battle over controlling customer relationships. (AT&T 1997) They found that, no matter what industry persons are involved in, their biggest fear is a technology company. Technology companies are changing the way consumers and corporations access, disseminate, and use information.

> Bankers that provide customers with home banking software only for bill paying, for example, will fall short in meeting the intrinsic buyer values of the customer segment that actually wants help in finding the lowest cost consumer loan or the best investment product. (AT&T 1997)

Banks need to have a thorough understanding of buyer values, a steady supply of customer-based innovations that target those values, and superior performance. The digital age is here and banks are going to have to enter it to remain competitive. It is important for them to be able to offer products in a competitive way, so customers are not lured away by digital commerce.

"Relationships often lead to business transactions because when business opportunities exist, qualities that promote positive social relationships may also produce positive business relationships." (Siles et al., 1994) This article provides evidence that loan approval is not always based on financial characteristics. The major factors that contribute to the development of a good business relationship are customer's demonstrated honesty, understanding of the customer's business, and the bank staff's friendly attitude toward the customer. Lenders may often approve a loan to maintain or improve an existing business or social relationship. In addition, they may receive "vicarious" satisfaction from improving the well being of a friend. In a survey completed by bankers, they found that, when the loan approval decision based on financial

characteristics is unclear, the relationship appeared to be the deciding factor. It was much more significant to have a loan denied because of a low-quality business relationship rather than have a loan approved due to a high-quality business or social relationship.

Collender recognizes three important reasons for financial services efficiency research. First, a general principal of economics is that improved efficiency will lead to increases in economic wellbeing and economic growth. Secondly, given this general principle, there is a need to identify the root causes of observed inefficiencies, their relative importance, and policies to facilitate improving efficiency. Changes in markets that lead to efficiency improvements are likely to have differential impacts on various sectors of the economy, and the transition period is likely to produce some dislocation and economic losses in certain sectors. The third reason is the one most important in agricultural lending. "Fear persists in rural areas that relaxing bank regulations will decrease lending to small local businesses, small communities, and agriculture." (Collender 1994) High capital ratios, low loan-to-deposit ratios, high profitability, and smallness typically characterize agricultural banks. The smallness factor may be the result of barriers to expansion or lack of scale economies in sparsely populated areas.

2.3   Marketing Products and Services

There are many different products and services being offered by lending institutions today. The bank has seen the need to become a "one-stop shop" for borrowing, investing, and financial planning needs. Due to the numerous products and services offered by lending institutions, they have found the need for better marketing techniques. Many customers are either unnecessarily targeted for certain products or services, or informed about others. This is where the need for customer databases arises.

Boehlje has found that in the past agricultural lenders have been too busy evaluating credit worthiness and making loans to find out or respond to what the customer really needs. The first step in agricultural lending should be to determine what the customer wants and needs and to ascertain why they do business with an institution. "Historically, agricultural lenders have segmented the market based on location, type of enterprise, size, or risk." (Boehlje 1996) He suggests breaking the customers into the

following four segments: traditional producer, industrialized/integrated grower, small-scale producer/consumer, and investor. Once the segments are determined, then the lender needs to estimate the lifetime value of the customer. If the lender knows what products/services the customer is currently using, he/she can estimate when the customer may need other products/services. Even if an institution does not offer products that a customer may need, the institution can establish an alliance with someone who does offer those products. An alliance allows the institution to retain the customer and meet his/her financial needs.

O'Sullivan found that data mining is helping banks segment their customers into more meaningful categories. "Characteristics that banks are now finding to be very significant are the age of the relationship, the credit quality of the business, and whether it acts as a net investor or net borrower." (O'Sullivan 1997) O'Sullivan found that access to credit is driving the small business. Due to the limitations of credit for small businesses, they don't leave for minimal charges. This limitation has a significant impact in the agricultural industry due to the high number of part-time farmers who may not have as many choices.

"More than 21 percent of respondents to a survey conducted by Unidex last year said they do business with four or more financial institutions. In 1993, only half as many reported their business being that fragmented." (Stoneman 1997) Banks are determining ways to keep their customers using their products/services. Cross-selling has become the key to keeping customers, and bundling accounts helps keep the customer at one institution. Norwest Corporation is offering a package with a no-fee, interest-bearing checking account and discounts on loan products to customers who either maintain a combined account balance of $3,500 or remit Norwest mortgage payments electronically. These types of programs are ways to recruit new customers. First American Corp. gained a "significant" portion of new business by offering incentive programs based on business transactions and account balances. Customers were earning anything from frequent flyer miles to gift certificates for local stores. This increases business both on the customer end and with local businesses. Stoneman recognized the need for databases and cross-selling in banks. Less than one-third of large banks can identify their credit card

customers from information in their deposit account system. This illustrates the need for a database, but once information is there it needs to be used appropriately. The next question may be how to get time constrained bank employees to implement these programs or to even try to cross-sell a product. First Tennessee National Corp. found that incentive pay has helped them increase the number of products sold per household from 1.9 to 3.3. (Stoneman 1997) The next big issue is to make sure that the effort pays off and is more profitable for the bank.

A report from the Bank Rate Monitor found that many customers are switching financial institutions for lower fees. Almost one-third of consumers are avoiding some type of banking service in order to prevent paying additional fees. "A substantial 84 percent of consumers polled said they would be very likely or somewhat likely to take their checking account elsewhere if their institution began charging teller fees." (Bank Rate Monitor) This could have serious implications for many institutions since customers are more likely to bundle their services at the institution where they have a checking account. The study found that 51 percent of consumers are using ATMs regularly. However, younger consumers with incomes over $60,000 are the most likely group to use ATMs. Information on the type of persons who use ATMs can be useful for institutions segmenting their customers, and then initiating marketing strategies through the ATM directed at that customer.

Doane Agricultural Services (1997) conducted a study on producers in the United States on the products and services they were using and plan to use in the future. Doane's found that 96 percent of the respondents were using a checking account, and 88 percent of the respondents plan to use a checking account by the year 2002. Sixty-four percent of the respondents were using operating loans, however only 56 percent of the respondents planned to use operating loans in the future. Forty-nine percent of the respondents were using credit cards, while only 46 percent of the respondents planned to use credit cards in the future. Doane's found that the use of ATM services is going to increase. Twenty-five percent of the respondents currently use ATM services, while 27 percent plan to use ATM services in the future. Respondents' current lenders included commercial banks (68 percent), Farm Credit (32 percent), and equipment dealers (27 percent). The survey

obtained data on farm characteristics. Thirty-six percent of the respondents planned to expand their operation. Fifty-two percent of the respondents owned a computer for farm or ranch business purposes.

"By using statistical models and well-mined data in careful combination, a company can not only determine a customer's 'profitability potential-' but boost it." (Heasley and Gross 1997) Heasley and Gross discuss the ways to get the most out of customer information. They found that few businesses understand the value of their customers or the value of the customers' relationship with their company. They found that banks which are composed of many different units - credit, mortgage, deposits, bank cards, etc. - don't share information between units, therefore they are not building the whole relationship with customers. By using proactive evaluation, a customer can be "pre-approved" for a product or service, allowing front-line staff to feel more confident in cross-selling the bank's products.

> By knowing who its most profitable customers are, the company can make service and responsiveness to those customers a higher priority…With this in place, the company as one unit can let unprofitable customers go and, at the same time, keep customers happy before they ever think of leaving. (Heasley and Gross 1997)

2.4   Survey Preparation

A survey conducted by Doane Agricultural Services Co. was used as a model for this study. It contained similar questions of opinions on and relationships with lenders and other people involved with agriculture. A survey conducted by J.R. Marker was also used to help design the survey. One of the participating institutions of the study provided input on information that is important to obtain from customers. The same institution allowed its database to be evaluated for missing information needs to determine their weakness in obtaining data from their customers.

Expertise in survey construction was provided by various faculty and staff within the Department of Agricultural and Applied Economics at Virginia Tech (Dr. David Kohl and Dr. Dixie Reaves) and by recent graduates from the same department (Dr. Alex White, Troy Wilson, and Ryan Clouse).

The survey was pre-tested on six agricultural producers. The producers' input was used to make the survey questions more precise and easier to understand.

Chapter 3: Survey Results

3.1   Introduction

This chapter focuses on the results from the combined surveys. Of the 1,500 distributed surveys, 308 surveys were returned. Section 3.2 discusses the agricultural characteristics of the surveyed states. Section 3.3 presents the demographic characteristics of the survey sample. Section 3.4 discusses the financial characteristics of the survey sample. Section 3.5 discusses the technology characteristics of the survey sample. Section 3.6 presents the banking services and products used by the survey sample. The final section, 3.7, focuses on the marketing attributes of the survey sample. These characteristics have very important implications for segmenting the agricultural lenders' database of information on customers.

3.2   Agricultural Characteristics of Surveyed States

Surveys were distributed to producers in four states: Iowa, Minnesota, Virginia, and Wisconsin. In addition, surveys were received from producers in West Virginia and South Dakota (See Table 3.1). One hundred and nineteen of the 308 returned surveys originated from those distributed at financial management workshops for agricultural producers in Iowa and Minnesota. The other 189 surveys were received from mail survey respondents who are customers at participating institutions in Virginia and Wisconsin. This section provides some background information on agriculture in the states of the participating institutions. All of the information in this section comes from the United States Department of Agriculture - NASS/ERS 1996/97 Farm Economic Report. Financial data and farm numbers are from 1996. Commodity data are from 1995. Cash receipts generated determines state rankings and commodity rankings.

Agriculture is very important in the state of Iowa with 98,000 farms. Iowa ranks third in the U.S. in terms of total cash receipts from agricultural commodities. Iowa's top 5 commodities are corn, hogs, soybean, cattle and calves, and dairy products, respectively. Iowa produces more corn than any other state in the U.S. Twenty-four

percent of all hogs and pigs on farms in the U.S. are on farms in Iowa. The average net farm income is $40,500. The average asset level is $651,306, while average debt level is $118,786. The average debt-to-asset ratio is 18.2 percent.

Agriculture is very important in Minnesota where there are 87,000 farms. Minnesota ranks seventh in the U.S. in terms of cash receipts from the sale of agricultural commodities. Its top 5 commodities are corn, dairy products, soybeans, hogs, and cattle and calves.   The average net farm income is $25,780. The average asset level per farm is $456,679, with an average debt level of $93,152. The average debt-to-asset ratio is the highest among the surveyed states at 20.4 percent.

Virginia is the lowest ranking surveyed state with a ranking of thirtieth. It has the lowest number of farms, with 48,000. Virginia's top 5 commodities are broilers, dairy products, cattle and calves, turkeys, and tobacco.   The average net farm income is $11,831. The average asset level is $386,102, while the average debt level is $37,858. Virginia has the lowest debt level of the surveyed states. The average debt-to-asset ratio is 9.8 percent.

Wisconsin is a large agricultural state. It ranks tenth in total cash receipts from the sale of agricultural commodities. Its top 5 commodities are dairy products, corn, cattle and calves, soybeans, and hogs. The average net farm income is the lowest of the surveyed states at $7,094. Wisconsin has the lowest average asset level among the surveyed states at $350,620. The average debt level is $67,889, with a debt -to-asset ratio of 19.4 percent.

3.3   Demographic Characteristics of Survey Sample

There are 6 states represented in this survey. There were 87 surveys returned from 2 institutions in Virginia, which included respondents from West Virginia, 100 surveys returned from an institution in Wisconsin, 91 surveys returned from a seminar in Minnesota, which included respondents from South Dakota, and 30 surveys returned from a seminar in Iowa. The percent of surveys returned from mailings is 19 percent and 20 percent for Virginia and Wisconsin, respectively.   Fifty percent of the surveys distributed at the Iowa seminar were returned, while 91 percent of the surveys distributed at the

Minnesota seminar were returned.   Overall, there was a 20% return rate on mailed surveys. This can be compared to the 15.2 percent response rate received by the 1995 Doane's survey. Reasons why there are low returns on this type of survey are the length of the survey due to the in-depth questions, and the confidential enumerated financial questions asked in the survey. Survey recipients included customers who had an adverse relationship with the institution. Surveys have the potential for creating their own sampling bias. Often, only recipients with higher levels of education or higher levels of income answer a survey.   There was not a follow-up to a random sample of non-respondents to check for non-respondent bias.

Survey data was entered into a Microsoft Excel database for each individual institution or seminar. The data was separated so that individual institutional analysis could be performed on the data. However, information is presented in aggregate form for privacy reasons and so that individual institutions can not be identified. Reports will be sent out to the separate institutions for their own comparison to the total summary.

TABLE 3.1 - NUMBER OF RESPONDENTS SURVEYED FROM EACH STATE
308 surveyed agricultural borrowers, 1997

State	Number of Respondents	Percent Returned
Iowa	30	50%
Minnesota	89	91%
South Dakota	2	
Virginia	85	19%
West Virginia	2	
Wisconsin	100	20%
Total	308	---

The age breakdown of the surveyed farmers shows a sample that corresponds to the average age of producers in the surveyed states which is 52. (USDA 1996) One percent of the respondents is between the ages of 18 and 25, 31 percent are between the ages of 26 and 40, 54 percent are between the ages of 41 and 60, and 13 percent are greater than the age of 60. Combining these age categories, 67 percent of the surveyed sample are over the age of 40.

TABLE 3.2 - PERCENT OF RESPONDENTS BY AGE OF RESPONDENT

Age	Percent of Respondents	Surveyed States Average (1996)
18-25	1%	
26-40	31%	
41-60	54%	52
>60	13%	
Total	100%	---

The survey respondents are predominately male (96 percent). This is slightly higher than the national average of 92.5 percent. (USDA 1992)

TABLE 3.3 - GENDER OF THE OWNER/OPERATOR
300 surveyed agricultural borrowers, 1997

Gender	Percentage of Respondents	National Average (1992)
Male	96%	93%
Female	4%	7%
Total	100%	100%

The producers who returned the survey have a higher level of education compared to the average American producer. Forty-one percent of the respondents have a high school degree or less, compared to the national average for producers at 61 percent. (USDA, Ag Fact Book) However, 25 percent have a four-year degree or more, with approximately 40 percent of the respondents having at least a two-year degree. The national average for producers who have some college and/or a degree is 39 percent. (USDA, Ag Fact Book)

TABLE 3.4 - EDUCATION LEVEL OF OWNER/OPERATOR
298 surveyed agricultural borrowers, 1997

Education Level	Percentage of Respondents	National Average (1995)
Less than High School	6%	21%
High School	35%	40%
Some College	20%	39%
2 Year Degree	14%	

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[*] For all tables in this chapter, cell totals may differ slightly from 100% due to rounding errors. Certain questions also allowed respondents to choose more than one answer. Some tables may show fewer than 308 respondents, indicating that some producers chose not to answer the question on the survey.

4 Year Degree	18%	
Masters	6%	
PhD	1%	
Total	100%	100%

The type of enterprise was a multiple answer question, with crops having the highest response. Nearly 70 percent of the respondents are involved in cropping enterprises. Nearly half of the respondents are involved in beef operations. Twenty-seven percent of the respondents are involved in dairy operations, while 21 percent are involved in swine operations.

TABLE 3.5 - TYPE OF OPERATION
308 surveyed agricultural borrowers, 1997

Type of Enterprise	Percentage of Respondents
Crops	68%
Beef	46%
Dairy	27%
Swine	21%
Poultry	9%
Other	5%
Horses	4%
Sheep	3%
Horticulture	1%
Orchard	1%

Seventy-seven percent of the respondents are in an operation that has been in existence for over 11 years. Over half of the respondents are in businesses over 20 years old. Only 23 percent of the respondents are involved in operations that had only been in existence for 10 years or less.

TABLE 3.6 - LENGTH OF TIME OPERATION HAS BEEN IN EXISTENCE
298 surveyed agricultural borrowers, 1997

Time (years)	Percentage of Respondents
< 5	7%
5-10	16%

11-20	25%
>20	52%
Total	100%

Over 70 percent of the respondents reported their farm organized as a sole-proprietorship. Ninety percent of farms are sole-proprietorships in the United States. (USDA, Ag Fact Book) Sixteen percent of the respondents have their business as partnerships and 11 percent of the respondents have businesses that are corporations.

TABLE 3.7 - ORGANIZATION OF BUSINESS
293 surveyed agricultural borrowers, 1997

Organization	Percentage of Respondents	National Average (1997)
Sole-Proprietorship	71%	70%
Partnership	16%	--
Corporation	11%	--
Limited Liability Company	2%	--
Other	2%	--
Total	100%	--

3.4 Financial Characteristics of Survey Sample

Almost half of the respondents have net farm incomes of less than $25,000. Thirty-nine percent of the respondents are between $25,000 and $75,000 in net farm income. Of the sixteen percent over $75,000, three percent of the respondents have a net farm income of over $500,000 and 13 percent between $100,000 and $500,000. The national average for net farm income in 1996 is $13,502. (U.S.D.A. 1997) The average income from the surveyed states is $21,301. (U.S.D.A. 1996) Both of these statistics are in the $1 - $25,000 range that has the highest percentage of respondents for this study. The average net farm income from the respondents is $75,324. The average from the respondents is based on the 169 producers who filled in exact incomes. This skewed by the 16 percent of the respondents who have income levels above $75,000.

TABLE 3. 8 - NET FARM INCOME
298 surveyed agricultural borrowers, 1997

Net Farm Income	Percentage of	Surveyed States	National	Respondent

	Respondents	Average (1996)	Average (1996)	Average[*]
0 or loss	7%			
1 - 25,000	39%			
25,001 - 50,000	27%	21,301	13,502	75,324
50,001 - 75,000	12%			
> 75,000	16%			
Total	100%	--	--	--

Almost half of the respondents have non-farm incomes of less than $25,000. Nearly 33 percent have non-farm incomes over $50,000. Twenty percent reported no non-farm income, slightly less than the national average of 68 percent. (U.S.D.A. 1997) Nearly 30 percent reported incomes between $1 and $25,000. One in five reported incomes greater than $75,000. The national average for non-farm income in 1996 was $42,455. (U.S.D.A. 1997) This falls into the range with the highest percentage of respondents from this study. The average non-farm income among the respondents is $29,849. The respondent average is based on the 169 respondents who filled in exact incomes.

TABLE 3. 9 - NON-FARM INCOME
296 surveyed agricultural borrowers, 1997

Non-farm Income	Percentage of Respondents	Non-Farm Income Average (1996)	National Average (1996)	Respondent Average[*]
0	20%	68%		
1 - 25,000	29%	--		
25,001 - 50,000	19%	--	42,455	29,849
50,001 - 75,000	13%	--		
> 75,000	20%	--		
Total	100%	--	--	--

Almost 50 percent of the respondents have a total income of less than $50,000. The average income among the respondents is $93,452. The 6 percent that have greater than $250,000 in total income increased the average. Nearly 25 percent of the respondents reported a total income of $100,000 plus while 30 percent are between $50,000 and

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[*] The respondent average is based on the 169 producers who filled in exact incomes.

$100,000. The national average for total income in 1995 is $44,400. (U.S.D.A. 1997)

This falls into the <$50,000 range which has the highest percentage of respondents.

TABLE 3.10 - TOTAL INCOME
169 surveyed agricultural borrowers, 1997)[*]

Total Income	Percentage of Respondents	National Average (1993)	Respondent Average
< **$50,000**	47%		
$50,000 - $100,000	30%		
$100,001 - $250,000	17%	40,223	93,452
> $250,000	6%		
Total	100%	--	--

Sixty-nine percent of the respondents have less than $1,000,000 in assets. The national average asset level in 1996 is $502,378. (U.S.D.A. 1997) The average of the surveyed states is $461,177. (U.S.D.A. 1996) The average asset level for the respondents is $1,060,819. A possible explanation for the higher asset level for the respondents may be due to the number of respondents who are larger, more aggressive producers utilizing financed debt. The average of the respondents is not offset by those producers who have very low asset levels and no loans.

TABLE 3.11 - ASSET LEVEL OF OPERATION
165 surveyed agricultural borrowers, 1997 (1996 financial information)

Total Assets	Percentage of Respondents	National Average (1996)	Surveyed States Average (1996)	Respondents Average
< **$50,000**	2%			
$50,000 - $100,000	2%			
$100,001 - $500,000	39%	502,378	461,177	1,060,819
$500,001 - $1,000,000	26%			
> $1,000,000	32%			
Total	100%	--	--	--

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[*] The financial information in this section (total income, asset level, debt level, debt-to-asset ratio, depreciation expense, total payments) has lower numbers of sampled agricultural borrowers due to a lower percent of respondents for this section of the survey. This was a fill-in portion and is more personal in nature, resulting in lower response rates. However, the type of respondents who answered the fill-in area of the survey represent a similar range of individuals as in the whole survey.

Twenty-four percent of the respondents have less than $100,000 in debt. Nearly 60 percent have debt levels between $100,000 and $500,000. Eighteen percent of the respondents have a debt level over $500,000. The national average debt level in 1996 is $75,825. (U.S.D.A. 1997) The average among the surveyed states was $79,421. (U.S.D.A. 1996) The average debt level among the respondents is $361,997. The debt level range with highest percentage of respondents in this study is at $100,000 to $500,000. This is most likely due to the survey recipients all having a loan, therefore the average is not balanced by producers without any debt.

TABLE 3.12 - DEBT LEVEL OF OPERATION
166 surveyed agricultural borrowers, 1997 (1996 financial information)

Total Liabilities	Percentage of Respondents	National Average (1996)	Surveyed States Average (1996)	Respondents Average
< $50,000	8%			
$50,000 - $100,000	16%			
$100,001 - $500,000	57%	75,825	79,421	361,997
$500,001 - $1,000,000	13%			
> $1,000,000	5%			
Total	100%	--	--	--

The debt-to-asset ratio is obtained by dividing total debts by total assets. Fifty-three percent of the respondents have a debt-to-asset ratio under 40 percent. Nearly 30 percent reported a debt-to-asset ratio between 40 percent and 60 percent. Nearly one in five have a ratio exceeding 60 percent. The average debt-to-asset ratio for this study is 37.8 percent compared to the national average of 15 percent. (U.S.D.A. 1997) Thus, the producers in this study have over twice the debt-to-asset ratio compared to the national average.

TABLE 3.13 - DEBT-TO-ASSET RATIO
165 surveyed agricultural borrowers, 1997 (1996 financial information)

Debt-to-Asset Ratio	Percent of Respondents	National Average (1996)	Respondents Average
< .40	53%		
.40 - .60	27%	.15	.38
> .60	18%		
Total	100%	--	--

Virginia's respondents have the lowest average debt-to-asset ratio, 31 percent, with Minnesota's having the highest, 51 percent. All of the states respondents have a higher debt-to-asset ratio than the national average of 15.4 percent. (U.S.D.A. 1996) The respondents from each state doubled their state average ratio, while the respondents from Virginia tripled the state average. This may be due to the sampling procedure for the survey. All participating institutions chose survey recipients by one factor being that they all had a loan with the institution.

TABLE 3.14 - DEBT-TO-ASSET RATIO OF AGRICULTURAL BORROWERS BY STATE

165 surveyed agricultural borrowers, 1997 (1996 financial information)

State	Average Debt-to-Asset Ratio	State Average (1996)
Iowa	35%	18%
Minnesota	51%	20.4%
Virginia	31%	9.8%
Wisconsin	41%	19.4%
All States	38%	15.4% (1995)

The debt-to-asset ratio is very similar between all enterprises. Swine and dairy are the same at 49 percent compared to poultry, which is 42 percent. The other category is the lowest at 38 percent. One would assume that swine and poultry enterprise would have a higher debt-to-asset ratio due to the large amount of assets in depreciable assets and due to vertical integration, however this study did not generate data supporting this assumption.

TABLE 3.15 - DEBT-TO-ASSET RATIO OF AGRICULTURAL BORROWERS BY ENTERPRISE

165 surveyed agricultural borrowers, 1997 (1996 financial information)

Enterprise	Average Debt-to-Asset Ratio
Swine	49%
Dairy	49%
Beef	48%
Crops	48%
Poultry	42%

Other	38%

<center>(Other consists of orchard, horticulture, sheep, horses, and other categories)</center>

Seventy-seven percent of the respondents have a depreciation expense of less than $50,000. This leads to the conclusion that a majority of the assets are non-depreciable, such as land, used equipment, and/or improvements or depreciated out.

<center>

TABLE 3.16 - TOTAL DEPRECIATION EXPENSE

132 surveyed agricultural borrowers, 1997 (1996 financial information)

</center>

Total Depreciation Expense	Percentage of Respondents
< $50,000	77%
$50,000 - $100,000	12%
$100,001 - $500,000	8%
$500,001 - $1,000,000	2%
> $1,000,000	0%
Total	100%

Almost 90 percent of the respondents have annual principal and interest payments of less than $100,000.   Sixty-four percent of the respondents have total annual payments less than $50,000.

<center>

TABLE 3.17 - TOTAL ANNUAL PAYMENTS, PRINCIPAL AND INTEREST

148 surveyed agricultural borrowers, 1997 (1996 financial information)

</center>

Total Annual Payments, Principal and Interest	Percentage of Respondents
< $50,000	64%
$50,000 - $100,000	24%
$100,001 - $500,000	11%
$500,001 - $1,000,000	1%
> $1,000,000	1%
Total	100%

Interest rates were shown to be very important. Almost 60 percent of the respondents said that the interest rate would have to be over 1 percent (100 basis points) lower for them to switch lenders. Thirty percent of the respondents would switch lending institutions if the rates were 1/2 percent to 1 percent lower (50 to 100 basis points). Only

10 percent would switch lending institutions for less than 1/2 percent (50 basis points) difference. Only 1 percent would switch lending institutions for less than 1/4 percent (25 basis points). This leads one to conclude that interest rates may be important in choosing a bank, but less important once the customer has established a relationship with the institution.

TABLE 3.18 - INTEREST RATE SENSITIVITIES (AMOUNT INTEREST RATE WOULD NEED TO DECLINE TO SWITCH LENDERS)

295 surveyed agricultural borrowers, 1997

Interest Rate Difference	Percentage of Respondents
< 1/4	1%
1/4 - 1/2	9%
1/2 - 3/4	11%
3/4 - 1	19%
1 -2	42%
> 2	17%
Total	100%

3.5   Technology Characteristics of Survey Sample

Sixty-five percent of the 303 respondents own a computer. This is much higher than the national average of 31 percent in a survey by the National Agricultural Statistics Service in 1997. (Farm Computer Usage, NASS)

TABLE 3.19 - OWNERSHIP OF COMPUTERS

303 surveyed agricultural borrowers, 1997

Own Computers	Percentage of Respondents	National Average (1997)
Yes	65%	31%
No	35%	69%
Total	100%	100%

Thirty-one percent of the 226 respondents responded they are using the Internet or email. The NASS survey showed that only 13 percent of farms have Internet access. (Farm Computer Usage, NASS) The reason why these statistics are so important is because of the numbers of people increasing their use of the Internet. The Internet can give

producers instant access to interest rates across America and globally. There is a vast amount of information available on the Internet that gives producers more choices. Loans and other products and services can be applied for over the Internet. This eliminates travel time and increases the options in shopping for financial services.

TABLE 3.20 - USE OF INTERNET / EMAIL
226 surveyed agricultural borrowers, 1997

Use Internet/Email	Percentage of Respondents	National Average (1997)
Yes	31%	13%
No	69%	87%
Total	100%	100%

Nearly three out of four respondents are using some type of financial software program. Proper use of this software allows producers to track their expenses and determine the amount of money being allocated to each expense category. Correctly used, these programs permit producers to monitor their financial situation more intensely than with manual records systems. Producers can easily examine how different loan rates and terms will impact their bottom line, possibly influencing their interest rate sensitivity.

TABLE 3.21 - USE OF SOFTWARE PROGRAMS
196 computer owners

Type of Software	Percentage of Respondents
Production	43%
Financial	74%
Entertainment	42%
Personal	62%

3.6 Banking Services and Products used by Survey Sample

The information in this section examines lenders walled share by individual customers. This area focuses on product and service use and institutional preference in selecting products and services. All survey recipients are using some type of loan product. However, the investment products are less utilized. Twenty-seven percent of the respondents do not use certificates of deposit, 33 percent are not using money market funds. The use of IRAs seems to be increasing. Twenty-seven percent of the respondents

are not using IRAs. Although different respondents, this statistic can be compared to 63.1 percent who were not using IRAs from a survey in 1995. (Marker 1995) However, the customer may be utilizing brokerage firms for these products and services rather than lending institutions. Forty percent are not using estate planning. Most people do not consider estate planning until later in life, usually after the age of 50. The percentage of respondents using leasing services is also very low, approximately 14 percent. Most of the respondents were using various forms of insurance. Only 6 percent of the respondents do not utilize life insurance, while only 21 percent of the respondents failed to report having disability insurance.

TABLE 3.22 - USE OF PRODUCTS AND SERVICES

308 surveyed agricultural borrowers, 1997

Product / Service	Farm Credit	Commercial Bank	Farm Service Agency	Insurance Company	Manufacturer Credit	Do Not Use
Long- Term Ag Loan	21%	42%	6%	2%	1%	17%
Intermediate-Term Loan	16%	65%	4%	1%	10%	8%
Operating	7%	63%	3%	0%	3%	10%
Personal Loan	3%	43%	0%	1%	1%	21%
Home Mortgage	13%	27%	2%	0%	0%	27%
Credit Card	2%	55%	0%	0%	9%	12%
Personal Checking Acct.	1%	95%	0%	0%	0%	1%
Business Checking Acct.	2%	73%	0%	0%	0%	9%
Savings Acct.	0%	62%	0%	2%	0%	8%
Certificate of Deposit	0%	31%	0%	2%	0%	27%
Money Market Fund	0%	15%	0%	6%	0%	33%
Mutual Fund	0%	14%	2%	14%	0%	27%
Pension Fund	0%	28%	3%	11%	1%	32%
IRA	0%	18%	3%	16%	0%	27%
Estate Planning Services	0%	7%	1%	7%	0%	40%
Brokerage Services	0%	8%	2%	4%	0%	34%
Internet Banking	4%	10%	0%	0%	0%	57%
ATM	0%	30%	0%	0%	0%	32%
Appraisal Service	1%	12%	3%	1%	0%	36%
Future Payment	0%	2%	0%	0%	1%	46%
Leasing	4%	2%	1%	2%	7%	36%
Life Insurance	2%	6%	1%	66%	1%	6%

Characteristic					
Disability Insurance	0%	2%	0%	37%	1%	21%
Multi-peril/Crop Insurance	2%	7%	5%	35%	0%	15%
Crop/Hail Insurance	2%	6%	3%	30%	0%	19%
Other	0%	1%	0%	3%	0%	4%

(The percent who do not use may be lower than the actual percentage due to many survey recipients leaving the column blank. There was not an assumption made if the respondent left the column blank that the product/service was not used. Due to multiple use of products/services, multiple institutions, and incomplete answers these percents will not add up to 100 percent.)

Average number of loan products per respondent for all 308 sampled agricultural borrowers is 3.2. Average number of other products/services for all 308 sampled agricultural borrowers is 7.6; therefore the average number of total products/services a customer has is 10.8.

3.7 Marketing Attributes

Doane's survey (1995) found that 88 percent of respondents indicated that the lender being a dependable source of credit was extremely important, compared to the 75 percent response from this study. This can be compared to the 92 percent who indicated the lender being a dependable source of credit was extremely important in Doane's 1990 study. (Note this study used Very Important which as the highest category of importance, where Doane's used Extremely Important as the highest category.) Seventy-six percent of the respondents indicated that a competitive interest rate as being very important, compared to the 80 percent in 1995 and 82 percent in 1990 from the Doane's study. The lender's knowledge of agriculture has remained at similar levels of importance with 69 percent in this survey compared to 71 percent in 1995 and 83 percent in 1990 from Doane's study.

TABLE 3.23 - CHARACTERISTICS IMPORTANT WHEN SELECTING A LENDER/SERVICE PROVIDER
1997

Characteristic	Percentage Respondents [*]	Total Respondents	Doane's (1995)	Doane's (1990)
Competitive Interest Rate	76%	299	80%	82%

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[*] Respondents who chose that the characteristic is very important when selecting a lender/service provider.

Dependable Source of Credit	75%	296	88%	92%
Knowledge of Agriculture	69%	296	71%	83%
Stability of Lender/Institution	66%	299	--	--

The survey respondents indicated that Internet banking, educational seminars, tax advice, and automated technology are not important when choosing a lender/service provider. Due to the high percentage of respondents who own a computer and use Internet/email, these characteristics may become more important in the future. It is possible that many of the respondents have not attended an educational seminar offered by their lender/service provider, therefore did not rate it as being important. Other characteristics which were between the two extremes include: staff turnover, location within 15 miles of business, paperwork required, locally owned, and understands commodity marketing.

TABLE 3.24 - CHARACTERISTICS NOT IMPORTANT WHEN SELECTING A LENDER/SERVICE PROVIDER
1997

Characteristic	Percentage Respondents[*]	Total Respondents
Internet Banking	3%	286
Education Seminars provided by lenders	9%	287
Offers Tax Advice	12%	293
Automated Technology	13%	290

Doane's study found that 71 percent (1995) and 80 percent (1990) of their respondents indicated that it was extremely important to have a strong relationship with their lender, compared to 69 percent in this study. Doane's found 60 percent (1995) and 68 percent (1990) of respondents indicated that they should have a strong relationship with their accountant compared to 53 percent in this study. The fertilizer/chemical dealer was more important in the Doane's survey than this study. The veterinarian (38 percent) is not as important in this study as in Doane's, 48 percent (1995) and 42 percent (1990).

TABLE 3.25 - INDUSTRY INFLUENCERS ON DECISION MAKING
1997

Influencers	Percentage	Total	Doane's (1995)	Doane's (1990)

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[*] Respondents who chose that the characteristic is very important when selecting a lender/service provider.

	Respondents[*]	Respondents		
Lender	69%	295	71%	80%
Accountant	53%	299	60%	68%
Veterinarian	38%	293	48%	42%

Over 60 percent of the respondents indicated that their spouse/partner has considerable influence on their investment and credit decisions. The spouse/partner is not as important of an influence for production decisions. In this study, the majority of the respondents are male owners of sole-proprietorships, therefore it can be concluded that the female often is the influencer in decisions making. The implications of this result are that the spouse/partner may need to be present for the person to make a sound credit or investment decision.

TABLE 3.26 - SPOUSE/PARTNER INFLUENCE ON DECISION MAKING
1997

Type of Decision	None	Very Little	Considerable	Total Respondents
Investment	13%	20%	67%	273
Credit	15%	24%	61%	289
Production	21%	36%	43%	274

Almost 90 percent of the respondents who use commercial banks visit their lender at his/her institution, while only 63 percent of Farm Credit borrowers visit their lender at his/her institution.

TABLE 3.27 - WHERE CUSTOMERS ARE VISITING THEIR LENDER
308 Sampled Agricultural Borrowers, 1997

Location	Farm Credit	Commercial Bank
At his/her Institution	63%	89%
At your Operation	35%	19%
Other	3%	6%
Total	100%	104%

(Note: Commercial Bank percentages are over 100% due to the use of multiple commercial banks.)

Over 60 percent of the respondents prefer to visit their lender at his/her institution, while 36 percent would rather the lender visit them at their operation. The respondents who wanted their lender to visit them at their operation usually had higher farm incomes and/or higher asset levels.

TABLE 3.28 - WHERE CUSTOMERS WANT TO VISIT THEIR LENDER
299 Sampled Agricultural Borrowers, 1997

Location	Percent of Respondents
At his/her Institution	64%
At your Operation	36%
Total	100%

This survey provides the banking industry with valuable information on the types of customers using their products/services. Three hundred eight surveys were returned. The use of technology, computers and Internet, is high. Through computers and the Internet, institutions are able to market to customers, decrease customer usage of human tellers, and increase customer awareness of products/services available. Institutions can make available financial software for customers to use to evaluate their accounts. These services increase the customer's relationship with the institution. Respondents indicate that they use an average 3.2 loan products and 7.6 non-loan products across all institutions. Information on average loan and service usage allows an institution to set goals on what they need to obtain per customer. There is still room for growth in the financial services area. The respondents indicate a low usage across all financial service products. Fifty-nine percent of respondents require that interest rates be more than one percent (100 basis points) lower before they would switch lending institutions. Customers are not switching institutions for small rate changes. Accountants, lenders, veterinarians, field crop specialists, and the spouse/partner have a lot of influence on the producer's decision making process. These people are important for the institution to incorporate into their inner realm so that the institution is selling to both the producer and the influencers. Respondents indicate that Internet banking, educational seminars, tax advice and automated technology are not important in the selection process of a lender/service provider, however these characteristics will probably increase in importance in the future.

Chapter 4: Survey Analysis

4.1   Introduction

This chapter reports the results of the statistical analysis of the survey results. Bank products and services and marketing attributes are analyzed to determine relationships to personal, business, and/or financial characteristics. Section 4.2 discusses the statistics used to analyze the data. Section 4.3 discusses the correlation relationship between interest rates and the farm and personal characteristics. Section 4.4 discusses the relationship between farm characteristics and the use of products and services. Section 4.5 discusses the correlation between other variables from the survey and agricultural business/personal characteristics.

4.2   Analytical Statistics

Due to the qualitative nature of the information provided by the survey, a limited amount of statistical analysis is possible. A majority of the data is presented in correlation tables, which are the easiest way to display and communicate the information. Correlations between the characteristics of the agricultural businesses and the bank services/products used are calculated to see what characteristics lead to a more likely use of a loan/service. The correlation data will be analyzed as ordered categories (x and y). This means, when testing for independence of two categorical variables, for each variable there is a natural ordering of the categories. In this study, the variables are set up so that they are increasing. Let γ represent the association between these two variables in the population. Based on the sample, we might want to test: Ho: $\gamma = 0$ versus H_1: $\gamma > 0$, H_1: $\gamma < 0$, H_1: $\gamma \neq 0$. Note that since both variables are ordered, the direction of association is a meaningful concept. Considering any pair of observations, the pair is concordant if the observation in the lower category on x is also in the lower category on y, or discordant if the observation in the lower category on x is in the higher category on y. Each pair is then classified as either concordant, discordant, or tied.

Let C = # pairs which are concordant

Let D = # pairs which are discordant
$\hat{\gamma} = C - D / C + D$
Note $-1 \le \hat{\gamma} \le 1$

To compute C we must consider all pairs of observations C equals the total number of concordant pairs of observations and is given by: $C = 1 \sum_i \sum_j n_{ij} c_{ij}$. D equals the total number of discordant pairs of observations and is given by: $D = 1 \sum_i \sum_j n_{ij} d_{ij}$. Thus, the estimate of gamma is $(C - D) / (C+D)$, note $-1 \le \hat{\gamma} \le +1$. Under the null hypothesis, H_o: $\hat{\gamma} \cong N(\mu, \hat{\sigma}_{\hat{\gamma}}^2)$, thus to test H_o, we form a z_{obs} which is equal to $\hat{\gamma} / \hat{\sigma}_{\hat{\gamma}}$ which is distributed $N(0,1)$.

Computing $\hat{\sigma}_{\hat{\gamma}}^2$: $\hat{\sigma}_{\hat{\gamma}}^2 = 16 (P_C^2 P_{DD} - 2P_C P_D P_{CD} + P_D^2 P_{CC}) / (n_2 - P_n)^4$

Where $P_C = \sum \sum n_{ij} C_{ij} = 2C$

$P_D = \sum \sum n_{ij} D_{ij} = 2D$

$P_{CC} = \sum \sum n_{ij} C_{ij}^2$

$P_{DD} = \sum \sum n_{ij} D_{ij}^2$

$P_{CD} = \sum \sum n_{ij} C_{ij} D_{ij}$

$P_n = \sum n_{i.}^2 + \sum n_{.j}^2 - \sum \sum n_{ij}^2$

The Z statistic is used to determine whether a positive or negative relationship exists between the two variables. . A 95% significance level is used for all tests. If the alternative hypothesis is that the relationship is greater than zero, then the rejection region is for the z observation to be greater than 1.645. If the alternative is less than zero, the rejection region is for the z observation to be less than -1.645.

A chi-square goodness of fit test (χ^2) is used to determine if a relationship exists between two variables when the data was not an ordered category. The statistic is as follows: $T = \sum_{i=1}^{k} (O_i - E_i)^2 / E_I$, where $E_i = np_i$, gives the expected cell count, n is the number of sample observations, and k is the number of cells in the single-row contingency table. O stands for observed, and E stands for expected. The alternative

hypothesis is that the true cell probabilities are different from those specified by the null hypothesis. The null hypothesis is rejected at the alpha (α) level of significance if T exceeds the 1 - α quantile from the chi-square distribution with k - 1 degrees of freedom, where k is the number of cells. The null hypothesis is that a relationship does not exist between the observations. An alpha of .05 was used for all tests.

4.3 Interest Rate Sensitivities

The following tables represent interest rate sensitivity correlations. This study and Doane's found interest rates are a large component of the selection process of choosing a financial institution. Thus, a major part of the statistical analysis is to determine whether a relationship or correlation exists between farm and personal characteristics to interest rate sensitivity. Net farm income is negatively correlated with interest rate sensitivity. At lower net farm income levels, producers are less likely to switch lenders for a rate decrease. This may be due to the limitations producers would receive from a lender who did not understand agriculture. There may be limitations on the opportunity to change lending institutions for a more competitive rate. Agricultural producers in the higher income levels have more choices and would be more likely to move to a competitor for lower interest rate changes.

TABLE 4.1 - INTEREST RATE CHANGE / FARM INCOME RELATIONSHIP

1997

Z = -1.65

Interest Rate Change / Farm Income	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%	# Respondents
O or loss	5%	15%	0%	25%	25%	25%	19
1 - 25,000	1%	8%	9%	17%	45%	20%	109
25,001 - 50,000	0%	8%	15%	16%	48%	15%	80
50,001 - 75,000	0%	6%	9%	34%	40%	29%	35
> 75,000	0%	17%	23%	13%	30%	17%	47

(Percentages given as a percent of respondents at that farm income level. For example, the first cell with 5% refers to 5% of 19 respondents who have 0 or loss farm income.)

Non-farm income and interest rates are negatively correlated. This means that at lower levels of non-farm income, producers are less likely to switch lenders for a rate decrease. This may be due to the unpredictability of farm income. If a producer is depending on the non-farm income to cover their payments in less productive periods, they may not want to take the chance in switching to a lender who they do not have a relationship.

TABLE 4.2 - INTEREST RATE CHANGE / NON-FARM INCOME RELATIONSHIP
1997

Z = -2.58

Interest Rate Change / Non-Farm Income	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%	# Respondents
0	0%	8%	8%	15%	47%	19%	58
< 25,000	2%	6%	7%	18%	46%	20%	86
25,000 - 50,000	2%	10%	14%	14%	35%	25%	51
50,001 - 75,000	0%	15%	18%	18%	36%	12%	33
> 75,000	0%	15%	15%	17%	43%	9%	53

(Percentages given as a percent of respondents at that non-farm income level.)

Asset level and interest rates are highly correlated. It is negative, leading to the conclusion that producers with less assets are less willing to change lenders due to rate decreases. This may be due to not having the choice. Many lenders are not willing to make a loan without the customer meeting all of their requirements, and due to the cyclical and seasonal nature of the agricultural industry, producers usually do not meet the requirements.

TABLE 4.3 - INTEREST RATE CHANGE / ASSET LEVEL RELATIONSHIP
1997

Z = -3.23

Interest Rate Change /Asset Level	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%	# Respondents
< 500,000	1%	9%	7%	17%	49%	17%	70
500,000 - 1,000,000	2%	20%	2%	27%	34%	15%	41
1,000,001 - 4,000,000	0%	19%	13%	28%	36%	4%	47

	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%	
> 4,000,000	0%	17%	67%	0%	0%	17%	6

(Percentages given as a percent of respondents at that asset level.)

There is not a significant correlation between debt level and interest rate sensitivity. This is surprising since at higher debt levels, a 1/4 percent difference can raise or lower interest expense up to $1,000/year. Therefore, this is an indication that interest rates are not the most important aspect when a customer evaluates an institution after a relationship has been established.

TABLE 4.4 - INTEREST RATE CHANGE / DEBT LEVEL RELATIONSHIP
1997

Z = -1.01

Interest Rate Change / Debt Level	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%	# Respondents
< 50,000	7%	14%	7%	36%	29%	7%	14
50,000 - 250,000	0%	13%	5%	23%	43%	16%	75
250,001 - 500,000	0%	14%	6%	18%	48%	14%	44
> 500,000	4%	19%	19%	23%	27%	8%	26

(Percentages given as a percent of respondents at that debt level.)

Producers with a higher debt-to-asset ratio are less interest rate sensitive. Again, this could be due the limitations agriculture producers find in the number of lending institutions who will lend to them, especially those who are more heavily leveraged.

TABLE 4.5 - INTEREST RATE CHANGE / DEBT-TO-ASSET RATIO RELATIONSHIP
1997

Z = 2.12

Interest Rate Change / Debt-to-Asset Ratio	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%	# Respondents
0 - 0.09	6%	13%	0%	44%	31%	6%	16
0.1 - 0.19	0%	29%	7%	21%	29%	14%	14
0.2 - 0.29	0%	24%	16%	28%	20%	12%	25
0.3 - 0.39	0%	16%	6%	19%	50%	9%	32
0.4 - 0.49	0%	13%	13%	9%	48%	17%	23

0.5 - 0.59	5%	5%	23%	14%	41%	14%	22
> 0.6	0%	10%	0%	30%	47%	13%	30

(Percentages given as a percent of respondents at that debt to asset level)

There is no significant relationship between age and interest rate sensitivities.

TABLE 4.6 - INTEREST RATE CHANGE / AGE RELATIONSHIP
1997

Z = -0.49

Interest Rate Change / Age	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%	# Respondents
18 - 25	0%	0%	0%	0%	67%	33%	3
26 - 40	2%	8%	11%	19%	38%	22%	93
41 - 60	1%	12%	11%	20%	44%	12%	156
> 60	0%	5%	15%	18%	41%	21%	39

(Percentages given as a percent of respondents at that age level)

There is no significant correlation between the number of services (non-loan products) and interest rate sensitivities.

TABLE 4.7 - INTEREST RATE CHANGE / NUMBER OF SERVICES RELATIONSHP
288 recipients, 1997

Z = -0.49

Interest Rate Change / # Services	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%
< 2.5	0	1%	2%	1%	6%	2%
> 2.5	1%	9%	10%	18%	36%	16%

There is no significant correlation between the number of loans per customer and interest rate sensitivities.

TABLE 4.8 - INTEREST RATE CHANGE / NUMBER OF LOANS RELATIOSHIP
292 respondents, 1997

Z = -0.23

# Loans/Interest Rate Change	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%
< 2.5	0	4%	4%	5%	13%	6%
> 2.5	1%	5%	8%	13%	30%	12%

The ownership of a computer and interest rate sensitivities are highly correlated. The positive correlation means that, as computer ownership increases, producers are less likely to switch lenders due to decreasing rates. Producers may understand their finances better when actively using a computer, therefore they understand the amount an interest rate would have to change to make it relevant for them to switch institutions.

TABLE 4.9 - INTEREST RATE CHANGE / COMPUTER OWNERSHIP RELATIONHSHIP
292 respondents, 1997

Z = 5.64

Computer / Interest Rate Change	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%
No	0	1%	3%	4%	16%	11%
Yes	1%	8%	9%	14%	26%	7%

There is no significant correlation between interest rate sensitivities and Internet usage. A negative relationship was expected due to the amount of information available to compare institutions on the Internet. The Internet has made applying for new products/services very easy. Many lenders are approving loans and never meeting the customer face to face. It may be very important for customers to evaluate their service provider/lender in person, supporting the evidence that many customers still prefer to visit their lender at their institution.

TABLE 4.10 - INTEREST RATE CHANGE / INTERNET USAGE RELATIONSHIP
217 respondents, 1997

Z = -0.30

Internet / Interest Rate Change	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%
No	1%	7%	7%	13%	29%	10%

Yes	0%	4%	5%	7%	12%	5%

Education level and interest rates are highly correlated, but in a negative way. Meaning that the customers with lower education levels are less interest rate sensitive. Customers may not compare, or they do not know when interest rates are changing, therefore do not evaluate the impact of the change in interest rate, or do not care. When applying for a loan, some institutions may require information that would be harder for someone with less education to prepare or present.

TABLE 4.11 - INTEREST RATE CHANGE / EDUCATION RELATIONSHIP
Z = -2.98

Education / Interest Rate Change	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 -2%	> 2%	# Respondents
< H.S.	0%	6%	6%	19%	44%	25%	16
H.S.	1%	9%	12%	14%	42%	21%	103
Some College	0%	4%	14%	21%	49%	12%	57
2 Year	2%	7%	2%	21%	42%	26%	43
4 Year	0%	13%	13%	28%	34%	11%	53
M.S.	6%	18%	18%	12%	47%	0%	17
PhD.	0%	50%	25%	0%	25%	0%	4

(Percentages given as a percent of number of respondents at that education level.)

The chi-square goodness of fit test shows a relationship between all the agricultural enterprises and interest rate sensitivity, except orchard and horticulture enterprises.

TABLE 4.12 - INTEREST RATE CHANGE / ENTERPRISE RELATIONSHIP
1997

Enterprise / Interest Rate Change	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 - 2%	> 2%	# Respondents	χ^2
Dairy	1%	12%	15%	16%	42%	14%	81	44.26
Poultry	0%	19%	4%	22%	26%	30%	27	11.89
Beef	1%	9%	10%	20%	47%	13%	137	104.53
Swine	2%	5%	8%	25%	38%	20%	64	38.76
Crops	1%	8%	11%	21%	42%	15%	204	123.06
Orchard	0%	0%	0%	0%	50%	50%	2	4

	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1-2%	>2%	# Respondents
Horticulture	0%	33%	0%	33%	33%	0%	3	3
Sheep	0%	0%	10%	10%	70%	10%	10	21.2
Horses	8%	8%	0%	8%	50%	25%	12	12

(Percentages given as a percent of respondents for that agricultural enterprise.)

The satisfaction level with the institution does not correlate with the interest rate

sensitivities. There are very few respondents who chose a satisfaction level below 3.

TABLE 4.13 - INTEREST RATE CHANGE / SATISFACTION RELATIONSHIP

1997

Z = -1.27

Satisfaction / Interest Rate Change	< 1/4%	1/4 - 1/2%	1/2 - 3/4%	3/4 - 1%	1 -2%	> 2%	# Respondents
1	0%	0%	0%	0%	0%	100%	2
2	3%	9%	9%	22%	41%	16%	32
3	1%	7%	12%	16%	49%	13%	67
4	1%	11%	9%	20%	40%	19%	137
5	0%	11%	22%	27%	30%	8%	37

(Percentages are given as a percent of respondents at that satisfaction level.)

4.4   Relationship between Farm Characteristics and Use of Products and Services

When farm income is greater than $25,000, the average number of loans a customer

has is greater than when the farm income is less than $25,000. The average number of

loans for all 308 sampled agricultural borrowers is 3.196. The chi-square goodness of fit

test shows no relationship between farm income and number of loans.

TABLE 4.14 - AVERAGE NUMBER OF LOANS PER CUSTOMER AT VARYING LEVELS OF FARM INCOME

308 sampled agricultural borrowers, 1997

$\chi^2 = .33$

Farm Income	Average Number of Loans
0 or loss	2.29
1 - 25,000	3.20

25,001 - 50,000	3.52
50,001 - 75,000	3.49
> 75,000	3.37

Average number of services per customer increases as farm income increases. The average number of services for all 308 sampled agricultural borrowers is 7.6. There is a significant increase in average number of services when farm income is greater than $75,000. However, the chi-square goodness of fit test shows no relationship between farm income and number of services.

TABLE 4.15 - AVERAGE NUMBER OF SERVICES PER CUSTOMER AT VARYING LEVELS OF FARM INCOME
308 sampled agricultural borrowers, 1997

$$\chi^2 = .70$$

Farm Income	Average Number of Services
0 or loss	6.53
1 - 25,000	6.35
25,001 - 50,000	6.92
50,001 - 75,000	6.33
> 75,000	9.13

The average number of loans per customer does not increase or decrease as non-farm income increases. This may be due to the inability to qualify for loans at lower incomes, or not requiring a loan at the higher incomes. The non-farm income range that had the most number of loans is the $25,000 to $50,000 range. The chi-square goodness of fit test shows no relationship between non-farm income and number of loans.

TABLE 4.16 - AVERAGE NUMBER OF LOANS PER CUSTOMER AT VARYING LEVELS OF NON-FARM INCOME
308 sampled agricultural borrowers, 1997

$$\chi^2 = .06$$

Non-farm Income	Average Number of Loans
0	3.09
1 - 25,000	3.22

25,001 - 50,000	3.62
50,001 - 75,000	3.11
> 75,000	3.20

As with farm income, as non-farm income level increases, the average number of services per customer increases. This may be due to the need for extra services at greater income levels. There is more protection necessary. The chi-square goodness of fit test shows no relationship between number of services and non-farm income. This may be due to the low degrees of freedom or the small difference between 7.10 and 8.65 services.

TABLE 4.17 - AVERAGE NUMBER OF SERVICES PER CUSTOMER AT VARYING LEVELS OF NON-FARM INCOME
308 sampled agricultural borrowers, 1997

$$\chi^2 = .28$$

Non-farm Income	Average Number of Services
0	7.10
1 - 25,000	7.46
25,001 - 50,000	7.98
50,001 - 75,000	8.83
> 75,000	8.65

The following tables represent correlations between farm characteristics and product usage. As farm income increases, the use of IRA's increases. Almost half of the respondents who have incomes greater than $75,000 are using an IRA, indicating that the respondents are making non-deductible contributions to their IRA. The chi-square goodness of fit test shows that there is a relationship between farm income and IRA usage.

TABLE 4.18 - FARM INCOME / IRA USAGE RELATIONSHIP
1997

$$\chi^2 = 28.38$$

Farm Income	IRA Usage	# Respondents
0 or loss	30%	20
1 - 25,000	31%	116

25,001 - 50,000	36%	80
50,001 - 75,000	34%	35
> 75,000	47%	47

(Percentages given as a percent of respondents at that farm income level.)

The use of IRA's is almost evenly distributed over the non-farm income levels. However, there are at least 25 percent of the respondents using IRA's at every non-farm income level. The chi-square goodness of fit test shows a relationship between non-farm income and IRA usage.

TABLE 4.19 - NON-FARM INCOME / IRA USAGE RELATIONSHIP
1997

$$\chi^2 = 12.49$$

Non-farm Income	**IRA Usage**	**# Respondents**
0	25%	59
< 25,000	39%	87
25,001 - 50,000	31%	55
50,001 - 75,000	41%	37
> 75,000	38%	58

(Percentages given as a percent of respondents at that non-farm income level.)

Thirty-six percent of the respondents who have farm income greater than $75,000 use money market funds. The chi-square goodness of fit test shows a relationship between farm income and money market fund usage.

TABLE 4.20 - FARM INCOME / MONEY MARKET USAGE RELATIONSHIP
1997

$$\chi^2 = 24.34$$

Farm Income	**Money Market Usage**	**# Respondents**
0 or loss	35%	20
1 - 25,000	25%	116
25,001 - 50,000	29%	80
50,001 - 75,000	17%	35
> 75,000	36%	47

(Percentages given as a percent of respondents at that farm income level.)

Forty percent of the respondents who have non-farm incomes greater than $75,000 are using money market funds. The chi-square goodness of fit test fails to show a relationship between non-farm income and money market fund usage.

TABLE 4.21 - NON-FARM INCOME / MONEY MARKET USAGE RELATIONSHIP
1997

$$\chi^2 = 8.52$$

Non-farm Income	Money Market Usage	# Respondents
0	17%	59
< 25,000	23%	87
25,001 - 50,000	22%	55
50,001 - 75,000	32%	37
> 75,000	40%	58

(Percentages given as a percent of respondents at that non-farm income level.)

Respondents with farm incomes over $75,000 are the highest percentage of users of mutual funds, 32 percent. The chi-square goodness of fit test shows a relationship between farm income and mutual fund usage.

TABLE 4.22 - FARM INCOME / MUTUAL FUND USAGE RELATIONSHIP
1997

$$\chi^2 = 40.31$$

Farm Income	Mutual Fund Usage	# Respondents
0 or loss	20%	20
1 - 25,000	29%	116
25,001 - 50,000	31%	80
50,001 - 75,000	14%	35
> 75,000	32%	47

(Percentages given as a percent of respondents at that farm income level.)

The use of mutual funds does not increase as non-farm income increases. The highest percentage of users is in the $50,000 to $75,000 non-farm income range. The chi-square

goodness of fit test fails to show a relationship between non-farm income and mutual fund usage.

TABLE 4.23 - NON-FARM INCOME / MUTUAL FUND USAGE RELATIONSHIP
1997

$$\chi^2 = 8.98$$

Non-farm Income	Mutual Fund Usage	# Respondents
0	17%	59
< 25,000	30%	87
25,001 - 50,000	25%	55
50,001 - 75,000	38%	37
> 75,000	31%	58

(Percentages given as a percent of respondents at that non-farm income level.)

The use of estate planning increases as asset levels increase. Producers who have more assets usually increase the effort to protect those assets. The chi-square goodness of fit test shows a relationship between asset levels and the use of estate planning services.

TABLE 4.24- ASSET LEVEL / ESTATE PLANNING USAGE RELATIONSHIP
1997

$$\chi^2 = 17.06$$

Asset Level	Estate Planning Usage	# Respondents
< 500,000	10%	70
500,000 - 1, 000,000	14%	43
1,000,001 - 4,000,000	38%	47
> 4,000,000	33%	6

(Percentages given as a percent of respondents at that asset level.)

4.5   Relationship Between Other Variables

The following tables represent correlations between income and visits at the operation. When farm income is greater than $25,000, the percent of respondents who prefer to be visited at their operation increases. These producers are more likely to be aggressively pursued by agribusinesses and lenders than the lower income group. The

chi-square goodness of fit test shows a relationship between farm income and preference for lenders to visit the customer's operation.

TABLE 4.25 - FARM INCOME / VISIT AT OPERATION RELATIONSHIP
1997

$$\chi^2 = 22.97$$

Farm Income	Visit at Operation	# Respondents
0 or loss	30%	20
1 - 25,000	27%	116
25,001 - 50,000	43%	80
50,001 - 75,000	51%	35
> 75,000	43%	47

(Percentage is given as the percent of respondents at that income level.)

As asset levels increase, the percent of recipients who prefer to be visited at their operation increases. The recipients who have over $4,000,000 in assets all prefer to be visited at their operation. These recipients are probably full-time operations. The chi-square goodness of fit test shows a relationship between asset level and the preference for the lender to visit the customer's operation.

TABLE 4.26 - ASSET LEVEL / VISIT AT OPERATION RELATIONSHIP
1997

$$\chi^2 = 9.85$$

Asset Level	Visit at Operation	# Respondents
< 500,000	34%	70
500,001 - 1, 000,000	44%	43
1,000,001 - 4,000,000	43%	47
> 4,000,000	100%	7

(Percentage is given as the percent of respondents at that asset level.)

The following tables represent activity level correlations with farm and personal characteristics. Farm income and activity level are positively correlated. As farm income increases, activity level increases. This is useful information for lenders seeking the higher farm income customers. This study found that as farm income levels increase, the

number of services that customer uses increases. Therefore, institutions would have a
higher probability of finding potential customers at local meetings.

TABLE 4.27 - FARM INCOME / ACTIVITY LEVEL RELATIONSHIP
1997

Z = 2.56

Farm Income / Activity Level	Not Active	Not Very Active	Attended	Somewhat Active	Very Active	# Respondents
0 or less	19%	31%	0%	31%	19%	16
1 - 25,000	14%	17%	10%	41%	18%	111
25,001 - 50,000	10%	11%	15%	39%	24%	79
50,001 - 75,000	9%	12%	12%	39%	27%	33
> 75,000	14%	5%	19%	49%	14%	37

(Percentages given as a percent of respondents in that farm income level.)

There is not a significant correlation between age and activity level. This may be
attributed to the fact that younger producers have less time because of business and
family commitments.

TABLE 4.28 - AGE / ACTIVITY LEVEL RELATIONSHIP
1997

Z = 0.84

Age / Activity Level	Not Active	Not Very Active	Attended	Somewhat Active	Very Active	# Respondents
18 - 25	67%	0%	0%	0%	33%	3
26 - 40	11%	13%	8%	53%	16%	93
41 - 60	10%	17%	14%	31%	28%	167
> 60	18%	5%	8%	30%	38%	39

(Percentages given as a percent of respondents in that age level.)

Education and activity level are highly correlated. As education levels increase, activity
level increases. This is good marketing information for lending institutions and other
businesses in general. Customers, with higher education levels, can be sought out in local
activity meetings.

TABLE 4.29 - EDUCATION / ACTIVITY LEVEL RELATIONSHIP

Z = 4.98

Education / Activity Level	Not Active	Not Very Active	Attended	Somewhat Active	Very Active	# Respondents
Less than H.S.	35%	12%	24%	18%	11%	17
H.S.	16%	21%	16%	31%	16%	102
Some College	8%	14%	17%	41%	22%	60
2 Year Degree	5%	12%	2%	53%	30%	44
4 Year Degree	7%	9%	6%	48%	30%	54
M.S.	12%	12%	0%	35%	41%	17
PhD.	0%	0%	25%	25%	50%	4

(Percentages given as a percent of respondents at that education level.)

Computer usage is almost evenly distributed across the age groups. People over 60 are the least likely to own a computer. This is most likely due to the exposure of computers. Many people over 60 have not needed computers throughout most of their life, have not been exposed to them at work or school, and therefore are more hesitant to adopt new technology. The chi-square goodness of fit test shows a relationship between age and computer ownership.

TABLE 4.30 - AGE / COMPUTER OWNERSHIP RELATIONSHIP
1997

$$\chi^2 = 151.65$$

Age	Computer Usage	# Respondents
18 - 25	67%	3
26 - 40	62%	93
41 - 60	70%	162
> 60	50%	40

(Percentages given as a percent of respondents at that age level.)

As age increase, the percent of operations expanding decreases. This is not surprising since the younger age groups are operating newer businesses, and agricultural operations usually start small and then grow. One hundred percent of the respondents who are age

18 - 25 plan to expand their agricultural operation. The chi-square goodness of fit test shows a relationship between age and expansion.

TABLE 4.31 - AGE / OPERATION EXPANSION RELATIONSHIP
1997

$$\chi^2 = 116.97$$

Age	Expansion	# Respondents
18 - 25	100%	3
26 - 40	72%	93
41 - 60	48%	162
> 60	20%	40

(Percentages given as a percent of respondents at that age level.)

The survey analysis indicates several important areas that lenders should focus. Lower education levels, increasing use of technology, lower farm asset levels, higher debt-to-asset ratio, and lower income levels have an influence on customer loyalty. These characteristics indicate the more loyal customer. Loyalty is measured in this study by the amount the interest rate would need to decrease for a customer to switch lending institutions. The number of products/services, debt level, and satisfaction level with the institution did not affect interest rate sensitivity. A majority of the respondents indicated that they preferred to visit the lender at his/her institution. However, as asset level and/or income increases, the customer is more likely to want the lender to visit him/her at the operation (farm).   There are marketing implications from the analysis. As asset level and/or education level of the producer increases, the producer's activity level in local/industry organizations increases. The lender is able to market these types of individuals at local/industry meetings. There is a relationship between producer characteristics and financial services. There exist a relationship between the use of IRAs and farm and non-farm income. There is a relationship between the use of money market funds and mutual funds with farm income. As asset level increases, the use of estate planning increases. This type of information allows institutions to not only know their customers, but also allows them to segment their customers into behavior groups. The institution will know there is a higher probability of a customer using a product/service if he/she has a certain characteristic.

Chapter 5: Summary, Conclusions, and Implications

5.1 Overview

Changes in the banking industry are increasing the need for lenders to become active players in investments and financial planning. The financial products and services market is expanding. Lending institutions will have to increase their marketing efforts to be able to retain their customers, rather than losing them to non-traditional lenders or other competitors in the financial industry. Customers will have a stronger need for and insist on a steady relationship with their financial services institution. Lenders will play an important role by offering quality products and services. From this analysis, banks and other credit institutions will be able to develop a more advanced customer knowledge system, allowing for customer segmentation and marketing to the segment that has the highest probability of using a service. Banks will not only know what customers want, but how they want it. In today's changing world, the bank has to be able to get and keep customers. Kohl et al. (1997) indicated that 65 percent to 90 percent of all new credit and financial services business is with the existing customer base. By increasing the services per customer, the bank is more effectively utilizing their resources and developing a relationship with that customer.

A review of literature indicates that database segmentation and target marketing are critical for institutions to implement cross-selling opportunities and increase the number of products/services per customer. A database allows the institution to keep current information on the customer's demographic and financial data and to compare it to the use of products and services. A database of information allows any member of bank personnel instant access to a complete product and transaction history on a customer, making it easier to understand what products/services the customer already uses and needs to use.

This study has six major objectives. The first is to determine data inadequacies in one of the participating institution's financial and marketing database. Questions in the survey will be developed to fill in the missing information. The second is to examine agricultural producers' use of products and services. The research investigates what

products and services the producer is currently using and where they are obtaining the products/services. Third, the study attempts to determine the correlation of the products and services with farm business and personal characteristics. Fourth, it determines the correlation between interest rate sensitivity and farm business and personal characteristics. Interest rate sensitivity is measured by asking the producer how much lower the interest rate would need to be for the producer to switch lending institutions. Fifth, the study determines the importance of technology and strategic alliances and other influences in the decision making process. After completing these objectives, marketing implications and recommendations for the lending institution will be evident which will complete the sixth objective.

Six surveys were mailed to agricultural producers as a method for pre-testing the survey. Comments received from these producers were used to make the survey more precise and easier to understand. It was the basis for determining the ranges used for questions such as income, age, and years in business.

Three-hundred eight surveys from agricultural producers from the states of Iowa, Minnesota, South Dakota, Virginia, West Virginia, and Wisconsin were analyzed. One hundred nineteen of the 308 returned surveys were from financial management workshops for agricultural producers. The other one hundred eighty-nine surveys were from customers at the participating institutions. There was a 20 percent response rate from the producers sampled. The information gained from the survey cannot be used to explain situations in any areas other than those surveyed.

There are many different products and services available to people using lending and/or financial service institutions. The products and services evaluated in this study include: long-term agricultural loans, intermediate-term agricultural loans, operating loans, personal loans, home mortgages, credit cards, personal and business checking accounts, savings accounts, certificate of deposits, money market funds, mutual funds, pension funds, IRAs, estate planning services, brokerage services, internet banking, ATM usage, appraisal service usage, future payment funds (liquidity account), leasing, insurance (including life, disability, multi-peril/crop, crop/hail).

5.2   Summary of Survey Results

Three hundred-eight surveys of agricultural producers were analyzed in this study. Appendix A contains a copy of the distributed survey. When analyzed, the results indicate the survey respondents are slightly above average in a number of categories as compared to the typical farmer from the surveyed states.

There are many significant results from this study. One of the most important is the increasing use of technology. The use of computers and the Internet is increasing. This opens up the ability to market products and services to customers in many ways. It increases the amount of competition for the customer's local bank/service provider. Seventy-four percent of the respondents indicated that they are using some type of financial software. This opens up the opportunity for financial institutions to assist the customer with financial planning by giving them a simple software program, or using a program on the Internet.

There were not any previous studies found on the total number of loans and services a customer typically utilizes across institutions. In the review of literature, one institution reported having 3.3 products per customer. This study found that the average number of loans per customer is 3.2. The average number of services per customer is 7.6. Therefore, the total number of products/services per customer is 10.7. This means that if a bank is a complete financial service institution, the bank has the opportunity to obtain 10.7 total products/services per customer. This type of information is important for institutions because it gives them a goal to set for the number of products per customer. Even though there was an increase in the use of many investment products, there is still a significant portion of the respondents who are not using any of these services.   A large percentage of agricultural producers with over $100,000 in assets and/or over 50 years of age have not had estate plans completed.   Many producers did not use financially related services, such as mutual funds, CD's, money markets, or pension funds. This study found that 59 percent of the respondent required interest rates to be more than 1 percent (100 basis points) lower before he/she would switch lending institutions.

The study found that there are significant influencers in the customers' surrounding. Accountants, lenders, veterinarians, and field crop specialists are in the

inner core of influencers. Spouses and/or partners influence nearly 60 percent of all financial and loan decisions. Interest rates are of major importance, followed by dependable source of credit, knowledge of agriculture, and stability of the institution. Most customers still want to visit their lender at his/her institution. This disputes the concept of computers and cars, and onsite marketing strategies. Some institutions, i.e. Telmark, have used the approach of selling credit products/services to the customer by visiting the customer at his/her operation and automatically determining potential through the representative's computer. This study found leasing services were used very little and when they were, leasing was used for tax reasons and convenience. Internet banking, educational seminars, institution offering tax advice, and automated technology were not important in the selection process of a lender/service provider.

5.3   Summary of Stastical Analysis

The results from this study have serious implications for institutions marketing their products and services. Education, technology, farm asset levels, debt-to-asset ratio, and income have an influence on customer loyalty as measured by how much interest rates would have to decrease for the customer to switch lending institutions. This study found that neither the number of products/services the customer had with an institution nor the customers' debt level affected his/her interest rate sensitivity. Unfortunately for lenders, satisfaction level did not influence the customers' interest rate sensitivity. There are implications for the institutions and how they conduct business. Many customers still prefer to visit their lender at his/her institution. As asset level and/or income increased, the customer is more likely to want the lender to visit at their operation. There are marketing implications for the institutions. As asset level and education level increased, activity level in local organizations increased. This type of information allows the lender to segment the database of information and appropriately target the customers who are most likely to use a product/service.

This study found that there exists a relationship between many investment products and farm financial characteristics. There is a relationship between the use of IRAs and farm and non-farm income. There is a relationship between money market

fund usage and mutual fund usage with farm income. The relationship with non-farm income may not have been important due to the possibility of the respondents having these products in a retirement plan through their off-farm employment. There is a relationship between the use of estate plans and asset levels.

Factors that were not correlated or showed no relationship included the correlation of net farm income and non-farm income with the number of loans or products/services a customer was utilizing.   This is surprising since most lenders would assume that as net farm income or non-farm income increase, the use of loans and/or products/services would increase. This study found that age was not significantly correlated with activity level in local organizations or with interest rate sensitivity.

The correlations and relationships presented in this section allow financial institutions to segment their databases and market to the customers who fit the profile of using a product/service. In addition, it allows the institution to segment the more interest rate sensitive customer, and provide that customer with value-added features that may make him/her less interest rate sensitive. This way the financial institution is being proactive in providing better service to its customers.

5.4   Strategic Recommendations and Areas for Future Research

Recommendations from Research Findings

This study has examined and analyzed the product characteristics and use of bank loans and services by agricultural customers. Relationships and statistical correlations were analyzed and suggest relationships between certain personal and financial characteristics with product use, community activities and sensitivity to interest rate changes. Specific recommendations to the institutions cooperating in this study must be minimized due to confidentiality aspects of the data. Thus, strategic recommendations will be developed and presented within the research methodology and constraints of this study. Readers must be assured that any recommendations can not be made over the total population. However, they can be fairly confident within the confines of this study.

The strategic recommendations are going to be conceptualized, developed, and presented in five different areas: influencers, institution, customer loyalty, technology, and targeting and segmenting. Each will be defined and presented as it pertains to the current lending environment. There are two important considerations when evaluating these recommendations. First of all, the customer must take it upon his/herself to learn and educate themselves on products and services offered by the institution that they use. Interest rate shopping is not always the best way to find a deal. Many institutions are offering bundled services and the customer receives discounts or incentives to increase the number of services they use at the same institution. Therefore, they often receive better deals than the published price/interest rate. There are many products/services that are very useful for people involved in agriculture being offered by institutions, from estate planning services to IRA's. This study showed a high percent of producers are still not using these services, and in most cases, they will help the producer financially. Secondly, an institution must evaluate itself first and determine their goals. As stated earlier, there are three strategies for expanding customer relationships, penetration, leverage, and differentiation. The institution must decide if they want to pursue in-house loan, credit, and/or financial services or out-source these products/services. After the institution has determined their goals, they will then be able to determine the best way to use databases to differentiate and target their customers. However, technology alone doesn't build customer loyalty, nor does it guarantee high levels of employee performance.

Institutional Recommendations

Departments need to share data to enhance the institution's marketing strategy. It was evident in both the literature review and the evaluation of one of the participating institutions that many institutions are not able to determine what products/services a customer is using with them. This has not been due to poor record keeping, but to bad communication lines. By combining the information that each department has on a customer, the institution will immediately have a better idea of who that customer is and what he/she needs.

It is important for institutions to use financial and personal data to target customers for the use of products/services, target influencer groups, and to increase loyalty to their institution. This study showed that there is often a relationship between personal and financial data and the use of products/services. Depending on the demographics of the customer, this may be different for each institution. It is important for each institution to understand who their customers are and when they are using products/services. The challenge for many institutions is creating and maintaining a database on their customers.

Implementation

Most institutions are not using the potential of their databases. Most banks are now using computers and have the capability of linking all of their computers together to have a main database on customers. Information can be obtained on a customer when he/she opens the first account. Afterwards, information can be continuously updated every time that customer makes a transaction. The database allows the institution to know what products/services the customer uses at their institution and at others. Information can then be obtained yearly or every other year through a survey or in-house visit. Information can be obtained from existing customers by the same method. Information on the customer allows the institution to "pre-qualify" customers for products/services. Pre-qualification allows the institution to target customers who need that product/service and meet the qualifications of obtaining it. This type of database can allow the institution to track the relationship with that customer. They will know whether the customer prefers to use a teller, an ATM, and when that customer has been targeted for a product/service. For example, if the customer is sent a flyer on estate planning services offered by the bank, at their next visit to the institution, the teller/ATM can remind the customer of the availability of estate planning services at the institution. This type of strategy can increase the customer's awareness of the different products/services offered by the institution.

Customer Loyalty

The banking industry has become a competitive marketplace where more lenders are competing for limited numbers of quality customers. The institution must evaluate

the profitability of each customer and whether they want to increase the relationship with the customer, by target marketing. This study finds that customers with lower farm income, lower non-farm income, lower asset levels, lower education levels, higher debt-to-asset ratio, and/or owned a computer are less interest rate sensitive. These are the characteristics of the customers who have a higher loyalty to their lending institution. An institution is going to have to offer either competitive rates or a value-added approach to keep the customers who are more interest rate sensitive. The value-added approach increases awareness of the characteristics, other than interest rates that customers find important. In this study, the institution being a dependable source of credit, lender's knowledge of agriculture, and the stability of lender/institution were chosen as very important by the highest percentage of respondents and can be marketed as a value-added service by the institution.

Influencers

In today's information based society, the use of networking is a critical element in the marketing programs of agribusiness and agrilenders. Critical in this study is the importance of influencers in the marketing mix. Strategically, there appears to be an inner-core, middle and outer-core of influencers in the decision making process of obtaining loans and financial services. First, the spouse/partner is critical in the decision making process, influencing nearly 70 percent of investment decisions and 61 percent of credit decisions. However, the spouse/partner has little or no influence on decision making about one-third of the time. Strategically, more of the calling strategies must include both spouses. Concerning related services, more of these decisions need orientation toward the spouse or partner.

Strategic alliances appear to be a common theme in this study as well as the Doane's study (1995 and 1990). The lender, accountant, and veterinarian are significant influencers. Doane's found the fertilizer/chemical dealer to be a very important influencer. Lenders need to either form or enhance strategic alliances with these groups. Producers demand and place a high priority on their advice. It is interesting that the lawyer, extension agent, and machinery and feed dealers play a limited role as major

sources of influence. Targeting specific influencer groups concerning use of product and services can be critical in obtaining products and services from other customers.

Income and asset levels influence the involvement in activities in the communities. As farm income or education level increase, the involvement in activities increased. As a market strategy, farm financial and personal data can be sorted to ascertain target markets or key influencers in these community activities.

Technology

The ownership of computers and use of Internet/email play an important role in the banking industry. The percentage of people who own a computer and/or use the Internet/email have been increasing. This study showed that as ownership of computers increased, the respondents are less interest rate sensitive.   Lending institutions can play an important role in the increasing of technology, though. The use of the Internet is a whole new realm available to banks to market their products/services. By allowing 24-hour access to bank products/services and account information, web sites can increase the availability of the institution to the customer. Institutions can offer simple software programs for computer owners to help customers with savings, investments, and retirement planning. The important conclusion from this study is that even though the use of technology is increasing, customers still want to retain a personal relationship with their lender. The lender can use the personal relationship to his/her advantage to improve the customer's loyalty to the institution as a whole.

Targeting and Segmenting

There are five different areas that must be evaluated when targeting and segment the market. These include: financial, physical, technological, human resources, and reputation.   Each of these areas has been discussed in the previous sections. However, to summarize, the institution needs to first evaluate itself before it evaluates outside markets. The institution must determine financially what is beneficial for them, physically what they are able to do, what technological resources they have and what they will need, who will implement and maintain the targeting and segmenting strategy, and what is the institutions reputation. All of these areas determine the potential for an institution to change its marketing strategy.

Areas for Future Study

This data has many implications for future research. Regression analysis could be performed on the data to assess the demand for the services. Regression analysis has proven to be an effective means of determining potential use of products and services. "One bank client, for instance, was able to increase response rates for products within its customer base to 12 percent through regression modeling. Regression modeling identifies cross-sell opportunities within a database by identifying customers with similar characteristics, which have been identified as indicators of a propensity to buy a particular product." (Morrall 1996)

The information from the statistical analysis can be used so that a marketing model can be set up, allowing the bank to maximize returns from a bundle of services targeted at a certain market with certain characteristics. There are two different methods that have been shown to be successful in determining the probability that a customer will choose a particular service. First Union has been using a process called predictive modeling. (Ables 1997) This process predicts which customers (or prospects) will take a specific action by arming a group of customers who have taken the desired action in the past with customers who have not taken the desired action. A predictive model takes as input a listing of all individuals who have displayed the desired behavior, and a list of all individuals who have not displayed that behavior. It then compares all the known characteristics about both of these groups. The result is a decision tree, or mathematical formula, that defines which characteristics are most descriptive in differentiating individuals with the desired behavior from those without the behavior. Information that needs to be collected for this type of analysis is referred to as RFM (recency of purchase, frequency of purchases, and monetary purchase amounts). There has been some research where N-P (need-performance) mapping was used. This technique helps match high business performance to high customer needs, the company can assure right products to right customers, high customer loyalty, reduced customer churn, and strong and continuous revenue streams.

One of the most important conclusions reached from this research is that it is important for lending institutions to obtain, and then use, data about their customers. By obtaining this information, the lending institution is knowledgeable about the customers'

use of products and services at their institution and others, and what products/services the customers may need. These products/services that are not being used by the customer can be highlighted and then chosen at random to be targeted at the customer by any person/machine in the institution. This way that customer is not being marketed products that they either currently use or do not need.   In the end, the lending institution improves profitability, improves relationships and retention of customer, and improves the employees' knowledge of the customer.

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Appendix A

Dear (institution) customer,

Rapid changes in the industry of agriculture are impacting producers and the businesses that serve them. In an effort to assist financial institutions in providing higher quality services for agricultural producers, the Department of Agricultural and Applied Economics at Virginia Tech has been commissioned to obtain your input on the characteristics you desire from financial institutions. The survey is being conducted in cooperation with (instituion), and other agricultural lenders throughout the state of Virginia. The results will be used to determine what products and services will be used by particular types of customers.

As part of this study, we have enclosed a survey related to financial services. The main objective of this survey is to gain a better understanding of your current and future needs from financial institutions. This survey will take approximately 30 minutes to complete. To maintain confidentiality, the survey is being mailed by the lending institution and the survey results will be mailed to the researchers. Lending institutions are under strict confidentiality guidelines. All individual answers will be held in confidence by the researchers at Virginia Tech; only aggregate results will be reported. No answer will be specifically linked to your name or operation in the final report back to the institution.

We appreciate your cooperation in completing this survey. Please return the survey by (date) in the enclosed self-addressed envelope. Again, be assured that all individual information will remain confidential. Thank you for your cooperation in this study. Those returning the survey will be eligible for a $50 cash prize drawing.

Sincerely,

Amanda J. Wilson, Research Assistant

David M. Kohl, Professor of Agricultural Finance

What state does your agricultural business reside in? _____

Which of the following products and/or services do you use? (Check all that apply)

	Farm Credit	Commercial Bank	Farm Service Agency	Insurance Company	Manufacturer Credit	Do Not Use
Long-Term Ag Loan (greater than 10 yrs.)	☐	☐	☐	☐	☐	☐
Intermediate-term Ag Loan (1 - 10 yrs.)	☐	☐	☐	☐	☐	☐
Operating loan (1 year or less)	☐	☐	☐	☐	☐	☐
Personal loan	☐	☐	☐	☐	☐	☐
Home Mortgage	☐	☐	☐	☐	☐	☐
Credit card	☐	☐	☐	☐	☐	☐
Personal checking account	☐	☐	☐	☐	☐	☐
Business checking account	☐	☐	☐	☐	☐	☐
Savings account	☐	☐	☐	☐	☐	☐
Certificate of Deposit	☐	☐	☐	☐	☐	☐
Money Market Fund	☐	☐	☐	☐	☐	☐
Mutual Fund	☐	☐	☐	☐	☐	☐
Pension Fund	☐	☐	☐	☐	☐	☐
IRA (individual retirement account)	☐	☐	☐	☐	☐	☐
Estate planning services	☐	☐	☐	☐	☐	☐
Brokerage services	☐	☐	☐	☐	☐	☐
Internet Banking	☐	☐	☐	☐	☐	☐
ATM (automated teller machine)	☐	☐	☐	☐	☐	☐
Appraisal service	☐	☐	☐	☐	☐	☐
Future payment fund (liquidity account)	☐	☐	☐	☐	☐	☐
Leasing	☐	☐	☐	☐	☐	☐
Insurance:						
Life	☐	☐	☐	☐	☐	☐
Disability	☐	☐	☐	☐	☐	☐
Multi-peril / Crop	☐	☐	☐	☐	☐	☐
Crop / Hail	☐	☐	☐	☐	☐	☐
Other_____	☐	☐	☐	☐	☐	☐

If you are using any of the above services/products with a certain firm, why are you doing so?
(Check all that apply and rank, with 1 being most important)

		rank
More easily accessible	☐	
Closer to your business	☐	____
Extended hours of business	☐	____
Drive-through capability	☐	____
Lower interest rates (loans)	☐	____
Higher interest rates (savings, etc.)	☐	____
Offers internet banking	☐	____
Recommended by a friend or relative	☐	____
Friend or relative works at institution	☐	____
Friendlier bank personnel	☐	____
Did not know it was offered at this institution	☐	____
Other_____	☐	____

Are you using leasing services for any of the following? (Check all that apply)

Not Applicable	☐
Livestock	☐
Land	☐
Buildings	☐
Equipment	☐
Vehicles	☐
Other	☐

If you are using leasing services, why are you doing so? (Check all that apply and rank, with 1 being most important)

		rank
Lower down payment	☐	
Keeps current with technology	☐	____
Tax reasons	☐	____
Low interest rates	☐	____
Convenience	☐	____

How satisfied are you with the loans you have? (Check one)

Very satisfied	☐
Somewhat satisfied	☐
Neutral	☐
Not very satisfied	☐
Not satisfied	☐

Not applicable ☐

How satisfied are you with the non-loan services you have? (Check one)

Very satisfied	☐
Somewhat satisfied	☐
Neutral	☐
Not very satisfied	☐
Not satisfied	☐

Not applicable ☐

Which of the following characteristics are important when selecting a lender or financial services provider? (Circle one for each)
1 = Not Important, 2 = Not Very Important, 3 = Neutral, 4 = Somewhat Important, 5 = Very Important

Interest rate on loan products	1	2	3	4	5
Stability of lender / institution as a whole	1	2	3	4	5
Staff turnover	1	2	3	4	5
Rate of return on deposit accounts	1	2	3	4	5
Located within 15 miles of your business	1	2	3	4	5
Automated technology	1	2	3	4	5
Internet banking	1	2	3	4	5
Educational seminars sponsored by lenders	1	2	3	4	5
Community involvement	1	2	3	4	5
Rapid turnaround on loan approval	1	2	3	4	5
Paper work required to obtain / maintain loan	1	2	3	4	5
Capacity to meet needs / flexibility	1	2	3	4	5
Access to decision maker	1	2	3	4	5
Knowledge of agriculture (your enterprise)	1	2	3	4	5
Locally owned	1	2	3	4	5

If the interest rate on loan products is somewhat or very important to you, how much lower would the interest rate need to be to switch from your primary lender to a different lender? (Check only one)

Less than 1/4%	☐
1/4 - 1/2%	☐
1/2 - 3/4%	☐
3/4 - 1%	☐
1 - 2%	☐
Greater than 2%	☐

In the next 5 years do you plan to: (Check only one)

Expand the operation	☐
Downsize the operation	☐
Remain the same size	☐
Sell out	☐

If you plan to expand the operation, how much capital do you expect to need? (Check only one)

Less than $50,000	☐
$50,001 - $100,000	☐
$100,001 - $250,000	☐
$250,001 - $500,000	☐
Greater than $500,000	☐

What percent of the capital you need will be debt financed? (Check only one)

0 - 20%	☐
21 - 40%	☐
41 - 60%	☐
61 - 80%	☐
81 - 100%	☐

When was the last time you visited with your lender? (Check one for each institution that applies)

	Farm Credit	Commercial Bank	Farm Service Agency	Insurance Company	Manufacturer Credit
Over 2 years	☐	☐	☐	☐	☐
Between 1 & 2 years	☐	☐	☐	☐	☐
Between 6 months & 1 year	☐	☐	☐	☐	☐
Within past 6 months	☐	☐	☐	☐	☐
Within past 1 month	☐	☐	☐	☐	☐

Where did you visit your lender? (Check one for each institution that applies)

	Farm Credit	Commercial Bank	Farm Service Agency	Insurance Company	Manufacturer Credit
At his/her institution	☐	☐	☐	☐	☐
At your operation	☐	☐	☐	☐	☐
Other_____	☐	☐	☐	☐	☐

Where would you rather visit your loan officer? (Check only one)

At his/her institution ☐
At your farm

How often would you like for your lender to visit your operation? (Check only one)

At least every other year ☐
At least every year ☐
At least every 6 months ☐
At least once per month ☐

What is your primary source of funds for living expenses and for debt payments?

Farm ☐   Non-Farm ☐

What is the average range of your annual cash net income, before depreciation, from farm operations for the past 3 years? (Check only one)

$0 or loss ☐
$1 - $25,000 ☐
$25,001 - $50,000 ☐
$50,001 - $75,000 ☐
>$75,000 ☐

What is the average range of your annual gross non-farm income for the past 3 years? (Check only one)

No non-farm income ☐
<$25,000 ☐
$25,000 - $50,000 ☐
$50,001 - $75,000 ☐
>$75,000 ☐

How important is it to you to have a strong business relationship with the following people: (Circle only one for each)
1 = Not Important, 2 = Not Very Important, 3 = Neutral, 4 = Somewhat Important, 5 = Very Important

Accountant	1	2	3	4	5
Lawyer	1	2	3	4	5
Lender	1	2	3	4	5
Professional farm manager	1	2	3	4	5
Veterinarian	1	2	3	4	5
Financial planner	1	2	3	4	5
Commodity broker/adviser	1	2	3	4	5
County Extension agent	1	2	3	4	5
Crop / livestock consultant	1	2	3	4	5
Farm supply store personnel	1	2	3	4	5
Fertilizer/chemical dealer	1	2	3	4	5
Farm machinery dealer	1	2	3	4	5
Seed dealer	1	2	3	4	5
Other_____	1	2	3	4	5

What is your overall opinion of the agricultural lenders that you have worked with? (Check one)
1 = Very unfavorable, 2 = Somewhat unfavorable, 3 = Neutral, 4 = Somewhat favorable, 5 = Very favorable

With Farm Credit	1	2	3	4	5
With Commercial Banks	1	2	3	4	5
Other	1	2	3	4	5

If you answered very favorable, or very unfavorable, please tell us why?

_____

_____

Please indicate how important these characteristics are to you in selecting a lender or service provider: (Circle only one for each)
1 = Not Important, 2 = Not Very Important, 3 = Neutral, 4 = Somewhat Important, 5 = Very Important

Has competitive interest rate	1	2	3	4	5
Is a dependable source of credit	1	2	3	4	5
Is flexible	1	2	3	4	5
Offers a record-keeping service	1	2	3	4	5
Has a good understanding of agriculture	1	2	3	4	5
Is conveniently located	1	2	3	4	5
Takes an interest in the success of your business	1	2	3	4	5
Can handle all of your credit needs	1	2	3	4	5
Offers profit-making crop or livestock production ideas	1	2	3	4	5
Understands commodity marketing	1	2	3	4	5
Offers tax advice	1	2	3	4	5
Offers financial advice	1	2	3	4	5
Is community minded	1	2	3	4	5
Has a faster rate of loan approval	1	2	3	4	5
Other_____	1	2	3	4	5

If you have changed primary lending institutions in the past five years, please check all of the following that apply:

Rank (with 1 = most important)

Former lender merged or went out of business		
New lender has lower interest rates		
Easier to obtain credit with new lender		
Location of new lender is more convenient		
New lender offers higher credit limit		
New lender provides higher quality of services		
Former lender was too impersonal		
Former lender's policies were too restrictive		
Former lender refused to continue lending to you		
Former lender changed personnel too frequently		
New loan officer at former lender		
Other_____		
_____		

How long have you been doing business with your primary lender? (Check only one)
Only answer if your primary lender is not Farm Credit

< 1 year		6 - 9 years		
1 - 5 years		>10 years		

Please check all that you think apply to each institution:

	Farm Credit	Commercial Bank	Farm Service Agency	Insurance Company	Manufacturer Credit
Provides services in your area	☐	☐	☐	☐	☐
You are currently using	☐	☐	☐	☐	☐
Is a dependable source of credit	☐	☐	☐	☐	☐
Is flexible	☐	☐	☐	☐	☐
Has a good understanding of agriculture	☐	☐	☐	☐	☐
Concerned about its institutional financial stability	☐	☐	☐	☐	☐
Concerned about staff turnover	☐	☐	☐	☐	☐
Has competitive interest rates	☐	☐	☐	☐	☐
Is aggressive in seeking new customers	☐	☐	☐	☐	☐
Is too quick to foreclose	☐	☐	☐	☐	☐
Requires detailed records	☐	☐	☐	☐	☐
Takes an interest in the success of your business	☐	☐	☐	☐	☐
Supports the economic development of your community	☐	☐	☐	☐	☐
Is your primary lender	☐	☐	☐	☐	☐
Has excessive transaction fees and hidden penalties	☐	☐	☐	☐	☐
Provides benchmark data / business comparisons	☐	☐	☐	☐	☐
Provides educational seminars	☐	☐	☐	☐	☐
Too many options / products make it confusing	☐	☐	☐	☐	☐
Not enough products / services	☐	☐	☐	☐	☐
Offers broader array of products and services	☐	☐	☐	☐	☐
Too restrictive covenants on loans	☐	☐	☐	☐	☐

Financial Questions

	1996
Total Assets	_____
Total Liabilities	_____
Total Depreciation Expense	_____
Total Annual Payments (Principal & Interest)	_____
Net Farm Income	_____
Non-farm Income	_____

What is the average interest rate on your loans for the past 3 years? (Circle one range for each type)

Operating (< 1 yr.)	3 - 5%	5 - 7%	7 - 9%	9 - 11%	12 - 14%	Other_____
Intermediate-term (1 - 10 yrs.)	3 - 5%	5 - 7%	7 - 9%	9 - 11%	12 - 14%	Other_____
Long-term (> 10 yrs.)	3 - 5%	5 - 7%	7 - 9%	9 - 11%	12 - 14%	Other_____

Do you have a computer? (Check one)

Yes ☐
No ☐

If yes, are you using the internet / email? (Check one)

Yes ☐
No ☐

If yes, what is your primary reason for using the internet? (Check all that apply)

Searching for information on agriculture ☐
Educational ☐
Keep up with commodity prices ☐
Shopping / purchasing agricultural equipment ☐
General shopping ☐
Enjoyment / hobby ☐
Keep up with news ☐
Keep up with stock prices ☐
Other _____ ☐

If you own a computer, what type of software do you use ? (Check all that apply)

Please list the software that you use on your computer:

_____

_____

How is your business organized? (Check all that apply)

Sole-proprietorship	☐
Partnership	☐
Corporation	☐
Limited Liability Company	☐
Other_____	☐

Do you have a son/daughter/partner who will take over the major management responsibilities within the next 3 years? (Check one)

Yes ☐
No   ☐

If yes, what do you perceive as the major obstacles of passing on the farm? (Check all that apply)

Financial	☐
Management	☐
Marketing	☐
Production	☐
Taxes	☐

Does the spouse/partner of the primary operator influence any business decisions? (Check all that apply)

	None	Very little	Considerable
Credit	☐	☐	☐
Investment	☐	☐	☐
Production	☐	☐	☐

In what type(s) of enterprises is your operation involved? (Check all that apply and STAR the main enterprise)

Dairy	☐	___
Poultry	☐	___
Beef	☐	___
Swine	☐	___
Crops	☐	___
Orchard	☐	___
Horticulture	☐	___
Sheep	☐	___
Horses	☐	___
Other_____	☐	___

How does your lender obtain financial statement information from you? (Check all that apply)

Interview / lender constructs	☐
Self prepared	☐
You provide accountant prepared	☐

What is your general opinion on the future of agriculture? (Circle one number for each region)
1 = no future, 2 = not much of a future, 3 = do not know, 4 = good future, 5 = very good future

U.S.	1	2	3	4	5
Your State	1	2	3	4	5

Age of the owner/operator: (Check one)

18-25	☐
26-40	☐
40-60	☐
> 60	☐

Gender of owner/operator: (Check one)

Male   ☐
Female ☐

Length of time operation has been in existence: (Check one)

< 5 yrs.	☐
5-10 yrs.	☐
11-20 yrs.	☐
>20 yrs.	☐

Are you involved in any community and/or industry organizations? (Check only one)

Very active	☐
Somewhat active	☐
Just attend meetings	☐
Not very active	☐
Not active	☐

Education level of owner/operator (Check one):

Less than High School	☐
High school	☐
Some college	☐
2 year degree	☐
4 year degree	☐
Masters	☐
PhD	☐

Who filled out this survey? (Check one)

Owner	☐
Operator / Manager	☐
Spouse of owner/operator	☐

Would you be willing to participate in a follow-up telephone survey? (Check one)

Yes ☐   If yes, please provide your phone number and first name_____
No

Please write any additional comments on the back of the survey.
Please return this survey in the enclosed self-addressed postage-paid envelope.

Thank you for taking the time to complete this survey.
If you would like a free copy of the finished report, please complete the following:

Name: _____

Address: _____

_____

City: _____ State: _____ Zip: _____

Appendix B

Products/Services

- **agricultural loans** - loans specifically for an agricultural enterprise
- **long-term loans** - Long-term loans are made for real estate purchases, debt consolidation, farm improvements, building construction and grove development and rehabilitation. Terms: Generally, longer than 10 years. Long-term loans require a first lien on real estate security.
- **intermediate-term loans** - Intermediate-term loans are made for purchases of machinery, equipment, vehicles, breeding stock and real estate; farm and home improvements; grove development and rehabilitation; construction of livestock and poultry facilities; and debt consolidation. Terms: Up to 10 years. Collateral required generally includes a lien on real estate and/or chattel.
- **operating loans** - Operating loans are short-term loans made for general operating expenses such as labor, feed, seed, fertilizer, grove caretaking, repairs, veterinary costs and small capital purchases. Inventory and commodity loans are made for the purpose of marketing. Terms: Generally, one year or within an operating business cycle. Operating and line of credit loans require crop liens in addition to other underlying security. Product inventory and commodities are normally taken as collateral.
- **personal loans** - i.e. automobile
- **home mortgage** - loans taking out for a house
- **credit card services** - VISA, MasterCard, and/or any other type of credit card
- **checking** - an account that allows check writing, may also be used as a savings account
- **savings** - an interest bearing account
- **certificate of deposit -** A debt instrument issued by a bank that usually pays interest. The date of the maturity names from a few weeks to several years.
- **money market fund -** A mutual fund seeking income and principal security.

- **mutual fund -** A mutual fund is a portfolio of stocks, bonds, or money market securities that is owned by many investors and managed by a professional investment company.

- **pension fund -** An employee benefit plan which provides retirement income to participants by means of advance funding or deferral of income.

- **individual retirement account (IRA) -** A tax-deferred account to which an eligible individual can make annual contributions of 100% of earnings up to $2,000 ($4,000 for a single-income married couple filing a joint income tax return).

- **estate planning** - allows a customer to plan a personal trust service, wills, etc.

- **brokerage services** - allows customer to buy/sell stock

- **internet banking -** allows customer to access account information from the internet. Often customer can pay bills, transfer funds, and open an account over the internet.

- **automated teller machine (ATM)** - allows customer to access money and account information from a remote location, any time of the day, and day of the year.

- **appraisal services** - Timely and accurate appraisals can help support critical decisions regarding: planning or settling an estate; buying or selling property; making a gift of property; selling development rights and incorporating or forming a partnership. In addition to real estate, we do appraisals for livestock, equipment processing facilities, greenhouses and packing plants

- **future payment fund**

- **leasing** - Leasing of agricultural transportation (including pick-up trucks) and material handling equipment. Also includes leasing of land. Lease schedules are usually five years but may range from three to ten years depending upon the type of equipment. Payments may be made monthly, quarterly, semi-annually, annually or on a harvest payment plan. Lease payments are generally tax deductible. At the end of the lease term, you may extend the leave, return the equipment or purchase it according to the terms of the contract.

- **life insurance products** - Life insurance products are available which will pay off all or part of outstanding indebtedness. Disability benefits may also be available for qualified applicants.

- **disability insurance -** A feature added to some life insurance policies providing for waiver of premium, and sometimes payment of monthly income, if the policyholder becomes totally and permanently disabled.

- **crop insurance** - Several types of crop insurance may be available and include the Catastrophic Crop Insurance Program, Multiple Peril Crop Insurance and Crop Hail Insurance. These coverages can be arranged in combination to afford crop producers maximum coverage in the event of an unavoidable crop loss due to covered perils.

VITA

Amanda Janice Wilson was born in Lynchburg, Virginia. She is the daughter of Mark and Janice Wilson. She graduated from Heritage High School in 1992, and received her Bachelor of Science Degree in Animal Science from Virginia Polytechnic Institute and State University in 1996. While an undergraduate, Amanda was active in Alpha Zeta (an agricultural honor fraternity) and Block and Bridle. She held offices in Alpha Tau Alpha (an agriculture education fraternity), participated in various research projects, and served as an undergraduate teaching assistant.

Upon completion of her undergraduate degree, Amanda enrolled in graduate school at Virginia Polytechnic Institute and State University in Agricultural and Applied Economics. While working on her graduate degree, she was a teaching assistant in the following courses: Marketing Agricultural Products, Agricultural Financial Management, Small Business Management and Entrepreneurship, and Agricultural Management and Problem Solving. She also acted as a research assistant on agricultural prices and basis, and researched small business ownership. She is also the coordinator for an agricultural web site, Virtual Virginia Agricultural Community. She completed the requirements for the Master of Science Degree in Agricultural and Applied Economics in April 1998. She plans to continue to act as the coordinator for the web site and move to Nelson County, Virginia where she plans to work in the marketing and/or finance fields.