Do farmer demographics influence their preferred type of communication?

by

Lenai Branco

B.S., California State University Stanislaus, 2013

A THESIS

Submitted in partial fulfillment of the requirements

for the degree

MASTER OF AGRIBUSINESS

Department of Agricultural Economics

College of Agriculture

KANSAS STATE UNIVERSITY

Manhattan, Kansas

2020

Approved by:

Major Professor
Dr. Aleksan Shanoyan

ABSTRACT

Customer satisfaction is an important performance indicator for a company. Given this, a company should devote time and resources to finding ways to provide a unique and differentiated experience to each individual customer based on their preferences. If a company can build a strong profile on each customer, any person within the company that is to be in contact with the customer will be able to provide that customer with their desired preference and increase the overall customer experience. On one hand, the customer preferences are continuously evolving driven by demographic and socio-economic factors, on the other hand technology advancements create new opportunities for connecting with customers.

The objective of this study is to gain insights into differences in customer preferences for communication methods. The main variables of interest for the financial institution are the generational groups, distance from the servicing office, segment and crops grown by the farmer. The analysis is based on primary data collected from a sample of 91 customers and their current relationship manager at American AgCredit. Existing data was researched and collected regarding borrowers' age, location in relation to the closest servicing office, segment within AAC, and crops farmed. Customer preference was then found by interviewing relationship managers for selected customers. Binary logit regression analysis was used to examine the relationship between the independent variables and customers' preferred communication method.

The results indicate that a statistically significant relationship exists between preferred method of contact and age of customer, segment and farmers that farm permanent crops. Results also indicate that younger customers and customers who are further from their servicing office are more inclined to use electronic communication methods, such as phone calls and email, compared to in-person meetings and snail mail. Given the importance of knowing customers’ preferences, these results can help service providers, such as financial institutions, provide their customers with superior communication experience.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER I: INTRODUCTION

1.1 Background

American AgCredit (AAC) is a member of the Farm Credit System and provides various financial services to agricultural customers in territories in multiple states including California, Colorado, Hawaii, Kansas, New Mexico, Nevada and Oklahoma. Some of the financial services provided include production and operating loans, real estate loans, short term loans, equipment and vehicle leasing, and crop insurance. The mission of AAC is to "be the best lender to Agriculture." (with an emphasis on the period).

The Farm Credit System consists of 72 farm credit institutions across all 50 states. The Farm Credit institutions are customer-owned financial institutions, which provide benefits traditional banks are incapable of providing based on their charter. Some of these benefits include patronage payments and Borrower's right opportunities. AAC is one of the few farm credit members that is double chartered with another farm credit, creating territorial overlap, which engenders competition. This overlap in territory makes customer satisfaction and retention a high priority to win and retain customers' business within its territory. Although traditional commercial banks may compete with Farm Credit, the inherent advantages presented above make competition from other farm credit association more serious.

1.2 Problem Statement

AAC does not currently use customer profiling or have a structured framework to assist in deciding and maintaining the type of relationship each customer wants. Additionally, AAC does not have a detailed understanding of how customer characteristics and demographics such as location, commodity, age, etc. influence customer propensities about its products, as well as influence decision-making.

Creating detailed profiles of customers will help AAC be more proactive in responding to their needs as well as have more useful information about the types of prospects to target. AAC has historically been using a single service model in which any customer can be assigned to any lender in its portfolio and be serviced based on each lender's philosophy. In the last year, AAC has adopted a new market strategy to segment the service into channels based on several criteria including loan size and total loan commitment to AAC. These channels include retail, commercial and corporate. This new strategy is the beginning of a process to be more proactive in the market with individual service. This is why a customer profiling/differentiation project would align greatly with the timing of the new market strategy.

1.3 Objectives

The research objective is to develop a customer profiling framework to enable segmentation on the basis of customers' preferred type of relationship with AAC. This should increase operational efficiency and customer satisfaction, because it allows for the delivery of a highly valued and differentiated customer experience. Providing the desired type of relationship between lender or underwriter and the customer is vital for customer acquisition, retention and the maintenance of existing credit relationships with borrowers. This is important because every borrower has a unique operation and falls at a different level on a scale of how involved they would like their credit professional to be in their operation. Without knowing the desired type of relationship, a lender runs the risk of providing inconsistent relationship management, misunderstanding the customers financing appetite, not providing appropriate product suggestions or awareness for each borrower and missing opportunities to acquire new customers.

The contribution of this research is twofold. First, it provides insights into preferences of current customers. Second, it presents implications for developing more customized relationships. The information could be included in the existing CRM tool allowing for increased efficiency for lenders to see customers that desire a high-touch relationship, ability for lenders to more quickly and accurately find growth opportunities, and increased customer satisfaction which would lead to more verbal referrals and customer retention.

1.4 Overview of Methods

Some of the basic information used was available in existing AAC data: customer demographics, location and commodity type. Other information such as preferred method of contact was collected via surveying relationship managers or lenders for the customer account at AAC. A random sample of 91 customers was chosen for this project. In addition to each customer demographic data on their age, distance from the servicing office, crop farmed and AAC segment was collected. The relationship manager survey was used to collect information on the method of contact the customer generally prefers given the options of in person contact versus phone call and email versus mail. Using the preferred method of contact as a dependent variable and the demographic data as independent variables a binary logit regression model was used to find the direction of the parameter estimates for decision making purposes.

1.5 Preview of Key Findings and Main Contribution

Based on the regression model results it can be concluded that customers that are further away from the office prefer communication by phone and email. Younger customers belonging to the GenX and Millennial generations also prefer the use of technology for communication, while customers in the Baby Boomer generation may still value in-person communication. The analysis did not show statistical significance for the communication preference between phone and in person contact. The independent variables of GenXPlus, commercial segment and growers of permanent crops show statistical significance at the 5% level for the preference of contact of mail versus email. The younger generation is likely to prefer technology for communication as they are familiar with it and enjoy the convenience. Customers in the commercial segment are in the middle of the borrowing groups and consists of a wide range of complexity in their operation and therefore are in a good position to prefer ease of communication through email. The increase in permanent crops in California from investors in farming has led to a group of people that do not generally fit into the traditional farmer label and are familiar with doing business electronically with other banking institutions, and therefore preferring contact by email. Overall, there are many factors that could influence the type of communication method a customer prefers but knowing some of the generalizations could help a lender when preference is unknown.

CHAPTER II: LITERATURE REVIEW

2.1 Customer Satisfaction

Customer satisfactions should be high in importance at any company since customers determine company success. Customer satisfactions is defined as a measurement that determines how happy customers are with a company's products, services and capabilities. Customer satisfaction ratings can help a company determine how best to improve or change their products or services (ASQ 2020). While it is important to measure customer satisfaction, finding accurate metrics of customer satisfaction can be a daunting task. A common way to measure customer satisfaction is through gathering data from customer surveys or questionnaires. Customer lifetime value and customer equity have also been used as proxies for customer satisfaction.

The customer lifetime value (CLV) evaluates the future profits generated from a customer, properly discounted to reflect the time value of money (Rust, Moorman and Bhalla 2010). A firm's customer equity is the sum of the lifetime values of all its customers (Rust, Moorman and Bhalla 2010). These metrics can be challenging to calculate but the intangible assets are valuable to a company related to their customer satisfaction. By using a framework to quantify the dollar impact of customer satisfaction, a firm can determine which elements of customer satisfaction have the greatest impact on corporate performance. Customer satisfaction is also important to companies because of the theory that customer satisfaction engenders customer loyalty which is directly related to company profitability (Hallowell 1996).

Customer satisfaction and customer loyalty are not necessarily the same thing. For example, a farmer could get a loan from a bank and the process could have gone extremely well and left them satisfied but it does not mean that the next time they need money they will not shop around for the best deal if their pivot decision variable is lower interest rates. Creating the customer loyalty depends on the satisfaction being provided repeatedly and reliably to build a strong customer relationship. Customer satisfaction is based on four predictable factors. These factors are a perfect product, delivered by a caring friendly person, in a timely fashion, with the support of an effective problem resolution process in the event there are problems (Soloman 2018). With those factors a business can begin to increase customer satisfaction and work towards creating the relationship to create truly loyal customers. Customer loyalty to their loan officer is changing as older generations generally keep their business with one loan officer as that is how they always have done it and there is a sense of loyalty. Younger generations are not as apt to using that same relationship out of loyalty but are rather concerned with the best deal or highest level of customer satisfaction/experience.

Another approach to increasing customer satisfaction is the zero-based design approach. If done correctly a zero-based design approach can increase customer satisfaction scores by 10 to 20 points (Higgins, et al. 2019). A zero-based design approach places the customer at the center of importance and uses their language to help get them from the beginning to the end of their customer journey. An important aspect of reaching the zero-based design approach is for the entire company to adopt an agile mindset. Adopting agile routines such as regular hurdles, brief sprints focused on output and regular evaluations can help a company become more agile and improve the success rate of a zero-based design approach (Higgins, et al. 2019).

Analysis in customer satisfaction has become important to strategic management. There are many ways to analyze the data collected from customers via questionnaires or surveys to find customer preference. Through this analysis a company can determine which factors are most important to customer satisfaction. One way to analyze the data is through a rough set theory. This theory aims at representing the customer preference by means of a simple decision rule and is simpler than the conjoint analysis traditionally used by many firms (Greco, Matarazzo and Slowinski 2006). Conjoint analysis is using data from questionnaires to build a collective utility function. The simple decision rule is "if feature A is good and feature B is sufficient then the overall evaluation of the product is medium".

Whichever method a firm uses to capture customer satisfaction it is important that they focus on making it a part of their strategic management. As technology advances and there is an increase in competition a company must focus on providing the product and service each customer desires individually.

2.2 Differentiated Customer Experience and Customer Profiling

A customer profile is a model of the customer, based on which the marketer decides the right strategies and tactics to meet the needs of that customer (Shaw, et al. 2001). Generally, a company will build a customer profile to understand the customer including their demographic information as well as their historical purchase transactions. Many companies today are stuck in outdated ways of marketing to their customers by using mass marketing. With the current technology and the amount of data that can be utilized and collected, companies should be shifting to a customer focused method of marketing (Rust, Moorman and Bhalla 2010). Using technology, a business can leverage the data and gain competitive advantage (Shaw, et al. 2001). Focusing on serving each customer segment individually is more important than mass marketing. Each customer wants to be served according to their individual and unique needs (Shaw, et al. 2001). With a more customized approach a company can build a valuable long-term relationship with customers and transition from a transactional relationship.

There are two types of choice models that can be used to find customer preference. A stated preference analysis finds customer preference using a technique such as a customer survey. This find the preference the customer says they prefer but doesn't always reflect actual behavior. The revealed preference model is based on the review of data which can show the actual behavior of the customer (Ram 2017). The use of historical data can be used to predict customer preference and what products a customer may need in the future.

With many firms in the marketplace competing for market share it is increasingly more important to focus on customer acquisition and customer retention. Creating customer profiles within a company can not only increase customer loyalty but can help a company with the ability to offer the right product at the right time. The idea of a Chief Customer Officer (CCO) in a company is one way to help focus on having customer centric culture within the company. The CCO is responsible for designing and executing the firm's customer relationship strategy and overseeing all customer facing functions (Rust, Moorman and Bhalla 2010). A customer profile looks into many characteristics of a customer including age, gender, location, interests, life stage etc. It can also look into past behavior to group together profiles that can be targeted with specific products. With the advancements in technology today, customers demand timely and personalized service and the feeling of an overall good customer experience. A business cannot provide that type of service if they do not understand their customers (Kiteley 2018).

2.3 Changing Farmer Demographics

As young talented people tend to find careers off farm there are less and less young famers taking over the family farm. Surveys from 2012 had shown the average age of a farmer in the US was 58 years old and few were under the age of 35 (Johr 2012). As farming operations are slowly transitioning from small family farms to large corporate farming operations, the dynamics of a farmer are transitioning as well. Small and large farmers need to learn how to handle new technology, management methods, risk management, financial literacy and environmental protection practices (Johr 2012). Making farming an attractive career for young people is a challenge that leads to the question of who the future farmers are that will grow the nation's food. This is an urgent problem in Japan where they are fostering a program targeting individuals under age 45 to become farmers (Johr 2012).

A farmer by profession is generally at the mercy of the market to sell their crop and the market tends to constantly be changing. Also changing is the farming strategy with new knowledge and technology. What used to work for famers of the past does not always provide success for farmers of the present. The old farmer mentality of "this is how we have always done it" is not necessarily a good one to have. The modern farmer has a different set of demographics and skill sets than farmers in the past (Oliver, et al. 2008). As the farmer of the past evolves into the farmer of the present and the future, companies serving them must adjust their strategies to remain relevant. In the world of technology and the wide use of the internet by farmers of all ages but especially younger farmers the ability to research different firms for their every need including financing is easier than ever. This provides a need for a firm to have strategic marketing techniques.

CHAPTER III: THEORETICAL FRAMEWORK

Consumer behavior is the study of how individuals, groups and organizations select, buy, use and dispose of goods, services, ideas, or experiences to satisfy their needs and wants (Kotler and Keller 2016). In theory there are many factors that influence consumer behavior including culture, social and personal factors. Understanding these factors is important to understanding the customer. Using consumer behavior theory to understand the customer will allow American AgCredit to provide a customized and differentiated customer experience. Agriculture in many ways is still a family oriented and generational profession. Family is one of the most influential groups on consumers. It is likely generations have dealt with one loan officer at the same bank for many years. It is also possible that the younger generations care less about relationships and more about the convenience or technology offered. These preferences and trends can help build a customer profile to enhance customer satisfaction.

The agricultural census provides a source of information about the changing demographics in farming and ranching. This information can be used to market products and services to geographical areas as well as to the different generations in farming. Because agriculture has a cyclical nature economic circumstances are important in the spending pattern of farmers and ranchers. When commodity markets are good, some farmers and ranchers tend to expand and use large and long-term loans to do so. When commodity markets are down, customers can be living on short term debt and struggling to break even. Using these factors to predict customer needs for their unique operation will help create the customized service desired by American AgCredit.

There are many theories on the psychological aspect of consumer behavior as well that help explain human motivation. Freud's theory revealed that people's behavior is generally unconscious, and they do not fully understand their own motivations. Maslow has a theory that there is a hierarchy of needs, and people will try to satisfy their most important need first on a scale of physiological and safety needs first and social, esteem and self-actualization needs later. Herzberg's theory separates factors that are dissatisfying to the consumer from those that are satisfying. He believed that a person will not be motivated because of something that is dissatisfying there must also be a satisfaction. These three best known theories help understand what motivates human behavior and buying habits. Having a full understanding of the consumer is imperative in good marketing. Because consumers are different and motivated by unique aspects of their psychological being, building an in-depth profile consisting of data, customer preference and assumptions based on patterns will provide an overall better customer experience.

Theory also suggests that consumers do not always process information to make a well-informed decision. Behavioral decision theory suggests that in many cases consumers make a decision without a complete set of information. This type of behavior can cause some customers to request loans that are out of their means and it takes a strong lender/borrower relationship to show the information that can provide for a more rational decision. This can also come into play when a farmer or rancher comes on hard times and wants to do anything to keep the family farm even if it is not a rational decision. Providing financial services to the extent of the customers preference can involve providing the service of financial advisor.

CHAPTER IV: METHODS AND DATA

4.1 Data Description

For this analysis a list of all active primary borrowers was gathered via the marketing department at American AgCredit (AAC). From this list of 9,831 customers a random sample of 110 customers was selected. After the selection, research was conducted by contacting their relationship manager at AAC to ask how they generally prefer contact in their experience with the customer. The options were if they preferred contact in person or through a phone call and separately if they prefer contact via email or mail. A response was received from 95 relationship managers narrowing the sample size to 95 customers. There were a few major outliers in distance from the office that were removed as not to skew the trend resulting in a sample size for analysis of 91 customers. The demographic information associated with each customer consists of their age, distance from the servicing office, crop farmed, and segment.

From the sample of 91 customers the resulting preferences used for dependent variables was split by the answers to the question of preference by in person contact or phone and email or mail. Based on the results, 35 customers preferred contact in person while 56 preferred contact by phone and 32 of those customers preferred contact by mail while 59 preferred email shown in Figure 4.1 and Figure 4.2. Of the customers that preferred in-person contact, 16 of them also preferred contact by mail. Of the customers that preferred contact by phone, 40 of them also preferred contact by email.

Figure 4.1: Dependent Variables In Person vs. Phone

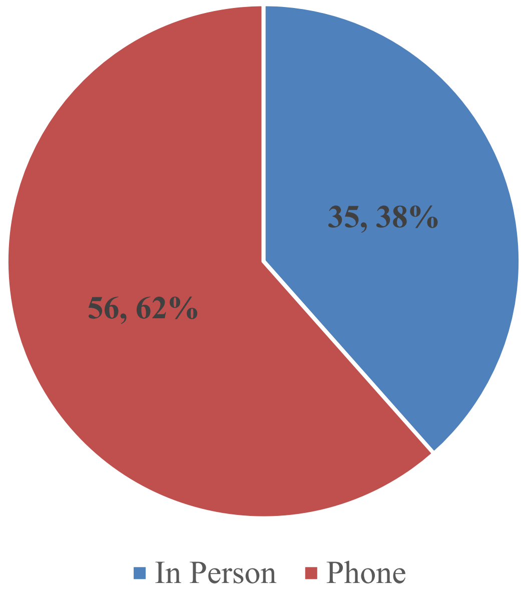
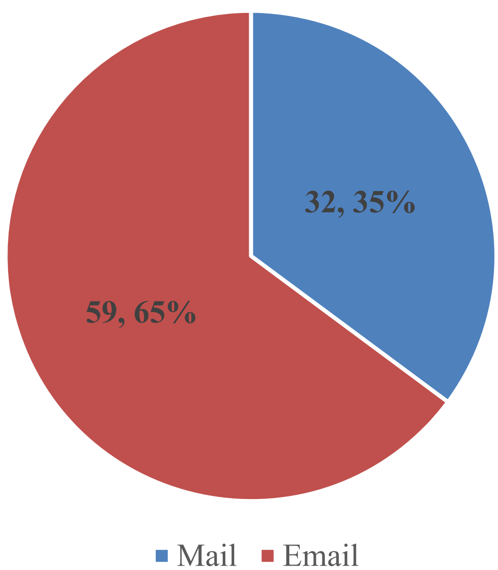


Figure 4.2: Dependent Variables Email vs. Mail



The age of the customers ranged from 29 to 87 years. Seven customers are below age 35, twenty-five are between the age of 35 and 55 and fifty-nine customers are over the age of 55. This allows a reclassification of customers into generation categories. The customers under 35 belong to the Millennial generation and represent the smallest portion of farmers (at approximately 7%) of the sample. The next largest category of customers between the age of 35 and 55 belong to the GenX generation and account for approximately 26% of the sample. Because there are so few Millennials, they were combined with the GenX generation for regression purposes to form one group that is not Baby Boomers. The largest group of farmers over the age of 55 belong to the Baby Boomer generation and account for the remaining 66%.

Figure 4.3: Age Reflected by Generation

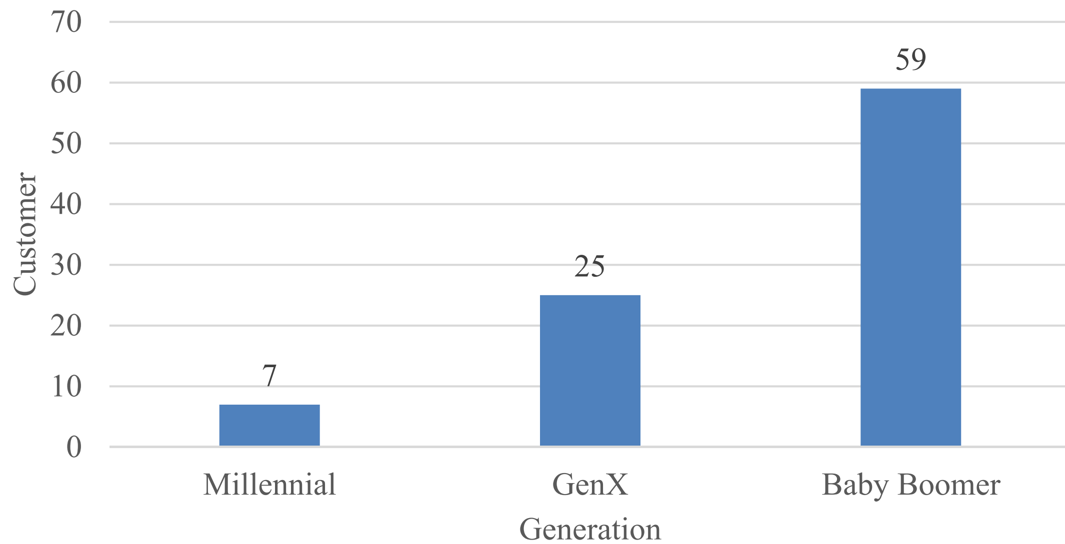
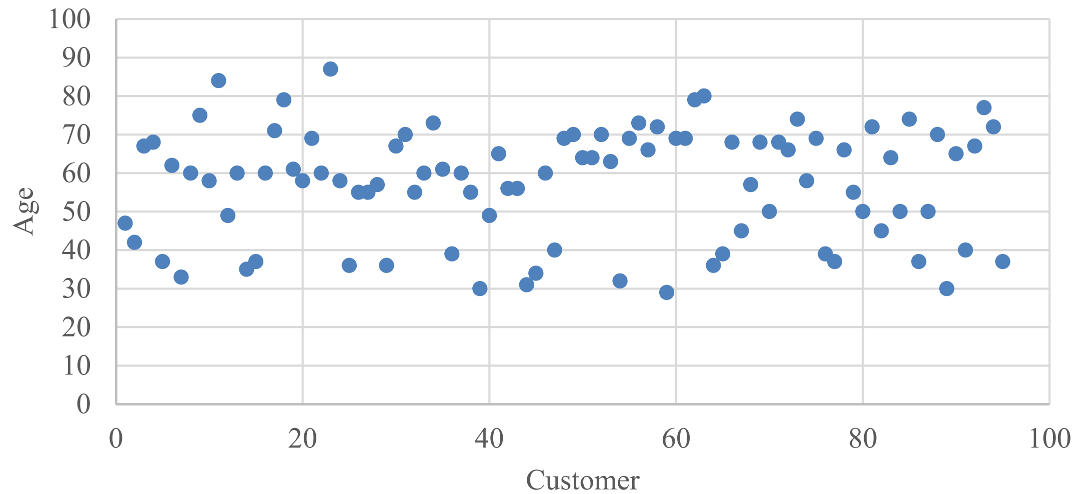
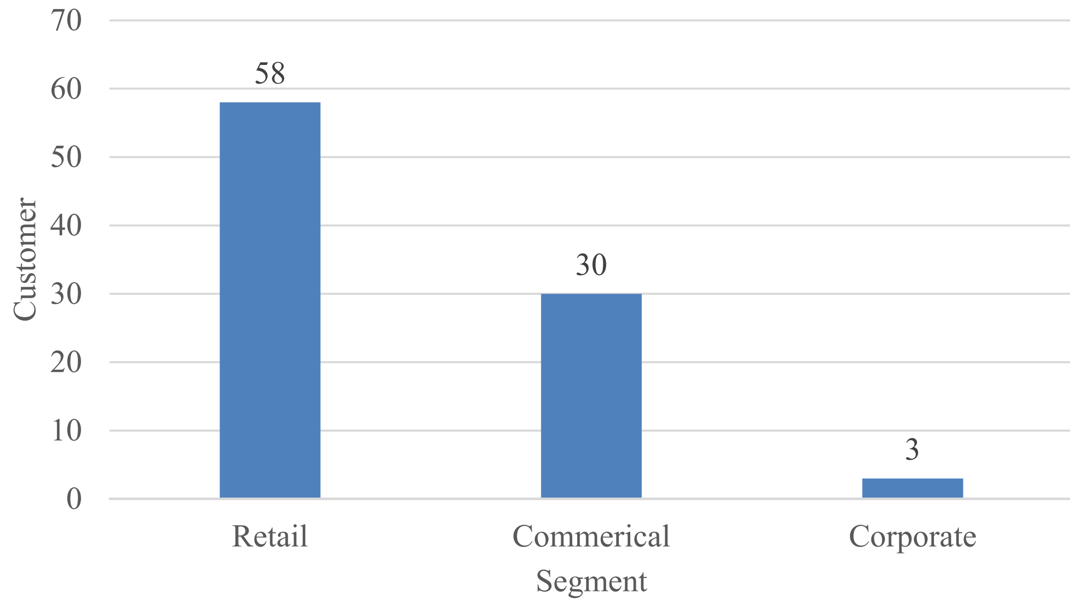


Figure 4.4: Age Reflected By Number



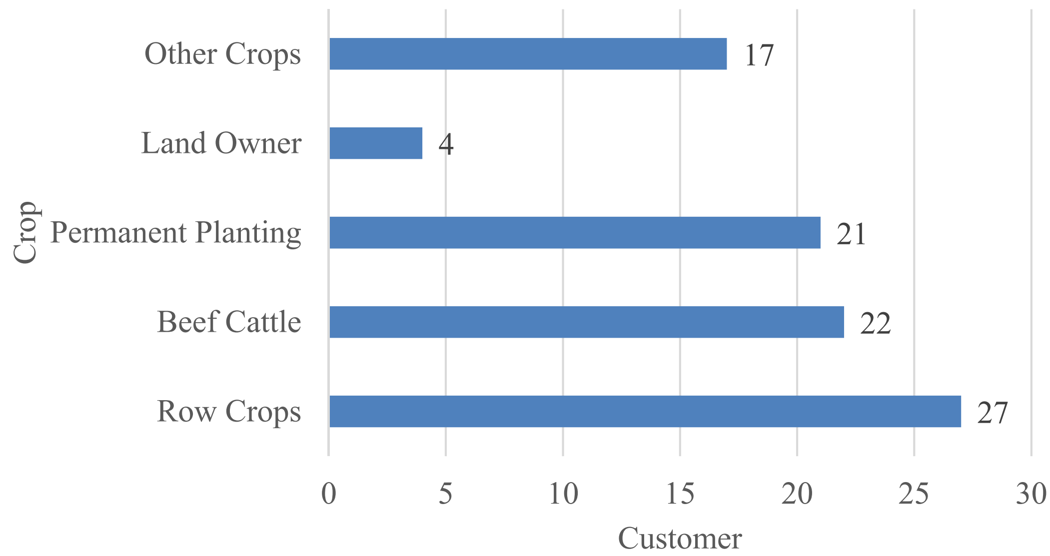
American AgCredit services their customers based on a differentiated channel delivery approach where a customer fits in either the retail, commercial or corporate segment. The retail segment holds the majority of the customers. This segment consists of customers that have a total commitment to AAC of $750,000. Working in this segment can be categorized as fast, easy and accessible. The sample consists of 58 customers in this segment accounting for 64% of the sample. The next set of customers belongs in commercial segment which is generally any customer with a total commitment of $750,000 to $25,000,000. Working in this segment can be categorized as streamlined, competitive, timely and knowledgeable. The sample data consists of 30 customers in this segment which is approximately 33% of the sample. The final segment is the corporate segment and it consists of customers with a total commitment of over $25,000,000. This segment can be categorized as informed, market based and tailored. The sample data consists of 3 customers in this segments accounting for 3% of the sample.

Figure 4.5: Segment of Channel Delivery



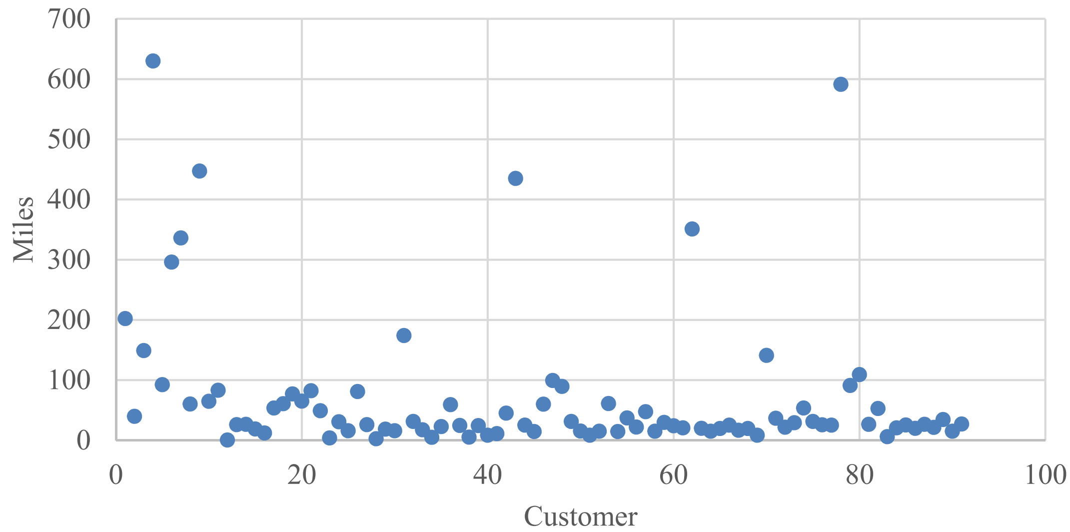
The sample consists of farmers of various different crops including row crops, permanent plantings, beef cattle, landowners and various others. The row crops include hay, wheat, corn, and soybeans. The permanent planting crops include grape vineyards, fruit trees and tree nuts. The various other category in the chart below reflects crops including timber, potatoes, hog farming, dairy, winery, customer harvest business, apiculture and fish. With a good portion of the sample in the Midwest, the largest group of the sample belongs to the row crops with 29 customers accounting for 31% of the sample. Row crops are followed by beef cattle and permanent plantings at 23 and 22 customers respectively. Beef cattle account for 24% of the sample and permanent plantings at 23%. There were 4 landowners that are lessors and do not do the farming on their own. This is about 4% of the sample. The crops lumped into the other category account for the remaining eighteen percent of the crops.

Figure 4.6: Crops Farmed



The sample customers live anywhere from a half a mile away from their servicing office to two thousand six hundred and seventy miles from their servicing office. The majority of the customers live within 100 miles from their servicing office while only four outliers are outside of one thousand miles away. In more rural areas such as Kansas it is likely that a customer must travel further to get to a local office than areas such as California where there are more local offices and there is less of a chance to have to travel very far. The chart below shows the variance of miles from the local office with the majority being less than an hour's drive.

Figure 4.7: Distance from Servicing Office in Miles



4.2 Model 1: Phone vs In Person Contact

The first model is designed to examine customer preference of phone or in person contact as a function of distance, age, segment and crop reflected in Table 4.1. For the purpose of this study we are interested in the direction of the parameter estimate rather than the marginal effect as the marginal effect is not very meaningful for practical decision making in this case.

Table 4.1: Preference for Phone vs In Person Contact

Variable	Description	Average	St.Dev	Minimum	Maximum
In Person	1 if customer prefers contact in person 0 otherwise	0.38		0	1
Miles	Distance from Customer's primary address to their servicing AAC office in miles	71	118	0.5	630
GenX Plus	1 if customer is younger than age 55 and 0 otherwise	0.35		0	1
Commercial	1 if customer is in commerical segment and borrows between $2,500,000 and $25,000,000 and 0 otherwise	0.33		0	1
Corporate	1 if customer is in corporate segment and borrows over $25,000,000 and 0 otherwise	0.03		0	1
Beef Cattle	1 if customer farms beef cattle, and 0 otherwise	0.24		0	1
Permanent Plantings	1 if customer farms permanent plantings including grapes, fruit trees and nut trees and 0 otherwise.	0.23		0	1
Lessor	1 if customer is landowner that leases ground to a farmer and 0 otherwise	0.04		0	1
Other	1 if customer farms other crops inclusing timber, potatoes, hogs, dairy, winery, custom harvest and fish and 0 otherwise.	0.19		0	1

The relationship between the distance and the preference for in person contact is expected to be negative. This is expected because the further away from the office the more likely the customer is to prefer the convenience of a phone call rather than a commute to meet in person. Due to transportation costs going up, moving people around is expensive now and will continue to get more expensive (Rogers 2010).

The relationship between the GenX and Millennial generation and the preference for in-person contact is expected to be negative as the GenX and Millennial Group is more inclined to use technology than Baby Boomers and therefore prefer contact via phone call.

The Baby Boomer generation is likely to be more old-fashioned in the sense that they would like to meet with their banker face to face to give the meeting "hand-shake deal" feel. It used to be that Baby Boomers were using the same technology as their elders but that is changing now where the younger generation expects to do a lot through their computer screens rather than face to face (Rogers 2010). Baby Boomers are characterized as being technophobes who are slow to adopt new technology and when they do, they struggle to understand how to use it (McLeod 2009). Although Baby Boomers were the first generation to use cell phones, they adopted the technology in adulthood rather than grew up with the technology. Most Baby Boomers use cell phones but when compared to Gen X and Millennials they aren't as dependent on it and still depend on face to face communication.

The relationship between borrowing segment of corporate and commercial and the preference for in person contact is expected to be positive because as a person borrows large amounts of money it is more likely they will prefer to meet in person with their relationship manager to know they can trust in their banker to handle their business effectively.

The relationship between crops that are less likely to demand funds often and the preference for in-person contact is expected to be negative. Farmers that grow row crops are likely to grow multiple crops in one growing season. For example, a farmer of wheat might double crop to corn on the same ground for the growing season. A farmer that has multiple crops is more likely to prefer phone calls rather than visiting the office multiple times where other crops only have one harvest such as beef cattle and permanent crops and may be less worried about traveling to the office.

4.2.1: Model 1 Results

First analysis is using a logit regression model to examine the relationship between several demographic variables and communication preference, the results are shown in Table 4.2.

Table 4.2: Regression Results: Phone vs In Person

	Parameter Estimate	Std. Error	Z	p-vaue
Constant	-0.0349	0.4810	-0.0725	0.9422
Miles	-0.0026	0.0024	-1.0700	0.2847
GenX Plus	-0.5431	0.4861	-1.1170	0.2639
Commercial	-0.0979	0.5254	-0.1865	0.8521
Corporate	1.5653	1.3197	1.1860	0.2356
Beef Cattle	0.4038	0.591	0.6833	0.4944
Permanent Crops	-0.3749	0.6673	-0.5619	0.5742
Lessor	-0.1407	1.3131	-0.1072	0.9146
Other Crops	-0.6487	0.7456	-0.9064	0.3647

Although the regression results show the direction of the parameter estimate is consistent with the expected relationship, the parameter estimates are not statistically significant, indicating the absence of a statistically significant relationship between the explanatory variables and the dependent variable. This can be due to two potential factors: i) the demographic variables do not significantly affect the preference for communication over phone versus in-person, or ii) the econometric model was not able to capture any potential significant effect (e.g. due to limited sample size). The commercial segment has a wide range of dollar amount borrowed from the bank and can therefore have a wide range of operation types. There could be a variation of customer preference between phone and in person meetings. Farmers tend to be proud of their operations and like their loan officer to visit their operation to show them what their funds are helping. This is a great tool for relationship building but is not necessary for every communication therefore the preference between phone and in person meetings could be more transactional rather than impacted by specific independent variables. For example, a customer may want to have an in-person meeting for a very first meeting to get a good feel for the lending style of their relationship manager. They may also want to have an in-person meeting for any expansion or large growth opportunities they are considering. Phone calls can be convenient for everyday business that does not require being face to face.

Due to the suspicion of additional outliers in the distance from office impacting the results of the regression, another regression model was run with the outliers of any distance over 100 miles from the office removed. The change in the results from the additional regression model were insignificant to the results from the initial regression model. The results are included in the appendix for reference.

4.3 Model 2: Email vs Mail

The second model represents customer preference of email or mail as a function of distance, age, segment and crop reflected in table 4.3. For the purpose of this study we are interested in the direction of the parameter estimated rather than the marginal effect similar to Model 1.

Table 4.3: Preference for Email vs Mail Communication

Variable	Description	Average	St.Dev	Minimum	Maximum
Mail	1 if customer prefers contact by mail and 0 otherwise	0.35		0	1
Miles	Distance from Customer's primary address to their servicing AAC office in miles	71	118	0.5	630
GenX Plus	1 if customer is younger than age 55 and 0 otherwise	0.35		0	1
Commercial	1 if customer is in commerical segment and borrows between $2,500,000 and $25,000,000 and 0 otherwise	0.33		0	1
Corporate	1 if customer is in corporate segment and borrows over $25,000,000 and 0 otherwise	0.03		0	1
Beef Cattle	1 if customer farms beef cattle, and 0 otherwise	0.24		0	1
Permanent Plantings	1 if customer farms permanent plantings including grapes, fruit trees and nut trees and 0 otherwise.	0.23		0	1
Lessor	1 if customer is landowner that leases ground to a farmer and 0 otherwise	0.04		0	1
Other	1 if customer farms other crops inclusing timber, potatoes, hogs, dairy, winery, custom harvest and fish.	0.19		0	1

The relationship between distance and the preference for contact via mail is expected to be negative as the further away from the office a customer is the more likely they will prefer email as it is faster than mail especially when the mail has to travel further.

The relationship between the GenX and Millennial generation and the preference for contact via mail is expected to be negative as the Gen X and Millennial generation are more likely to prefer technology and less likely to use mail regularly. On the opposite side the older generation of Baby Boomers is less likely to prefer technology and more likely to prefer to receive documents via mail. A Baby Boomer is more likely to find value in having a hard copy of their documents as opposed to only the electronic version. According to a 2005 study, producers do not take the time to check their email every day and it is easy for them to miss information therefore preferring direct mail as their first choice (Eberspacher and Jose 2005).

The relationship between the commercial and corporate segment and the preference for communication via mail is expected to be negative as the larger operations that borrower more money tend to be more complex and can handle business electronically. Corporate customers often times have managers that handle most of their financial obligations and as that is their main job, they can usually follow an electronic paper trail. Also, as the operations get larger and more complex there tends to be more paperwork and people are less likely to want to receive large stacks of paper in the mail.

The relationship between crops grown and preference for communication via mail is expected to be negative for all crops except beef cattle as ranchers of beef cattle tend to have an old school feel even in the days of new and emerging technology. All other crops are expected to have a negative correlation as they are more likely to prefer email than mail over many row crop farmers. This is expected due to the large amount of row crop farmers in the Midwest where the mail has to travel further and takes longer to receive especially in comparison to email. Direct mail provides the space and time needed to appreciate what was sent and can appeal in an emotional way. The average lifespan of direct mail is 17 days compared to email as only 2 seconds (Medlar 2017).

4.3.1 Model 2 Results

Using a binary logit regression model to examine the relationship between several demographic variables and communication preference, the results are shown in Table 4.4

Table 4.4: Regression Results: Email vs Mail

	Parameter Estimate	Std. Error	Z	p-vaue
Constant	0.5418	0.5109	1.061	0.2889
Miles	-0.0020	0.0023	-0.8873	0.3749
GenX Plus	-1.1400	0.5674	-2.0100	0.0445**
Commercial	-1.4317	0.6576	-2.1770	0.0295**
Corporate	-0.2480	1.3253	-0.8710	0.8516
Beef Cattle	0.6577	0.6288	1.0460	0.2956
Permanent Crops	-1.8273	0.8997	-2.0310	0.0423**
Lessor	-0.1644	1.3222	-0.1244	0.9010
Other Crops	-0.6650	0.7599	-0.8752	0.3815

According to the regression results the direction of the parameters is consistent with the expected relationship previously described.

The independent variables of GenX Plus, Commercial and Permanent Crops show statistical significance at the 5% level. Farmers and ranchers under the age of 55 that belong to the Millennial and Gen X generations are much more likely to prefer to be contact and receive documents via email than mail compared to their baby boomer parents. They have grown up with technology as opposed to Baby Boomers and are not as skeptical of the security of internet communication and more impressed with the convenience of email.

Farmers in the commercial segment belong to a wide range of crops, people, location farming experience and various complexity levels of operations. Because this group fits in the middle they are not expecting quick easy loans with minimal documentation and are not at the other end expecting large amounts of documents that can be hard to handle. This puts them in a good position to prefer the ease of communication through email. Many farms in the commercial segment are still family operated or have generational layers to the workforce that can help with the office aspect of the business and be familiar with technology such as email.

In recent years there has been a large increase in the number of permanent crops planted in California. With this increase many investors are working their way into farming through planting permanent crops. Many of these investors are very familiar with doing business with banks and through email communication and therefore make Farm Credit no exception.

CHAPTER V: CONCLUSION

Although there are many factors that can impact a customer's decision on what type of communication type they prefer from their relationship manager there are certain generalizations that can be made when preference is unknown. This study focused on the relationship between distance, age, customer segment and crop farmed and the customer preferred method of communication as it relates to phone versus in person and email versus mail. With technology nearly ubiquitous in the world today many people prefer the ease of using technology to complete business transactions but there are still farmers and ranchers that find value in personal relationships and having hard copy documents. With customer satisfaction and retention at the forefront of business priorities, knowing your customer is essential to providing top service. With the insight from the regression analysis a relationship manager could work on building a customer profile for each existing customer and new prospects. For example, if a young new prospect were to inquire about a loan for their new almond operation it is likely they would prefer to do business over phone and email.

The literature reviewed for this project centered around customer profiles and customer satisfaction with a section specifically on the changing dynamics of having farmers and ranchers as customers. In addition, literature surrounding consumer behavior was reviewed. From this literature it is clear that customer satisfaction should be of high importance to firms and creating a great customer experience that is personalized adds value to the overall customer satisfaction. In order to reach that great customer experience it is important to understand and know your customer.

This method will not be a one size fits all approach to building a customer profile that reflects a customer's preferences but it can be a good place to start for decision making purposes when approaching new customers or when an existing customer is transferred to a new relationship manager that is unfamiliar with the account or another member of the AAC team that is not usually in contact with the customer. As the profile is built out completely any employee will be able to give any given customer the unique and differentiated customer experience they want.

Some areas of limitation of this study include the size of the sample used as a larger sample size could provide a better understanding. Another limitation of the study is the preference was derived via contact with the relationship manager and their experience with the customer rather than directly from the customer which may skew the actual preference information. It was also brought to my attention that text message is another popular method of communication that was not addressed in this study and could therefore be considered a limitation of this study and possible addition for further study. There are many other demographic or socio-economic variables that were not addressed in this study that could be included to provide a more detailed customer profile including gender, education level, or annual income.

WORKS CITED

ASQ. 2020. *What is Customer Satisfaction?* Accessed April 30, 2020. https://asq.org/quality-resources/customer-satisfaction.

Eberspacher, Beth, and H. Douglas Jose. 2005. "Determining Educational Needs: A Focus Group Approach." *15th Congress-Developing Entrepreneurship Abilities to Feed the World in a Sustainable Way.* 320-322.

Greco, Salvatore, Benedetto Matarazzo, and Roman Slowinski. 2006. *Customer Satisfaction Analysis based on Rough Set Approach.* Zeitschrift Fur Betriebswirtschaft.

Hallowell, Roger. 1996. "The relationship of customer satisfaction, customer loyalty, and profitability: and empirical study." *International Journal of SErvice Industry Management* 27-42.

Higgins, JP, Elixabete Larrea, Swapnil Prabha, Alex Singla, and Rohit Sood. 2019. "How to Extract Maximum Value from a Zero-Based Design Approach to Customer Journeys." *McKinsey Digital.* January. Accessed September 9, 2019. https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/how-to-extract-maximum-value-from-a-zero-based-design-approach-to-customer-journeys.

Johr, Hans. 2012. *Where are the Future Farmers to Grow our Food?* Vevey: International Food and Agribusiness Managment Review.

Kiteley, Clare. 2018. *serendipity2.* March 20. Accessed September 3, 2019. https://serendipity2.com/advantage-of-customer-profiling/.

Kotler, Philip, and Kevin Lane Keller. 2016. *Marketing Managment.* Vol. 15E. Pearson Education, Inc.

McLeod, Elisabeth. 2009. "The Use (and Disuse) of Mobile Phones by Baby Boomers." *International Journal of Emerging Technologies and Society* 7: 28-38.

Medlar, Angela. 2017. *Enthusem.com.* August 31. Accessed June 6, 2020. https://www.enthusem.com/blog/direct-mail-vs.-email-if-you-can-only-use-one-which-wins.

Oliver, Jason, Luc Valentin, Bruce Erickson, and Mike Boehlje. 2008. *Are Changing Demographics Fostering a New Role for Farmers?* Big Sky: Western Agricultural Economics Assocaition.

Ram, Sudarshan Venkat. 2017. *A Data Mining Approach to Modeling Customer Preference: A Case Study of Intel Corporation.* Dissertation, Arizona State University, Ann Arbor: ProQuest LLC.

Rogers, Michael, interview by World Future Review. 2010. *Technology and the Baby Boomers* (June-July): 54-59.

Rust, Roland T, Christine Moorman, and Gaurav Bhalla. 2010. "Rethinking Marketing." *Harvard Business Review* 88: 94-101.

Shaw, Michael J, Chandrasekar Subramaniam, Geck Woo Tan, and Michael E Welge. 2001. *Knowledge managment and data mining for marketing.* Elsevier Science B.V.

Soloman, Micah. 2018. *Forbes.* June 10. Accessed April 30, 2020. https://www.forbes.com/sites/micahsolomon/2018/06/10/the-four-elements-of-customer-satisfaction-how-to-achieve-it-over-and-over-again/#40599af328c2.

APPENDIX A

A-1: Regression Results: Phone vs In Person with Distance Outliers Removed

	Parameter Estimate	Std. Error	Z	p-vaue
Constant	-0.3611	0.7134	-0.5063	0.6127
Miles	0.003	0.0113	0.2665	0.7899
GenX Plus	-0.6185	0.5372	-1.1510	0.2495
Commercial	-0.0768	0.5938	-0.1294	0.8971
Corporate	20.9017	17124.8000	0.0012	0.999
Beef Cattle	0.3855	0.6475	0.5954	0.5516
Permanent Crops	-0.12393	0.7916	-0.1565	0.8756
Lessor	0.6353	1.5274	0.4159	0.6775
Other Crops	-0.2554	0.7730	-0.3304	0.7411