The Cooperative Value Proposition: Portrayal and Perception

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ABSTRACT

Cooperatives are private businesses in which members are also the owners and the customers. Cooperatives have a significant role in the United States economy, especially in the agricultural sector. By operating in a cooperative, members reach a critical mass necessary to either tap markets or economies of scale or both. To this end, membership is vital to the effectiveness of the cooperative economic model; however, membership is declining. This study compares what agricultural cooperative employees, credit union employees, and consumer food cooperative employees think their members and potential members value. In addition, the study compares what agricultural producers (members and non-members) value from a cooperative, and what cooperatives think agricultural producers value. It can be concluded that agricultural cooperative employees know their members somewhat well but should understand their potential members more. Finally, a Logit model is developed to determine the likelihood of an agricultural producer being a member of an agricultural cooperative given the variables education, income from agriculture, past generation involvement with agricultural cooperatives, credit union membership, and knowledge of agricultural cooperatives. The model helps determine who the agricultural cooperative in the Northwest should target for membership growth. This study is a stepping stone to helping cooperatives focus on crafting the right messages that will not only retain members but gain new members.

ACKNOWLEDGEMENTS

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CHAPTER 1 INTRODUCTION

A cooperative is a unique form of private business in which the members are also the owners and the customers. To be more specific, cooperatives can be distinguished from other forms of business in three ways. First, cooperatives implement the user-owner principle, which means that the people who own and finance cooperatives also patronize them. Second, cooperatives implement the user-control principle, meaning that that the cooperative is controlled by the people that use the cooperative. Third, cooperatives implement the user-benefit principle. In other words, benefits, (usually profits) generated by the cooperative are allocated to its users in relation to the degree of their usage (Barton, 1989). Some of the largest cooperatives in the Northwest region are Northwest Dairy Association, Snake River Sugar Co., Tree Top Inc., and Tillamook County Creamery Association (USDA, Rural COOPERATIVES 3 IN A ROW!, 2014).

1.1 Cooperatives in the United States

Cooperatives, in the last century, have been very successful and common in the United States. They play an important role in the United States economy, especially in the agricultural sector. In 2009, nearly 30,000 cooperatives in the United States generated over $500 billion dollars in revenue, controlled over three trillion dollars in assets, and provided almost one million jobs. In addition, cooperatives donated over $20 million to scholarships, faculty, and other endowments in agricultural economics departments in 2009 (Deller, Hoyt, Hueth, & Sundaram-Stukel, 2009).

Even though cooperatives play such an important role in the United States farm economy, the number of farmer-owned cooperatives declined from 2002 to 2011. In 2002 there were around 3,200 agricultural cooperatives. Since 2002, the marketing and supply agricultural cooperatives have been steadily declining and in 2011 there were only around 2,300 agricultural cooperatives left in the United States. In addition, the number of total members in cooperatives has dropped from 2.8 million in 2002

to 2.3 million in 2011. The number of memberships has long exceeded the number of farms, due to ranchers and farmers being members of more than one cooperative. However, today the number of farms and number of memberships are almost equal (Ali, Penn, & Eversull, 2011). Since cooperatives are such a vital part to the economy, especially the agricultural economy, this decline can have a detrimental effect on the United States economy.

1.2 Cooperative Membership

Many studies discover that the number of members and participation of members are an essential key for a cooperative's existence (Bhuyan, 2007; Fulton & Adamowicz, 1993; The Co-operative Commission, 2001). Wadsworth (2001, pg. 19) goes even further, saying members are the only ones that can keep a "co-op spirit alive and kicking". Members are the owners, users, and benefiters of cooperatives. Therefore, a cooperative with few members risks shutting down from the lack of business and therefore, lack of profit. Some of the most successful agricultural cooperatives can have hundreds to thousands of members. For example, more than 500 dairy farm families own the Northwest Dairy Association (Darigold, Inc., 2012) and more than 1,000 apple and pear growers own Tree Top, Inc. (Tree Top Inc., 2013).

To help encourage membership and maintain their members' loyalty, cooperatives provide their members with a unique package. The benefits cooperatives offer include access to the market place, greater market power, and/or financial return to its members (Kenkel & Park, 2011). In other words, members are able to purchase and/or sell to the cooperative and the profits from those downstream transactions are then returned to the members (Barton, 1989). In addition, cooperatives can offer members a sense of community and family, which cannot be represented on financial statements (Birchall & Simmons, 2004).

Cooperatives struggle to convey some of these benefits to agricultural producers, particularly the non-monetary benefits. Kenkel and Park (2011) found that cooperative leaders believe

communicating value to their members is the most important communication challenge. Some of this challenge is due to the complex value cooperatives offer. Much of the value that cooperatives offer is not visible on a financial statement and some of the value is not even material (Hueth & Reynolds, 2011). This paper identifies the value cooperatives portray through promotional efforts and how this value is being perceived by agricultural producers.

1.3 Objectives

This paper has four main objectives:

1) Identify how different types of cooperatives perceive and present their value to members and potential members.
2) Compare what agricultural producers want to what agricultural cooperatives *think* producers want.
3) Discover traits that would indicate who would likely join an agricultural cooperative.
4) Uncover how cooperatives can improve their communication efforts.

This paper contributes to the literature by providing a direct comparison of what agricultural producers value from an agricultural cooperative and what agricultural cooperatives think producers value. In addition, it also provides an assessment of how well agricultural cooperatives are communicating their value proposition. This idea is studied very little and the method of assessment used in this paper to compare the value portrayed and perceived has not been applied to agricultural cooperatives before. Finally, the probability of producers joining agricultural cooperatives has never been determined. The Logit model can determine which producers agricultural cooperatives should target their promotional efforts towards to gain more members. The results of this paper directly affect agricultural cooperatives by helping them better understand their relationship with their members. In turn, this paper will help agricultural cooperatives more effectively promote the value

they have to offer by being able to match their promotional efforts to what producers want more accurately. In addition, they will have the knowledge of why some producers are not members and how to better appeal to those producers. Using the Logit model, agricultural cooperatives can also more efficiently target potential members that are most likely to join. Agricultural cooperatives can better understand the effectiveness of their current promotional efforts. Ultimately, this paper has the potential to increase agricultural cooperatives' member retention and new member enrollment.

1.4 Organization

This paper is organized into seven chapters. Chapter two contains background information and a review of literature on types of cooperatives and the agricultural cooperative value package. Chapter three discusses sampling and methodology of the interviews conducted of cooperative employees and the surveys distributed to northwest agricultural producers. The analysis and interpretation of the interview and survey data is explained in chapter four and five, respectively. Chapter six describes the development of the Logit model. Lastly, conclusions and implications are included in chapter seven.

CHAPTER 2 BACKGROUND AND REVIEW OF LITERATURE

The review of current literature starts at the foundation of describing what cooperatives are and their defining characteristics. Cooperatives hold a strong presence in the United States, but that presence has been changing. This chapter reviews the changes in the number of cooperatives and memberships and the level of presence that cooperatives currently have in the United States. In order to understand why these changes are occurring, it is important to understand the cooperative governance system and how it compares to the governance system of similar organizations. In addition, this chapter explores how different types of cooperatives are classified. Classifying cooperatives by function is not a focus of this chapter; instead, classifying cooperatives by type, such as agricultural, consumer food, and credit cooperatives are given the most attention. The next section of this chapter consists of describing the agricultural cooperative value package. It describes the cooperative value from two perspectives: the value agricultural cooperatives are portraying to their members and potential members and the value that is being perceived by the members and potential members. The final section of this chapter explores the methods used in this study. It begins by explaining the grounded theory approach, which is followed by the perceived value scale, and then finally the Logit model. The information in this chapter is the foundation for analyzing what value cooperatives are portraying, how that value is being perceived, and what agricultural producers want from agricultural cooperatives.

2.1 Cooperatives

Cooperatives, in the last century, have been very successful and common in the United States. In 2011, the 2,285 farmer, rancher, and fishery cooperatives in the United States had the highest sales and income year for cooperatives on record (Ali, Penn, & Eversull, 2011). In general, cooperatives have

been growing in numbers and members more than most literature recognizes because most literature does not take into account all the different types of cooperatives (Novkovic, 2008).

2.1.1 What is a Cooperative?

A cooperative is a private business that is unique in that the members are also the owners and the customers. To be more specific, cooperatives can be distinguished from other forms of business in three ways: First, cooperatives implement the user-owner principle, which means that the people who own and finance cooperatives also patronize them. Second, cooperatives practice the user-control principle, meaning that that the cooperative is controlled by the people that use it. Third, cooperatives exercise the user-benefit principle. In other words, benefits, usually profits, generated by the cooperative are allocated to its users, depending on their degree of use (Barton, 1989; Dunn, 1988; USDA, 1991). These characteristics of cooperatives can be summarized by defining a cooperative as a "user-owned, user-controlled business from which benefits are derived and distributed equitably on a basis of use" (USDA, 1991, p. 1).

Like many other forms of business, cooperatives' primary goal is to make a profit while providing their members with benefits (Fulton M. , Cooperatives in Oligopolistic Industries: The Western Canadian Fertilizer Industry, 1989; Kyriakopoulos, Meulenber, & Nilson, 2004). They are able to meet their goals by actively attempting to increase profits, employing a pricing strategy, and distributing patronage.

In order to understand the cooperative governance system, it is necessary to understand the differences/similarities in methods of doing business between cooperatives and other types of business organizations. Cooperatives are corporations, which are entities that the law created. The owners either hold shares of common stock or, in the case cooperatives that do not have stock, the owners usually pay a membership fee (Schaars, 1971).

Table 2.1 outlines these differences/similarities between individual, partnership, investor-oriented, and cooperative businesses. It is noticeable from the table that cooperative members control and manage the cooperative, which is consistent with the definition of cooperative. Under an individual business (or sole proprietorship), the individual owner has complete control over policies and operations of the business. A partnership business follows the same pattern as an individual business; however, instead of one individual controlling the business, there are two or more owners.

Investor-oriented firms (IOF's) are very similar to cooperatives. However, instead of being owned by members, as are cooperatives, IOF's are owned by their stockholders. Similar to the members voting in cooperatives, the stockholders vote in IOFs. Cooperatives and IOFs vary in their customer base. Generally speaking, cooperatives' members make up majority of the customer base, while IOFs customers are vastly, if not completely, non-owner customers. Additionally, instead of voting by shares of common stock like IOFs cooperatives usually vote on a one-member-one-vote basis. Finally, the cooperative operating proceeds are distributed by a patronage, which is based on usage level in a cooperative while IOFs distribute their profits to their owners via dividends based on proportion of stock that is held (USDA, Cooperatives in Agribusiness, 2011).

Table 2.1: Methods of Doing Business under Private Enterprise
(Source: "Cooperative in Agribusiness", Cooperative Information Report 5, USDA, 2011)

Features	Type of Business			
	Individual	Partnership	Corporation	
			Investor- Oriented	Cooperative
Who uses the service?	Non-owner customers	Generally non-owner customers	Generally non-owner customers	Chiefly the owner patrons/members
Who owns the business?	The individual	The partners	Stockholders	Member-patrons
Who votes?	Not applicable	The partners	Commons stockholders	Member patrons
How is voting weighted?	Not applicable	Usually by partners' share in capital	By shares of common stock	Usually one-member one-vote
Who determines policies?	The individual	The partners	Commons stockholders and directors	Member-patrons and directors
Are returns on ownership capital limited?	No	No	No	Yes- 8% or less (usually less if any)
Who gets the operating proceeds?	The individual	The partners in proportion to ownership percentage	The stockholders in proportion to stock held	The patrons based on a patronage

The structure that cooperatives operate under is based upon the three defining principles of cooperatives: user-owner, user-control, and user-benefit. Only the members of a cooperative have ownership rights to that cooperative (Chaddad & Cook, 2004). In other words, the members of a cooperative own that cooperative's equity and equity transfers are prohibited (Barton, 1989; Kyriakopoulos, Meulenber, & Nilson, 2004). The cooperative equity is usually in the form of unallocated reserves, which is generally sizeable and built on member retained patronage refunds

(Kyriakopoulos, Meulenber, & Nilson, 2004). A patronage refund is a payment from the cooperative to the member that is distributed from net margins. The size of patronage is based upon how much a member uses a cooperative. This payment is not to be confused with a dividend, which is a distribution of funds to a shareholder that is based upon the member's investment/ownership in the organization (Frederick, 1993).

Cooperatives operate under democratic control. Members exercise their control by performing activities such as electing the board of directors or Farmers' Board, approving annual reports, acquiring/relinquishing a business (Kyriakopoulos, Meulenber, & Nilson, 2004), and electing to retain a certain amount of the patronage in the cooperative for financial stability (Frederick, 1993). Even though all cooperatives operate under democratic control, there are a few cooperatives that have adopted a different voting policy than the more widely-accepted one-member one-vote policy. Most cooperatives have adopted a one-member-one-vote policy; however some cooperatives distribute voting power that is based on individual members' patronages (Barton, 1989; Kyriakopoulos, Meulenber, & Nilson, 2004; Frederick, 1993). It is the job of the board of directors to make strategic decisions, which serve as the directions for the professional management team.

Members of agricultural cooperatives are not only concerned with the profits earned by the cooperative, but also the producer surplus of their farming operation. Producer surplus is what the producer actually receives for his goods minus what he was willing to receive to sell his goods. The optimal output to maximize the sum of these two factors is where the marginal cost equals the output price. However, some cooperatives are forced to set price equal to average cost instead because members are unable to distinguish between their patronage and the cost of the goods they bought from the cooperative. This occurs when members view their patronage as a discount on the price of raw materials. This results in an increase in demand for these raw materials, which leads to a greater

than optimal supply from the cooperative (Fulton M. , Cooperatives in Oligopolistic Industries: The Western Canadian Fertilizer Industry, 1989).

Some cooperatives, such as cooperatives supplying fertilizer, operate with their marginal cost curves and average cost curves being identical because their average cost is constant for a large range of production. For these select cooperatives, it does not matter if they use the average cost curve or marginal cost curve to maximize member welfare (Fulton M. , Cooperatives in Oligopolistic Industries: The Western Canadian Fertilizer Industry, 1989).

A pricing strategy is also used to maximize member benefits. This strategy depends on the type of cooperative. Marketing cooperatives want to charge their consumers the highest price for their goods and supply cooperatives strive to charge their members the lowest price for the raw materials. Pricing strategies can also vary within the functional type of cooperative. Cooperatives may range from equal pricing where per-unit cost is equal and is reflective of the average cost of the material to differential pricing where premiums or discounts may be included depending on volume, quality, location, etc. (Kyriakopoulos, Meulenber, & Nilson, 2004).

In addition to pricing advantages, benefits also include the distribution of net income to members. Net income is most commonly distributed as patronage refunds to its members (Barton, 1989). Patronage can also fall under the user-owner principle because the members only receive patronage because they are owners. However, for the purpose of this study, patronage is categorized under the user-benefit principle because it is assumed that is how most cooperatives member see it.

The cooperative structure described in this paper is based upon the traditional and non-traditional cooperative structures. Chaddad and Cook (2004) outline alternative cooperative models from the ownership perspective (Figure 2.1). First, they describe three non-traditional cooperative models: proportional investment cooperatives, member-investor cooperatives, and new generation cooperatives. Proportional investment cooperative structure is closest to the traditional cooperative

structure; however, it diverges in that proportional investment cooperatives expect their members to invest an amount into the cooperative that is proportional to their patronage that year. Traditional cooperatives do not require a proportional investment. Member investor cooperatives distribute the benefits to their members based upon member shareholdings and patronage. New generation cooperatives' ownership rights are non-redeemable and transferable, unlike traditional cooperatives where they are redeemable and are not transferable (Chaddad & Cook, 2004).

Like traditional cooperatives, these three non-traditional cooperatives reserve their ownership rights for their members only. There also exist cooperative types and entities that are very similar to cooperatives where the ownership rights are not restricted to members. These include cooperatives with capital seeking entities, investor-share cooperatives, and investor-oriented firms (Chaddad & Cook, 2004). The entities where ownership rights are not restricted to members are not included in this study.

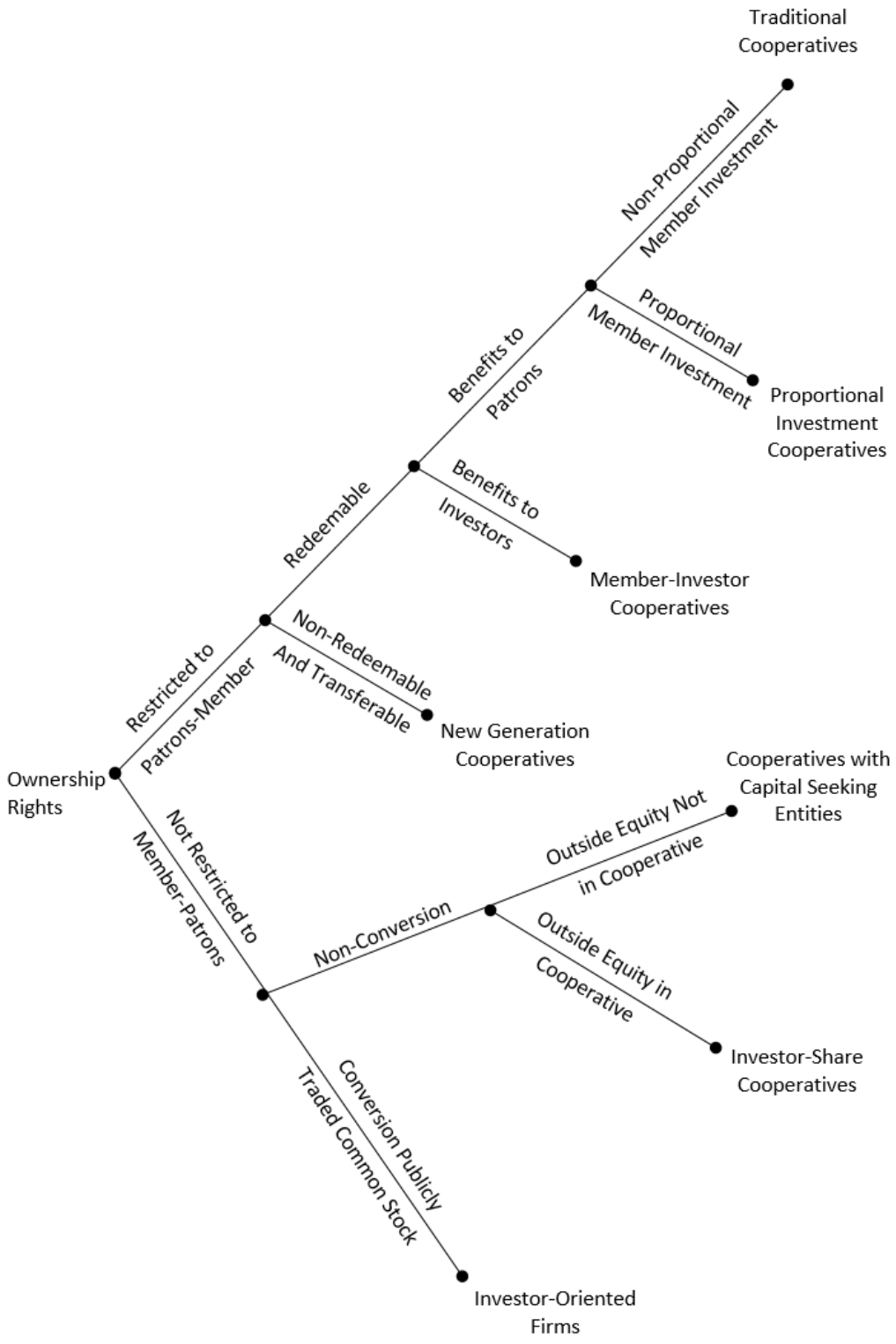

Figure 2.1 Alternative Cooperative Models: An Ownership Rights Perspective
(Source: Chaddad & Cook, 2004)

These non-traditional cooperative structures are becoming more prevalent in agricultural cooperatives as these cooperatives are faced with challenges such as globalization, free trade, industrialized agriculture (Fulton M. , Co-Operatives and Member Commitment, 1999), product differentiation (Borgen, 2011), an increase in vertical integration, and a greater concentration of one type of business in many sectors, for example pork packing (Fulton & Giannakas, ORGANIZATIONAL COMMITMENT IN A MIXED OLIGOPOLY: AGRICULTURAL COOPERATIVES AND INVESTOR-OWNED FIRMS, 2001). Even while cooperatives undergo these structural changes, member commitment continues to be a growing concern (Fulton M. , Co-Operatives and Member Commitment, 1999).

2.1.2 Cooperative Classification

Cooperatives can be classified by their functions as the following: marketing, supply (also called purchasing or input), service (Ali, Penn, & Eversull, 2011), and bargaining cooperatives (University of California Cooperative Extension, 2012; Williamson, 1987). Marketing cooperatives focus their efforts on processing and selling their members' products (Ali, Penn, & Eversull, 2011). Modern marketing cooperatives may perform the following operations but are not limited to them: canning, drying, blending, freezing, consumer packaging and marketing of animal products, fruit, nuts, and vegetable products. Marketing cooperatives may also bargain for a better price, quality and quantity of their members' products (USDA, 1991), and provide access to larger markets (The University of Wisonsin Center for Cooperatives, 2012). Cooperatives that fall under this category include many agriculture- related cooperatives.

Supply cooperatives, also called purchasing or input cooperatives, focus on selling production supplies to their members (Ali, Penn, & Eversull, 2011). Their objective is to save their members money through bulk purchasing, manufacturing, and distributing supplies more efficiently (USDA, 1991). Supply cooperatives can also provide their members with better availability, selection, and/or distribution of production supplies (The University of Wisonsin Center for Cooperatives, 2012).

Nowadays, many marketing cooperatives also perform the activities of supply cooperatives. (USDA, 1991). Consumer food cooperatives fall under this category.

Service cooperatives provide their members with specialized services to help run their operation. These services can include trucking, storing, harvesting, drying (Ali, Penn, & Eversull, 2011), agronomy, artificial breeding, and grazing (USDA, 1991). In addition, service cooperatives may provide their members with a source of credit offered at a reasonable rate and financial advice. Such cooperatives are called credit cooperatives. Marketing and supply cooperatives may also provide some of the cooperative functions that are often categorized under service cooperatives.

Bargaining cooperatives, also known as bargaining associations, negotiate with first handlers, such as processors, for better prices or terms of trade for their producer members (University of California Cooperative Extension, 2012). Depending on the product, bargaining cooperatives can reach price and terms of sale agreements that extend for a given period or season. They are unlike marketing cooperatives in that they do not handle the physical products of their members (Williamson, 1987).

Classifying cooperatives by function is a common way to group them and is used by multiple entities, including USDA. With that said, it is not the only way to classify cooperatives. Cooperatives can also be classified by the type of the cooperative. This other classification is more appropriate for understanding the value that cooperatives have to offer.

2.2 Types of Cooperatives

Understanding the functions of cooperatives is critical to understanding the value that cooperatives offer. Since many cooperatives have multiple functions, the functional classification of cooperatives is not used as a determining factor for which cooperatives to include in this study. However, researchers recognize the main functions and/or activities of each cooperative included in this study and identify any obvious correlations between function and results.

Instead of classifying cooperatives by function, researchers classify cooperatives by identifying the more common types of cooperatives in the United States. Researchers identified three common types of (voluntary) cooperatives: agricultural, consumer food, and credit cooperatives.

2.2.1 Credit Cooperatives

There are two types of credit cooperatives: credit unions and farm credit systems. Credit union members put their funds together and borrow from one another at a carefully selected interest rate (Hoyt, 1989). "A credit union, by law, must be an association of people who have a common bond" (Hoyt, 1989, p. 71). This common bond can be satisfied through living in the same geographic location, working for the same employer, or members of the same association (Matthews, 1966; Meehling, 1959). In other words, credit unions can be distinguished by two features: "its co-operative structure, with ownership and democratic control vested in a membership composed of individuals with some pre-existing bond of unity . . . and . . . its function of providing small loans for 'provident' purposes to its members at rates limited by statute, while encouraging thrift and educating its members in the wise management of their financial affairs" (Meehling, 1959, p. 93).

There are three types of credit unions: those that are chartered under federal law and are federally insured, those that are chartered under state law and are federally insured, and those that are charted under state law and privately insured (Kaushik & Lopez, 1994; National Credit Union Administration, n.d.). The federally insured credit unions operate under federal charter and are known as federal credit unions. Any credit union chartered under the state is called a credit union. Federal credit unions are regulated by the National Credit Union Administration (NCUA) and those credit unions that are federally insured are insured by the National Credit Union Share Insurance Fund (NCUSIF). The U.S. government backs the NCUSIF (National Credit Union Administration, n.d.).

These differences in charter and insurance agencies between credit unions barely affect members and many do not even notice the difference (Department of Insurance and Financial Services,

2014). This study centers on the value communication between cooperatives and their members, and because members are not impacted by the difference between types of cooperatives, this difference is not a concern in this study. Henceforth, both federal and state chartered credit unions are referred to as credit unions.

Credit unions have three main objectives. The most obvious objective is to provide their members with a source of credit at reasonable rates. Of equal importance, the second objective is to encourage thrift. Credit unions provide their members with a safe and convenient place to invest their savings by either purchasing shares or depositing their funds into a savings account. The third objective is to train their members in business. Members of cooperatives learn about managing their money and the value of cooperation (Froman, 1935; Shipe, 1943).

In the United States, credit unions are organized into three levels: Central Credit Union (national level), Corporate Credit Unions (regional level), and Credit Unions (local level). The following figure was first illustrated by the United States Department of Treasury in 1997 (Frame & Coelli, 2001). Figure 2.2 illustrates that there only exists members at the local level of credit unions of which the members can either accept loans from credit unions or deposit funds. The three levels of credit unions do business with each other only by depositing excess funds, upstream, or by liquidating loans or requiring transaction services downstream. All three levels of credit unions invest in the capital markets (Frame & Coelli, 2001).

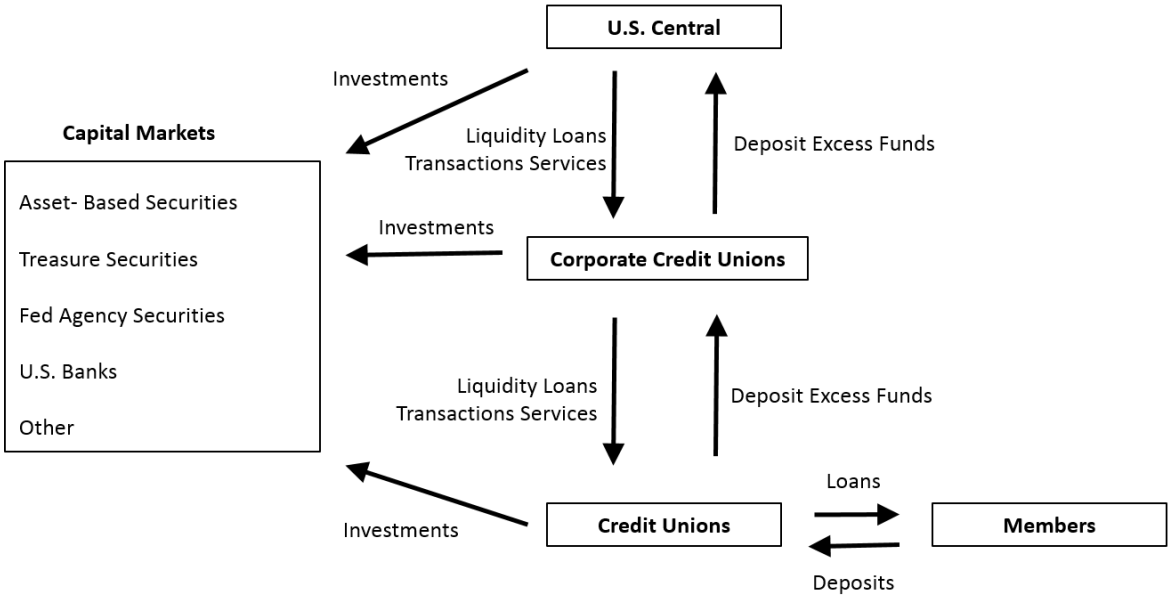

Figure 2.2 Structure of the United States Credit Union System
(Source: Frame & Coelli, 2001)

In 1986, credit unions were the largest and the most influential in terms of members (about 50 million), number of cooperatives (18,000), total assets (exceeding 100 billion), and industry penetration (acquired 15% of consumer loans in the United States) of all cooperatives in the United States (Hoyt, 1989). From 1985 to 2011 the depository institutional assets held by credit unions have almost doubled. In addition, the credit union average size has increased by 600% (after accounting for inflation). In 2011, credit unions had 93 million members, responsible for 10% of all United States savings deposits, and are responsible for 13.2% of all non-revolving loans (Whellock & Wilson, 2011).

The other type of credit cooperative is farm credit services. Farm credit systems (FCS) enable participants to collectively acquire funds from an investor. FCS is a government sponsored enterprise, developed by the Federal Farm Loan Act of 1916. The purpose of FCS is to overcome perceived market failure in the agricultural credit markets by providing farmers with reliable long-term funding and low interest rates that were determined with farmers' unique needs in mind (Jensen, 2000). In agriculture, this type of credit cooperative is by far more extensive than credit unions. In 1986, one third of all

agricultural credit was procured through farm credit systems and outstanding loans added up to almost $55 billion (Cropp & Gene, 1989).

Given the definition of FCS, this study does not include them. Within our defined groups of cooperatives, agricultural, consumer food, and credit, FCS falls in both the categories agricultural and credit cooperatives. Therefore, in order to have three distinct groups of cooperatives FCS is not included in this study.

2.2.2 Consumer Food Cooperatives

Consumer-owned food stores, henceforth called food cooperatives, offer their customers an assortment of products from lotions to hand-woven baskets, but their primary focus is on food. The foods that these cooperatives offer are centered around whole grains, organic, herbal, and homeopathic treatments (Rodrigues, 2010). The main difference between food cooperatives and the neighboring grocery store is that purchasing products from a food cooperative is an "investment in the local community and its farmers" (Rodrigues, 2010, p. 1292).

The price of being a member of a food cooperative can come in two forms: the purchase of membership shares or the payment of an annual membership fee. When members purchase additional shares it is seen as a contribution to the cooperative's equity. However, the payment of membership fees is seen as income if it is non-refundable (Deller, Hoyt, Hueth, & Sundaram-Stukel, 2009).

In return for memberships, food cooperatives often distribute their store's income to their members as allocated patronage or discounts. This allows food cooperatives to avoid paying income taxes on member-based income; however, they are still required to pay taxes on non-member-based income and any unallocated member-based income (Deller, Hoyt, Hueth, & Sundaram-Stukel, 2009).

Food cooperatives can either take the form of retail stores or pre-order buying clubs. Retail food cooperatives typically operate out of one store; however, some very successful retail consumer

food cooperatives have expanded into multiple stores. For example, Puget Natural Markets has nine locations. In addition, some food cooperatives have expanded into other forms of business, such as restaurants and delis (Deller, Hoyt, Hueth, & Sundaram-Stukel, 2009).

Retail food cooperatives are generally run by a general manager and a hierarchical team of employees. However, there are some cooperatives that are worker collectively managed, meaning they are co-managed instead of managed by a general manager. For example, People's Food Co-op is a 29-person collective and uses modified consensus to make decisions. After a nine-month probationary period, full-time employees are considered for collective membership pending application approval (Davis & Burge, 2008). Olympia Food Co-op collectively manages two stores (Olympia Food Co-op, 2005). Whether a retail food cooperative is managed under general management or is collectively managed, it still operates as a cooperative.

Pre-order buying clubs consist of a group of people that have come together to either pre-order a "market basket" for some set price or combine individual orders into a bulk order. Through both these means of pre-ordering, members can pick up their individual orders at a distribution point. The typical buying club usually has about 40 members (Herrmann, 1993). Larger buying clubs hire a manager or coordinator to help direct the orders and deliveries; however, many buying clubs operate purely by the labor provided by member volunteers.

Buying clubs allow their members to skip the middle man since they do not use normal retail distribution channels. Therefore, members of buying clubs can often save a large amount of money because there is no added cost of the retail distributor in the product price (Deller, Hoyt, Hueth, & Sundaram-Stukel, 2009). Even though buying clubs are formed to provide their members with purchasing advantages, many buying clubs only last a couple of years. Many of the families that initially started the buying club become financially better-off and their time begins to be devoted to other

activities (Herrmann, 1993). Since buying clubs are short lived and do not have a physical storefront they are not included in this study.

Food cooperatives' growth has been in waves since the 1850s. Their growth periods are often due to economic difficulties experienced by a large number of people that is followed by a growing interest in controlling their food sources. In addition, food cooperatives tend to increase during times of social and political disorder (Deller, Hoyt, Hueth, & Sundaram-Stukel, 2009). In the 1990s there was a significant decline in food cooperatives from changing social and political climate. However, from 1999 to 2009 food cooperatives increased from 300 to 350 stores in the United States from the growing interest by consumers in alternative markets (University of Wisconsin Center for Cooperatives, n.d.).

2.2.3 Agricultural Cooperatives

Agricultural cooperatives are a type of cooperative where farmers and ranchers work together in certain areas, such as marketing. These cooperatives are also known as farmers' cooperatives. There are two types of agricultural cooperatives: agricultural production cooperatives and agricultural service cooperatives. The latter cooperative type is where the cooperative provides various services, from supplies to marketing to service, to their individual members. In agricultural production cooperatives, farmers pool together their production resources, such as land and machinery, and farm jointly. Since few of these cooperative exist in the United States this study only addresses the agricultural service cooperatives (Smith, 2010). Henceforth, agricultural service cooperatives are referred to as agricultural cooperatives.

The USDA Rural Development's Cooperative Programs have developed four major criteria for identifying agricultural cooperatives:

1) "Membership is limited to persons producing agricultural and aquacultural products, and to associations of such producers;

2) Cooperative members are limited to one vote regardless of the amount of stock or membership capital owned; or the cooperative does not pay dividends on stock or membership capital in excess of 8 percent a year or legal rate in the State, whichever is higher;
3) Business conducted with non-members may not exceed the value of business conducted with members; and
4) The cooperative operates for the mutual interest of members by providing member benefits on the basis of patronage" (Ali, Penn, & Eversull, 2011, p. 1).

In the United States and Canada, agricultural cooperatives have emerged and fallen in waves. In the early 1900s, agricultural cooperatives were in their infancy stage but were growing steadily because of the oligopolistic practices of suppliers, handlers, and processors. This was the first wave of cooperatives. The second wave occurred thirty or forty years later when producers had a demand for services that was not being met by investor-owned firms. The latest and third wave of cooperatives is driven by the younger generation of producers that are attempting to overcome the challenges of niche and deregulated markets. The third wave represents the emergence of the New Generation Cooperatives (Fulton M. , New Generation Co-operatives, 2000).

In the 1990s about 200 value-added processing and closed membership cooperatives emerged (Fulton M. , New Generation Co-operatives, 2000). These cooperatives are called New Generation Cooperatives, also known as "new wave" or value-added cooperatives. New Generation Cooperatives have two distinguishing features: (1) membership shares are directly connected to tradable "delivery rights". When a member purchases a cooperative share, they have the right and obligation to sell the cooperative an agreed upon quantity of product. (2) The cooperatives have a limited or closed membership. The cooperative limits the number of members and/or quantity product through the distribution of delivery rights (Harris, Stefanson, & Fulton, 1996; Zeuli, Cropp, & Schaars, 2004).

Agricultural cooperatives have played a key role in the growth of the United States agricultural sector and that role has only increased in the last century (Sexton & Iskow, 1988). In 2011, agricultural cooperatives provided 131,000 people full-time employment (Ali, Penn, & Eversull, 2011) while there are 131,159,000 United States employees on non-farm payrolls (Bureau of Labor Satistics, 2012). Agricultural cooperatives had 2.3 million members and recorded $28 billion in equity and $78 billion in assets (Ali, Penn, & Eversull, 2011).

Even though cooperatives play such an important role in the United States agricultural sector, the number of farmer-owned cooperatives declined from 2002 to 2011 (Ali, Penn, & Eversull, 2011) even though the number of farms and the average farm size leveled off in the early 1970s at about 2.1 million and 400 acres, respectively (USDA, 2014). In addition, the number of total members in agricultural cooperatives continuously declined from 1979 when there were about 5.5 million memberships to only about 2.3 million memberships in 2011. The number of memberships has long exceeded the number of farms, due to ranchers and farmers being members of more than one cooperative; however, today the number of farms and number of memberships are almost equal (Ali, Penn, & Eversull, 2011).

2.3 The Agricultural Cooperative Value Package

Many studies discovered that members are an essential key for the success of agricultural cooperatives (Bhuyan, 2007; The Co-operative Commission, 2001; Fulton & Adamowicz, 1993), where success is defined as being profitable in the long-term. Wadsworth (2001, pg. 19) goes even further, saying members are the only ones that can keep the "co-op spirit alive and kicking". Members are the owners, users, and benefiters of cooperatives, therefore, a cooperative with few members, risks shutting down from the lack of business and therefore, lack of profit. "In short, member commitment is a sort of glue that allows membership and business volume to be maintained even as trade becomes

more fluid and barriers to reorganization are broken down" (Fulton M. , Co-Operatives and Member Commitment, 1999, p. 2).

Agricultural cooperatives members are offered a unique value package by the cooperatives. These benefits include access to the market place, greater market power and/or financial return for their members (Kenkel & Park, 2011). In other words, members are able to purchase and/or sell to a cooperative and cooperative profits from those transactions, are returned to the users (Barton, 1989). In addition, cooperatives can offer members a sense of community and family, which cannot be represented on financial statements (Birchall & Simmons, 2004).

2.3.1 Cooperative Value Portrayal

Agricultural cooperatives struggle to convey some of these benefits, particularly the non-monetary benefits, to producers. Kenkel and Park (2011) found that agricultural cooperative leaders believe communicating value to their members is the most important communication challenge. The unique cooperative structure deserves credit for this challenge. Agricultural cooperatives have difficulty communicating value because of the complex package they offer. Much of the value that agricultural cooperatives offer is not visible on a financial statement and some of the value is not even material (Hueth & Reynolds, 2011). For example, the sense of a community that cooperatives offer does not show up on financial statements. This paper attempts to identify the value that agricultural cooperatives portray to members and potential members.

Agricultural cooperatives should recognize what agricultural producers want from an agricultural cooperative and let it guide their promotional efforts. For example, members highly value participation in the democratic governance system of cooperatives (Osterber & Nilsson, 2009). On the other hand, agricultural cooperative leaders believe quality services are very important to their members (Wadsworth, 2001). There are many studies of agricultural producer attitudes and perceptions of cooperatives but what agricultural producers perceive has never been directly

compared to how the agricultural cooperative leaders think their producers see them. This study makes that comparison.

2.3.2 Member Perceptions and Attitudes

When it comes to membership, the single most important and significant predictor is the agricultural producers' attitude or perception of cooperatives (Dakurah, Goddard, & Osuteye, 2005). There are many studies that uncover how members perceive cooperatives. A study conducted in Iowa on cooperative fertilizer dealers found that 76 percent of farmers saw cooperatives favorably and only five percent actually saw them unfavorably. These attitudes appeared to be dependent on how the agricultural producers were raised (attitudes were passed down through generations) and the value of their products. The higher the value of products, the more positive attitude the agricultural producers felt towards cooperatives (Gensch, 1983). Another study in Wisconsin found that dairy producers are more married to the cooperative idea or model rather than to a specific single cooperative (Zeuli & Bentancor, 2005).

There are also many studies that look into the factors that affect member satisfaction or favorability of their cooperatives. Kalogeras, J.M.E. et al. (2004), through previous literature and Dutch horticulture cooperative member focus groups, discovered six utility driving attributes of marketing cooperatives. These include: business issue/scope, corporate governance, product-related decision making, financial structure, members' benefits, and product quality. Kalogeras, J.M.E. et al. (2004) conducted a large scale survey where they asked a Dutch horticulture marketing cooperative members to grade the importance of the attributes listed above. Business issue/scope and product quality are most important to members with a relative importance of 21.4% and 18.7% respectively. Both of these attributes are part of the marketing cooperative's strategic behavior. A close third is product-related decision making with 17.2% relative importance. The other internal structure attributes, financial structure, members' benefits, and corporate governance all rate lower with 14.9%, 14.8%, and 13%

relative importance respectively. Therefore, Kalogeras, J.M.E. et al. (2004), found that members think that strategic attributes such as business issue/scope and product quality strategy are most important.

The results of a survey distributed in 1991 to active members of the Alberta Wheat Pool revealed that the producers who are more likely to patronize Alberta Wheat Pool are those that put a greater importance on dividend allocation ability, availability of other agro-services, and have a larger percentage of their income coming from their grain operation. Some of the variables included in their analysis are operator age, percentage of income from grain operation, dividend importance, agro-service availability importance, competitive grain pricing importance, cooperative representing views on farm matters importance, and company being active in the community importance (Fulton & Adamowicz, 1993).

A study on African cashew producers found that "farmers committing to membership believe in the bargaining power of the cooperative, prefer patronage refunds, do not prefer trade credit, are small holder farmers, and have some psycho-sociological reasons to join the cooperatives." (Mensah, Karatininis, Adegbidi, & Okello, 2012, p. 23). There were no conclusive findings linking cooperative membership to agricultural producer age. In addition, there was no conclusive evidence of the delivery of agricultural producer products being correlated with the profitability of the producers' operations and their satisfactions with cooperatives.

Numerous studies also look into what causes members to be dissatisfied with cooperatives and ultimately leave them. Bhuyan (2007) found that members who share a marketing agreement with their cooperative are much more likely to become dissatisfied with their cooperative than those without an agreement. Bhuyan believes that this is most likely the case because of the lack of flexibility of a marketing agreement. However, a study in Africa found that contracts should exist to ensure that both parties meet expectations and benefit (Mensah, Karatininis, Adegbidi, & Okello, 2012).

Members are also more likely to leave their cooperative if they feel that their input is not counted in making management decisions (Bhuyan, 2007). Members may feel that their input is undervalued because of the problem of asymmetric information associated with member control. The input that members give the cooperative board and management is built upon imperfect information. This also results in difficulties for the members to assess board and management decisions. This problem increases with the cooperative size. As more members join a cooperative, a member's individual voice gets drowned out. In addition, as the larger cooperatives expand their activities, particularly into the international market and vertical integration, members are unable to understand the complete picture of the cooperative (Osterber & Nilsson, 2009).

Even though agricultural cooperative member perceptions and wants in a specific industry are examined somewhat extensively in literature, there is little literature studying what differentiates the members from the potential members (Fulton M. , Co-Operatives and Member Commitment, 1999). In addition, literature does not explore the agriculture industry perceptions and wants of cooperatives as a whole. This paper not only looks at members' perceptions and wants of agricultural cooperatives across industries but also that of potential members. Do the potential members have a common attribute that is significant in their decision to not be member of an agricultural cooperative? Are potential members looking for a certain characteristics of an organization that agricultural cooperatives do not fulfill? Or are potential members just unaware of the value that agricultural cooperatives have to offer? In addition, are there any patterns of member and potential member perceptions and wants across agricultural industries? This paper attempts to answer these questions.

Cooperatives' success is not only linked to the number of members but also the participation level of its memberships. Achieving the 'cooperative advantage' is heavily dependent on member participation (Birchall & Simmons, 2004). The Co-operative Commission (2001, p.41) stated that

"Successful Co-operative businesses require . . . the participation of an active, informed, and representative elected membership."

There are many ways members can get involved with their cooperative. One way is to simply give the cooperative their business. Another way rotates around one of the three cooperative principles, user-control. Members can take part in controlling the cooperative, mainly by voting for the board of directors or serving as a director on the board (Osterber & Nilsson, 2009). Members can also participate in the governance of the cooperative during the cooperative's annual meeting (Barraud-Didier, Henninger, & Akremi, 2012).

Often, members will have little involvement with their cooperative. The same study mentioned early concerning fertilizer cooperatives in Iowa, found that 88 percent of the agricultural producers surveyed said they were a member of at least one supply cooperative. However, only 16 percent said that they were active members and 37 percent said that they participated very little with their cooperative. In addition, 30 percent of the agricultural producers surveyed said they purchased all their fertilizer from a cooperative and 20 percent said they did not purchase any fertilizer from cooperatives (Gensch, 1983).

The lack of member involvement has raised questions about incentives and other methods to increase member participation. Members of a large UK consumer co-operative value collectivistic incentives, such as a strong sense of community and shared goals and values, most as incentives to participate in their cooperative,. However individual benefits, such as sense of achievement and enjoyment from learning and participating in cooperatives are also important. Even though membership participation is a growing issue, it is still under researched (Birchall & Simmons, 2004).

The research described in this literature review lays the foundation for this study to accomplish the objectives outlined above. This literature has provided researchers with a better understanding of defining characteristics of cooperatives, especially characteristics regarding member benefits. This

greater understanding allows researchers to segment the cooperatives into three different types: credit unions, food cooperatives, and agricultural cooperatives. As researchers study the differences and similarities between these three types of cooperatives they are better able to tailor their study of cooperative value to each type. In addition, researchers now understand the high level of importance that members and their involvement has to the existence of agricultural cooperatives. The literature research on the agricultural cooperative value package also provides researchers with the knowledge to explore in greater depth how that value package is being portrayed by agricultural cooperatives and how it is being perceived by members and potential members. Using this knowledge as groundwork, researchers are able to employ qualitative and quantitative research methods to accomplish the objectives of this study.

2.4 Methods Used

Researchers use a couple of different methods of analysis to achieve the four objectives of the study outlined above. Researchers use some features of the grounded theory approach when conducting cooperative employee interviews to develop a theory as to why some potential members have chosen not to become members. In addition, researchers also use an adapted perceived value scale to help uncover what cooperative members and potential members value through interview and survey questions. Finally, researchers use a Logit model to determine what characteristics of agricultural producers significantly affect whether they are a member of an agricultural cooperative.

2.4.1 Grounded Theory Approach

Kathy Charmaz (2006, p.2), who has been called the mother of grounded theory, states that the grounded theory approach "consist[s] of systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories 'grounded' in the data themselves." It is a way to view data in a new light and organize the data to generate a theory (Charmaz, 2006; Engward, 2013). In

other words, the grounded theory approach is used in qualitative research to generate an explanation or theory to an action or process demonstrated from a large number of individuals (Creswell, 2012; Engward, 2013). This approach is designed to provide theories or explanations that will optimally and sustainably affect social and organizational systems (Simmons, 2006).

In this study, researchers use the grounded theory approach to help construct a theory explaining why some potential members of credit unions, food, and agricultural cooperatives are not members. However, unlike grounded theory, researchers were unable to continue interviewing until the cost of interviews was greater than the gain as grounded theory dictates due to time and funds constraints. However, researchers are still able to construct a theory as to why so many potential members of cooperatives are not yet members.

2.4.2 Perceived Value Scale

Research on willingness to pay, or in this study's case willingness to become a member, has diverged into two main branches: consumers buy products that offer them the greatest perceived value (Chang & Wildt, 1994; Zeithaml, 1988) and consumers buy products that offer them the least amount of perceived risk (Bettman, 1973; Cox & Rich, 1964; Roselius, 1971). This study centers around the value perceived branch of the consumer purchasing decision because this study focuses on how value is portrayed by cooperatives and perceived by agricultural producers.

Product value is most commonly defined as the ratio between quality and price (Sweeney & Soutar, 2001; Sweeney, Soutar, & Johnson, 1999). Zeithaml (pg. 14, 1988) defines consumer perceived value as the "consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given". To measure consumer perceived value, a scale was developed by Sweeney and Soutar (2001). The scale was developed using data collected from Australian university students and was tested extensively for validation (Sweeney & Soutar, 2001; Walsh & et al., 2013).

The Consumer Perceived Value Scale (PERVAL) consists of four dimensions: quality, price, emotional, and social value. The quality value is scored according to the utility that is derived from the expected quality of the product and how the consumer expects the product to perform. The price value is the utility that is created by a decline in the expected costs of the product in the short and long term. The emotional value is the utility that is generated from the feelings that are caused by the product. Lastly, the social value is the utility derived by the ability of the product to improve a consumers' social self-content (Sweeney & Soutar, 2001).

The scale was originally developed as a 19-item scale. Each dimension contains at least four items. For example, the quality dimension contains items such as "is well made" and "would perform consistently" and the social dimension contains items such as "would help me to feel acceptable" and "would give its owner social approval" (Sweeney & Soutar, 2001, p. 212).

Walsh et al. (2012) proposed two shorter PERVAL scales that were based upon the items Sweeney & Soutar (2001) developed but the number of items decreased to 12 items and then to eight items. There are three sets of criteria when selecting to use the 12-item and 8-item scale: internal, external, and judgmental (Walsh & et al., 2013). "Internal criteria relate to internal consistency and dimensionality of a construct, external criteria refer to criterion-related validity, and judgmental criteria involve assessments of content validity and ease of use." (Walsh & et al., 2013, p. 2).

PERVAL is used in this study to determine how producers perceive the value that cooperatives offer. This tool provides a solid foundation and structure when exploring member and potential member perceived value. PERVAL is used to determine which of the four dimensions (quality, emotional, price, and social) is perceived with the highest praise and which dimensions are inaccurately being perceived by producers.

Researchers adapted the four dimensions of PERVAL and used quality, price, and relationship to obtain an understanding of perceived value of cooperatives. The emotional and social aspects were

replaced with relationship because relationship more accurately fits what agricultural cooperatives are trying to offer. Researchers believe that members are receiving some form of social and emotional values from agricultural cooperatives; however, these two values could be combined into a word that is better understood by cooperative employees and agricultural producers: relationship. Agricultural cooperative members often develop relationships with their cooperative and/or its employees, particularly agronomists, and it is important to give credit to those relationships. In addition, being a member of a cooperative can be a long-term asset or deliver a long-term value to its members and the term "relationship" recognizes that long-term value. Therefore, price, quality, and relationship constructs were used instead of the original four constructs.

2.4.3 Logit Model

Probit and Logit models are types of linear regressions that are used "for understanding and prediction of human choice behavior" (Kamakura, 1989, p. 253). In the family of generalized linear models, they are the two most widely used methods to estimate the relationship between two alternatives or choices (Hahn & Soyer, 2005; Hausman & Wise, 1978). For Logit and Probit models there is generally a binary outcome. For example, outcomes can include but are not limited to yes/no, success/failure, heart attack/no heart attack, and in/out of the labor force. The values of zero and one are given to the two outcomes, so y=0 or y=1. This can also be shown by the following equation (Equation 2.1) where y^* is the tendency that y=1 (Moore, 2013):

$$y^* = \alpha + \beta x + e$$

$$y_i = \{\frac{1 \; if \; y_i^* > \tau}{0 \; if \; y_i^* \leq \tau} \text{ Where } \tau \text{ is the threshold}$$

Equation 2.1 Modeling a Binary Outcome

Since y^* cannot be observed, the distribution of the error terms is unknown. Therefore, assumptions are made so the maximum likelihood estimation can be used. In the assumptions of the

error terms lies the first difference between Logit and Probit models. The Logit model assumes a standard logistic distribution of the errors with mean of zero, variance of $\frac{\pi^2}{3}$, and a cumulative distribution function of $\lambda(\varepsilon) = \frac{e^{\varepsilon}}{(1+e^{\varepsilon})^2}$. A Probit model assumes a standard normal distribution of the errors with a mean of zero, variance of one, and a cumulative distribution function of $\phi(\varepsilon) = \frac{1}{\sqrt{2\pi}} e^{\frac{\varepsilon^2}{2}}$ (Figure 2.3) (Park, 2009).

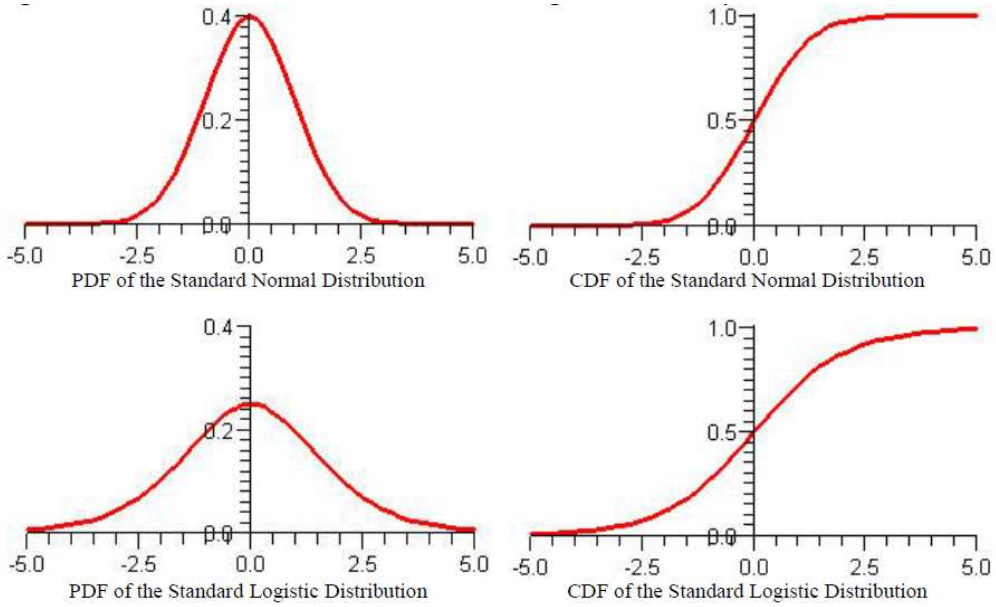

Figure 2.3 The Standard Logistic and Standard Normal Probability Distributions
(Source: Park, 2009)

$$ln\left(\frac{p_i}{1-p_i}\right) = \sum_{k=0}^{k=n} \beta_k x_{ik}$$

Equation 2.2 Logit Model

$$\varphi^{-1}(p_i) = \sum_{k=0}^{k=n} \beta_k x_{ik}$$

Equation 2.3 Probit Model

Equation 2.2 and Equation 2.3, above, are the general Logit and Probit models (Moore, 2013). In the above equations, p_i represents the probability of an event occurring, β_k represents the

coefficient in front of the input variable, x_{ik}. The Logit model determines the probability of an event occurring by equating the natural log of the probability of the event occurring divided by the probability of the event not occurring and the linear function of independent variables. The Probit model determines the probability by multiplying φ by the linear equation of independent variables.

The Logit model is more widely applied than the Probit model due to the existence of simple estimation procedures of the Logit model such as XLOGIT, NMLOGIT, and QUAIL. The Probit model has been called a "computational burden" (Keane, 1992, p. 193) and the model with "difficulties in model calibration" (Kamakura, 1989, p. 253). Based upon residuals, the Logit is a better model for large sample sizes (greater than 500 cases) and the Probit model is better for smaller samples sizes (between 40 and 200 cases) (Cakmakyapan & Goktas, 2013). Yet, in statistical theory there is no basis for choosing one of the other (Texas A&M University, n.d.). Often times, preference towards one model or the other is dictated by discipline (Moore, 2013). For this study, researchers chose the Logit model in the analysis because there is no reason to assume that the error terms are normally distributed and the Logit model is more widely applied than the other models (Kamakura, 1989).

The use of the Logit model in this study allows for the discovery of the independent variables that are significant in determining whether an agricultural producer is a member of an agricultural cooperative. Through a Logit model, researchers discover the factors that have the greatest significance when it comes to an agricultural producer being a member of an agricultural cooperative.

CHAPTER 3 SAMPLING PROCEDURES AND METHODOLOGY

In order to achieve the four objectives of this study, researchers gathered data from cooperative employees and agricultural producers. The first phase of this study consists of interviewing employees of agricultural and food cooperatives and credit unions. This allows researchers to determine what value cooperatives are portraying and how they are portraying it to their members and potential members. The second phase of this study consists of surveying agricultural producers. Researchers are able to compare what agricultural producers want and perceive to what is being portrayed. In addition, researchers construct a Logit model on the probability of an agricultural producer being a member of an agricultural cooperative.

This chapter discusses the sampling procedures and sampling results for the interview and survey phase of this research. The interview sampling procedures includes the qualifications and preferences of the sample, cooperative contact, and the modifications made throughout the interview process. The interview sample contains a description of how the data was collected and an outline of the interview questions. The survey section describes the qualifications and source of survey participants, the development of the survey questions, and the surveying process.

3.1 Interview Sampling Procedures

The purpose of the interview phase is to determine the value cooperatives offer and how they present that value. The interviews allow the researchers to compare and contrast the value cooperatives offer and how it is offered between types of cooperatives. In addition, the interviews make it possible to identify any value differences within types of cooperatives. Also, they allow the researchers to discover any divergence between the value portrayed to consumers and the value offered. Finally, the interviews lay the ground work for the survey questions.

The three types of cooperatives selected to participate in the interview process include agricultural cooperatives, credit unions, and food cooperatives. These cooperatives were chosen for their wide range of services, as well as their voluntary member participation. Five to six cooperatives from each type were chosen to participate in the interviews; due to the nature and intended use of this stage's results, it was time and cost effective to limit the number of interviews. The list of potential cooperatives within each of the three types came from multiple web-based sources.

3.1.1 Sampling Qualifications and Preferences

The participating cooperatives were chosen using the purposive sampling technique. Purposive sampling, also known as judgment sampling, is a form of non-profitability sampling where the chosen sample units are those that are chosen by researchers because they are believed to be the most useful to the study (Babbi, 2013; Tongco, 2007). The cooperatives chosen to participate in this study were purposely selected with two main considerations in mind: expand geographic reach across the Northwest and diversify size of the cooperatives within each type. In addition, agricultural cooperatives were purposely selected to diversify the products offered by each cooperative.

The first consideration when selecting cooperatives was the geographical reach across the Northwest. The cooperatives selected were chosen in order to stretch into the largest geographic area across the Northwest. The three geographic regions initially chosen included: Northern Idaho, Southern Idaho, and Central Washington, yielding a broad region with diverse cultures.

The second consideration when selecting cooperatives was the diversification of size within each type of cooperative. For selecting agricultural cooperatives and food cooperatives, size was defined by the number of members and sales volume. Ideally, the researchers would have had the size distribution of their sample represent the population. However, there was not enough information regarding membership numbers or sales for the population of agricultural and food cooperatives to accurately determine the distributions of size based on memberships or sales. Therefore, the

researchers attempted to include agricultural cooperatives from a large range of size, according to membership and sales, in their sample.

For credit unions, the size was determined by the number of members and the asset size. In addition, it was found from a list of credit unions that the high majority of credit unions in Idaho, Washington, and Oregon have between one and 10,000 members. In addition, within that range, a high majority of those credit unions have between one and 2,000 members for all three states. In regards to asset size, most credit unions in Washington, Idaho, and Oregon have between one and $100,000,000 in assets (CUDATA, 2014). Therefore, in order to represent the credit union population accurately in the sample, the majority of the credit unions chosen to participate in the interviewing process were between one and 10,000 members and one and $100,000,000 in assets.

The researchers' last consideration regarding product diversification only concerned agricultural cooperatives. When selecting agricultural cooperatives to participate in the interview phase, researchers considered the type of product/service. They attempted to sample agricultural cooperatives with a range in products from crops to animal products to purely retail outlet. The researchers were not concerned with diversifying by function performed, meaning marketing, supply, service, and bargaining cooperatives, because many cooperatives perform a combination of functions, particularly a combination of supply and marketing functions (National Agricultural Law Center, 2014).

3.1.2 Contacting Cooperatives for Participation

Once the researchers chose the most diverse and appropriate cooperatives within each type of cooperative to participate in the study, the researchers contacted the general managers of these cooperatives via phone. The researchers gave a brief description of the study to the cooperative employees so they could better understand why researchers were asking certain questions and why researchers needed their participation. The researcher also explained that three to four employees from the cooperative would need be interviewed in order to gain a more accurate perspective of what

value is portrayed and how it is communicated. Finally, the researchers described the expected duration of the interviews and asked for their participation. The general dialogue on the side of the researchers can be found in Appendix A.

After cooperatives agreed to participate, the researchers asked them to either contact the other participating employees in their cooperative or provide the researchers with the contact information. The researchers then scheduled a time and place to meet during that phone call or contacted the general manager a week later after he/she has had time to discuss a time with his/her employees. They contacted most cooperatives again a day before the scheduled interviews to remind them where and when the interviews would take place. At the time of the meeting, the researchers asked participants to sign a consent form (see Appendix B).

3.1.3 Sampling Modifications

While attempting to find food cooperatives that were willing to participate, the researchers soon realized that there were not enough food cooperatives to meet their quotas in their desired areas. This was mostly due to the lack of food cooperatives still in operation, particularly the lack of their existence in Central Washington. Initially, the researchers did not plan on interviewing cooperatives in Northwest Washington (Seattle area) in order to save funds and time; however, because of the fewer than desired number of food cooperatives in the researchers' initial sample, the researchers expanded the sample area to Northwest Washington.

In addition, the researchers found difficulty in obtaining the participation of small credit unions, credit unions that have between one and 2,000 members. This was due to the small number of staff working in these credit unions. Most of the credit unions that have fewer than 2,000 members that the researchers contacted declined participation because they were unable to spare the little manpower they had. Because of this hardship, the researchers contacted larger credit unions and were unable to include any credit unions that have fewer than 2,000 members in the sample.

3.2 The Interview Sample

The following sections outline how researchers collected the data from the cooperative employees and the characteristics of the cooperatives and employees interviewed. In addition, researchers also describe the interview questions and why they were chosen. Researchers explain why some interview questions were different depending on if the interviewed cooperative was a food cooperative, credit union, or an agricultural cooperative.

3.2.1 Data Collection

The researchers conducted face-to-face interviews from June to August 2014. The researchers interviewed two to four employees from different levels of management from each cooperative. They audio recorded each interview, with participant permission, and interviews lasted an average of 45 minutes. The researchers transcribed the interviews and developed qualitative and quantitative summaries of their findings.

3.2.2 Interview Questions

Interview questions were developed with four sections: cooperative information, cooperative membership information, cooperative value, and interviewee information. The questions in the cooperative information section were developed to gather a general description of the cooperatives being interviewed. Questions included their mission statement, product(s), and perception of their cooperative size. The cooperative membership questions were developed to understand the cooperative's membership field. Questions included member penetration, share of wallet, reasons why members join/stay, and why potential members do not join. The questions in the cooperative value section were constructed in order to understand what cooperative employees think their members and potential members value from their cooperative. For example, participants were asked to distribute 100 points between the three cooperative principles (ownership, control, benefit) as their

members and potential members would. In addition, the same question was asked for the adapted PERVAL factors (price, quality, and relationship). The interviewee information questions were developed in order to further understand the interviewees and their background. Participants were asked how long they have been working in that cooperative, where they have worked in the past, and their position title. Each section of interview questions had its own individual purpose, but come together to provide researchers an understanding of cooperative employee perceptions of how their members and potential members value cooperatives.

The interview questions were developed with the understanding that they would most likely change throughout the interview phase in order to improve them and allow for adaptability. The questions were initially developed to keep them consistent across cooperative types. However, throughout the interview phase the researchers realized that the questions needed more variability between cooperative types because the relevance of individual questions was different across the types of cooperatives. For example, researchers asked agricultural and food cooperatives to put themselves on a size scale in regards to sales; however, credit unions were asked the same question but in regards to assets since their size is more appropriately measured in assets.

Researchers also changed the cooperative value section questions after the first few interviews to allow for more quantitative results. Initially, the questions were more qualitative and researchers were unable to truly understand what employees thought their members and potential members valued from the cooperative. Researchers changed this section using the cooperative value principles and PERVAL as a guide. The researchers asked the interview participants to distribute 100 points between ownership, control, and benefit according to how they think their members and potential members would distribute them. They adapted the PERVAL scale from four dimensions (quality, price, emotional, and social value) (Sweeney & Soutar, 2001), to three dimensions (quality, price, and relationship). The researchers thought that a relationship dimension was more applicable

than emotional and social because much of the value that cooperatives offer is trust and knowledge. One prime example of this exists in the relationship between cooperative agronomists and farmers. The researchers defined the price, quality, and relationship as dimensions under the benefit umbrella of the cooperative principles. This allowed for easier understanding by the interviewee participants. The final set of interview questions for agricultural cooperatives, food cooperatives, and credit unions can be found in Appendix C, Appendix D, and Appendix E, respectively.

3.3 Survey Sampling Procedures

There were three main objectives to conducting the agricultural producer surveys: (1) Determine how agricultural producers perceive the agricultural cooperative value, (2) Identify any divergence between what agricultural producers' want and what cooperatives offer, and (3) Develop a Logit model that identifies factors of predictability, and their level of importance, for agricultural producers being a member of an agricultural cooperative.

3.3.1 Sampling Qualifications and Sample Source

For the survey, researchers targeted active agricultural producers that live in Washington, Oregon, and/or Idaho. The location qualification allows for a more direct comparison between northwest agricultural cooperative employee views of member and potential member perceptions to actual northwest member and potential member perceptions. The list of participants and contacts were purchased through the agri-marketing solutions company, Farm Market iD. "Farm Market ID harvests the most reliable and richest data, providing the deepest solutions for the U.S. agriculture industry." (Farm Market iD, 2015).

3.4 Survey Sample

The following sections regarding the survey sample follow the same outline as the interview sample section above. Researchers first discuss how the survey was administered and dates of

deployment. Then researchers discuss the reasons behind the development of individual survey questions.

3.4.1 Data Collection

This section outlines how researchers chose to distribute the survey and companies used to construct and distribute the survey. In addition, the section details when the survey was deployed and number of responses for each deployment. The researchers deployed the survey on three occasions. For the first two deployments researchers developed and deployed the survey using SurveyMonkey, a web-based survey solutions too, and the last deployment researchers used Qualtrics. The number of responses is not desirable; however, there are enough responses to perform a reliable analysis.

Before even developing the survey, the researchers compared distributing the using email, postal mail, or phone. It was determined that distributing the survey via email was cheaper than distribution by postal mail or phone because of the saved postage, paper, and time. Email also allowed the researchers to contact more agricultural producers. In addition, technologies, and with it communication methods, have rapidly been changing. A study surveying Midwest soybean growers found that the growers are quickly adopting computers, high-speed internet, and smart phones (Davis & Conley, 2011). Therefore, the researchers distributed the survey via email.

To create the agricultural producer survey online, the researchers initially used the web-based survey solutions company SurveyMonkey. SurveyMonkey provides their customers with the tools needed to construct an effective online survey with over 10 years of experience improving survey methodology and constructing web-based tools to use for surveys (SurveyMonkey, 2009).

Farm Market iD sent agricultural producer an email announcing this study on February 21st at 7:01am PST. This message outlined who was conducting the study and its purpose. The email also gave the recipients an opportunity to opt out of the study by actively clicking on a link. If no action

was taken then the agricultural producers received a second email with the actual link to participate in the survey. This initial announcement email message can be found in Appendix F.

Farm Market iD sent out a second email to the agricultural producers on March 2nd, 2015 at 1:59pm PST with a short description of the project and an individualized link (found in Appendix G). This individualized link is unique for each agricultural producer, allowing the researchers to identify the agricultural producers that completed the survey. The researchers received 25 (0.4%) survey responses out of 6,935 emails that were sent out. Of these responses, 21 were complete and four were incomplete. Almost 2% of the emails sent were undeliverable and just over 7% unsubscribed or said "stop". This led to a low response rate of 0.3%. This response rate and the following response rates in this study were calculate by the following equation:

$$Response\ Rate = \frac{C + P}{(C + P) + (R + NC + O) + (UH + UO)}$$

$$Where\ C = Completes$$
$$P = Partials$$
$$R = Refusals$$
$$NC = Non\ Contact$$
$$O = Other$$
$$UH = Unknown\ Household$$
$$UO = Uknown\ Other$$

Equation 3.1 Response Rate
(Source: American Association for Public Opinion Research, 2010)

In the above equation the "Completes" indicates competed surveys. "Partials" is the surveys that were started but not completed. The "Refusals" indicated those who unsubscribed. "Non contact" is the number of emails that were undeliverable and those producers that did not reply. "Other" refers to those respondents that did not meet the researchers screening criteria for this study. Finally, there were no potential respondents classified under "Unknown Household" or "Unknown Other". With only 21 completes in this study and 0.3% response rate, the number of observations was

too limiting. Therefore, the researchers explored reasons that would result in such a low response rate and explored possible changes that could be made to the deployment methodology.

The researchers made two major changes for their second survey deployment. They changed the web-based survey solutions website used and the source of deployment. The researchers decided to switch from SurveyMonkey to Qualtrics because, according to Iowa Corn Promotion Board, many agricultural producers are unhappy with SurveyMonkey's choice to contribute $400,000 to the Humane Society of the United States (HSUS). HSUS is not known to be a reputable group for many reasons, including spending an alarmingly small amount of their funds on local shelters. However, the biggest reason why agricultural producers are not supportive of HSUS is because HSUS is trying to end all animal agriculture. HSUS even employed a former PETA activist that compared farms to Nazi concentration camps (Humane Watch Team, 2013). Agricultural producers have been spreading the word about SurveyMonkey's contribution to HSUS. For example the Iowa Corn Promotion Board posted a special report about it on their website, stating that they learned about the relationship from their pork industry contacts (Zylstra, 2014). The researchers believe that agricultural producers are more likely to fill out surveys if it is not generated by SurveyMonkey. Therefore, the researchers switched to Qualtrics.

The researchers also decided deploy any email communications using a University of Idaho email account. This allowed the researchers to have more control of when the survey was sent, subject line, and from who the email was sent from. The researchers decided that in order to help increase the response rate, they would send the survey from one of the researcher's personal University of Idaho email addresses. This gave legitimacy to the email, confirming that it was for research and not a third party, for profit effort. These changes were implemented for the second and third round of surveys deployed.

The researchers deployed the survey created in Qualtrics on March 16th, 2015 at 12:40am PST to 6,743 agricultural producers. However, the survey was only sent to those agricultural producers that did not start the survey or unsubscribe. In addition, the survey was not sent to the email addresses that bounced during the first survey deployment. Once again, the emails were sent with individual links so the researchers are able to connect responses to the data purchased from Farm Market iD. Appendix H contains the message and subject line for this email. As a result of this email the researchers received 74 (1.1%) completed surveys and 49 (0.7%) incomplete surveys on Qualtrics, meaning 60% of the surveys started were completed. Of the emails sent 48 (0.7%) responded with "stop" or unsubscribed, 21 (0.31%) respondents either did not meet the criteria to participated in the study (i.e. they were not agricultural producers) or were not the person stated in our purchased list. Fifty seven (0.85%) of the email addresses were undeliverable. This amounted to a total response rate for that deployment of 1.1%. This was an improvement from the researchers' initial deployment response rate; however, still undesirable.

The researchers deployed the Qualtrics survey a second time on March 23rd, at 2:40pm PST to 6,540 agricultural producers. Again, this round was not sent to the agricultural producers that started the survey, unsubscribed, or those agricultural producers that had bounced email addresses from any of the previous deployments. Appendix I contains the subject line and title of the email message sent to agricultural producers. From this emailing, 68 (1.0%) completed the survey and 40 (0.6%) respondents started the survey but did not complete the survey. Forty five (0.7%) responded with "stop", 14 (0.2%) were undeliverable, nine (0.1%) did not fit the criteria to take the survey. From this third round alone, researchers calculated a response rate of 1.0%. Collectively, with the other rounds, the response rate is 2.4%.

Some respondents replied via email that they are not qualified to complete the survey but provided contact information of a person that is qualified. In addition, some producers were unable

to open the survey with the individualized link. Therefore, the researchers created a survey with an anonymous link and two extra questions. These questions asked for their zip code and how much of each product they farm/ranch (information researchers purchased from Farm Market iD for the agricultural producers on their list). This anonymous link was emailed directly to three agricultural producers that were having trouble opening the individual links and the referred agricultural producers. One out of the three agricultural producers provided with this link completed the survey.

In conclusion, the survey was sent to a total of 6,935 emails, 256 surveys were started and 163 were completed. Thirty respondents were out of scope, 198 had undeliverable addresses, and 595 unsubscribed or replied with "stop". Thus, the overall total response rate was 2.4%.

It should be noted that the researchers mistakenly left off a scale factor on one question when copying the questions from SurveyMonkey to Qualtrics. The question asking the agricultural producers to rate a variety of factors on level of importance, the researchers mistakenly left off the "important" scale factor. The scale of that question on SurveyMonkey includes "not very important", "somewhat important", "moderately important", "important", and "extremely important". To compensate for this researchers assigned this question a four-point scale where the "important" factor was assigned a value of 3.5. Therefore, the missing scale factor on the Qualtrics survey was corrected to the greatest of the researchers' abilities.

In addition, on the same question, the researchers mistakenly left off "patronage" for agricultural producers to rate importance. Researchers feel that this is an important item and could reveal some very telling information. Therefore, the researchers emailed only those agricultural producers that started and/or completed the survey asking them to reply with an importance rating for patronage. This email can be found in appendix J. This email was sent to 224 agricultural producers on April 9th, 2015 at 2:38 PM PST. One hundred and five producers responded with an answer. A second email was sent out on April 19th at 9:32 PM PST to those who had not responded to the April

9th email. This email was identical to the email found in Appendix J. Thirty six more agricultural producers responded to this email, making a total of 141 responses.

3.4.2 Survey Questions

The survey questions developed fell into four sections: demographics, perceptions and use of agricultural cooperatives, member value of agricultural cooperatives, and potential value of agricultural cooperatives. The researchers developed many of the member and potential member questions in a manner that the results from the survey can be easily compared to the results from the interviews.

The researchers constructed demographic questions in order to gather a baseline on the respondents and allow for any correlations, if any existed, between demographics and perceptions of agricultural cooperatives to be observed. For example, Gensch (1983) found that older farmers with less formal education had more favorable attitudes toward cooperatives. The demographics section of the survey included questions about education level completed, age, gender, agricultural experience, income, family ownership of operation, and sharing equipment.

Questions regarding perceptions and use of agricultural cooperatives allowed researchers to gain a greater understanding of what agricultural producers think of agricultural cooperatives, what agricultural cooperative features are most important to agricultural producers, and their usage of agricultural cooperatives. These questions asked if they were a member of any type of cooperative, how knowledgeable they were of agricultural cooperatives, what their opinion was of them, and how important certain factors were to renewing or becoming a member by rating importance level. The factors in the question asking participants to rate importance originated from agricultural cooperative employee. Employees were asked what factors drive new membership or membership renewal in the first phase of this study. In addition, if participants responded that they do business with agricultural

cooperatives then they were asked to designate the percentage of their farming and ranching activities they did with agricultural cooperatives in 2014 (Purdue University, 2012).

Only agricultural cooperative members answered the member value questions. The member value questions were written to gain a better understanding of members' relationships with agricultural cooperatives. Members were not only asked how loyal they were to the agricultural cooperative they belonged to but how loyal they were to the cooperative idea as a whole. Zeuli & Bentancor (2005) found that in the dairy sector, farmers were more loyal to the cooperative model than to a specific agricultural cooperative. Members were also asked about their level of involvement in their agricultural cooperative. In addition, they were asked how they value the three defining principles of cooperatives (ownership, control, and benefit) and how they value the three adapted PERVAL factors (price, quality, and relationship). Finally, they were asked how they receive information from their agricultural cooperatives by rating the importance of the communication channels that were stated by agricultural cooperative employees in the interview phase.

Only agricultural producers who were not members of any agricultural cooperative answered the potential value questions. The purpose of the potential value questions is to discover why they are not a member and how they value agricultural cooperatives. Agricultural producers were asked to answer why they are not a member by rating the importance of factors relating to non-member status. Most factors originated from agricultural cooperative employees' responses to the question asking why some agricultural producers were not members. The researchers also included the "Feel Undervalued" factor because members are more likely to leave their cooperative if they feel that their input is not valued when making management decisions (Bhuyan, 2007). In addition, researchers asked these agricultural producers how they value the three defining principles of cooperatives and how they value the three adapted PERVAL factors. Since the SurveyMonkey survey and Qualtrics survey are nearly identical, researchers only included the Qualtrics survey in this paper, which can be found in

Appendix K. The extra questions that were asked of the participant that anonymously took the survey can be found in Appendix L. There are only slight variations between these three surveys, as described above.

CHAPTER 4 INTERPRETATION OF INTERVIEW RESULTS

In this chapter researchers present an analysis of the four main areas of interest in the interview phase of this study: interview sample information, cooperative information, cooperative value, and cooperative communication. Results from the interviews are compared between and within the three types of cooperatives: agricultural cooperatives, credit unions, and food cooperatives. In addition, special interest is given to the agricultural cooperative communication means, value communicated, value not communicated, and member and potential member misunderstandings.

4.1 Interview Sample Information

Six agricultural cooperatives, six food cooperatives, and five credit unions participated in this study. The four areas where participating cooperatives reside are Northwest Washington, Central Washington, Northwest Idaho, and Southwest Idaho.

Table 4.1 shows the distribution of participating and contacted cooperatives by area. The top number represents the number of cooperatives that were interviewed and the bottom number represents the total number of cooperatives contacted (including those that researchers interviewed). In total, exactly 50% of the cooperatives contacted participated in an interview.

Table 4.1 The Number of Contacted and Interviewed Cooperatives by Area and Type*

	Northwest WA	Central WA	Northwest ID	Southwest ID	Total
Agricultural Cooperatives	2/2	2/2	2/4	0/3	6/11
Credit Unions	0/0	1/5	2/3	2/5	5/13
Food Cooperatives	3/3	0/3	2/2	1/2	6/10
Total	5/5	3/10	6/9	3/10	17/34

* Top number represents the number cooperatives interviewed and the bottom number represents the number of cooperatives contacted.

The agricultural cooperatives who participated in this study range in membership from 125 to more than 1,000 members. In addition, the products of these agricultural cooperatives stretch from grain, to dairy, to retail farm supply, to fruit (Table 4.2).

Table 4.2 Agricultural Cooperative Interview Sample Memberships and Products

Agricultural Cooperative	Memberships	Product
AC1	~100	Grain
AC2	~500	Dairy
AC3	~800	Farm/Ranch Supply
AC4	~900	Grain
AC5	~1,100	Fruit
AC6	~1,400	Farm/Ranch Supply

The memberships in the five credit unions sampled range from around 3,500 members to just over 16,000 members. In addition, the minimum asset size of the credit unions is around $50 million and the maximum is just over $163 million (Table 4.3).

Table 4.3 Credit Union Interview Sample Memberships and Asset Sizes

Credit Union	Memberships	Asset Size ($ in millions)
CC1	~4,000	~55
CC2	~5,000	~20
CC3	~6,500	~70
CC4	~9,500	~70
CC5	~21,500	~230

The sampled food cooperatives' memberships range from around 2,300 to over 52,000 members. Most of these food cooperatives only have one location but there is one in the sample with multiple locations, FC6, and another is planning on expanding into two stores (FC5). In addition, half of these food cooperatives distribute patronage to their members, ranging from $20,000 to $50,000 (Table 4.4).

Table 4.4 Food Cooperative Memberships and Patronage Allocation

Food Cooperative	Memberships	Patronage ($)
FC1	~2,200	None
FC2	~7,000	~22,000
FC3	~13,000	~50,000
FC4	~13,000	None
FC5	~23,500	~19,500
FC6	~50,300	None

In order to gain a better understanding of the relative size of the cooperatives sampled, the researchers asked the cooperative employees to place their cooperative on a relative size scale from one to 10, where 10 is largest, based on membership and sale size for agricultural and food cooperatives and membership and asset size for credit unions. Researchers asked them to compare their cooperative to other cooperatives (of the same type) in the Northwest region.

Most of the agricultural cooperatives sampled think their relative size for membership are very similar to if not slightly greater than the relative sale size. However, AC2 thinks that they average a nine in sale size but only a five in membership size. Note, that the researchers did not distinguish sale and membership size for AC4, which was the first cooperative interviewed, thus they are recorded as equal. Agricultural cooperative employee responses are averaged for each cooperative in Figure 4.1.

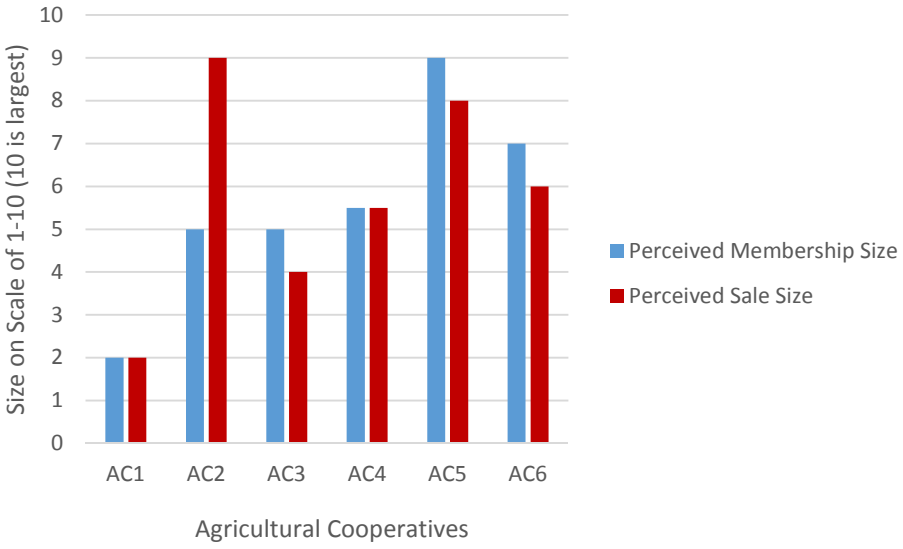

Figure 4.1 Employees' Perceived Relative Size of Agricultural Cooperatives

The same question was asked of credit unions (Figure 4.2) and food cooperatives (Figure 4.3). Note that the researchers did not distinguish between membership size and sale/asset size for CC3, FC1, and FC2, thus they are recorded as equal. The credit unions sampled either perceive their membership and sale size as equal or sale size as slightly larger than membership size. However, the

opposite is true for food cooperatives. Their employees responded on average that membership size is either equal to or greater than sale size.

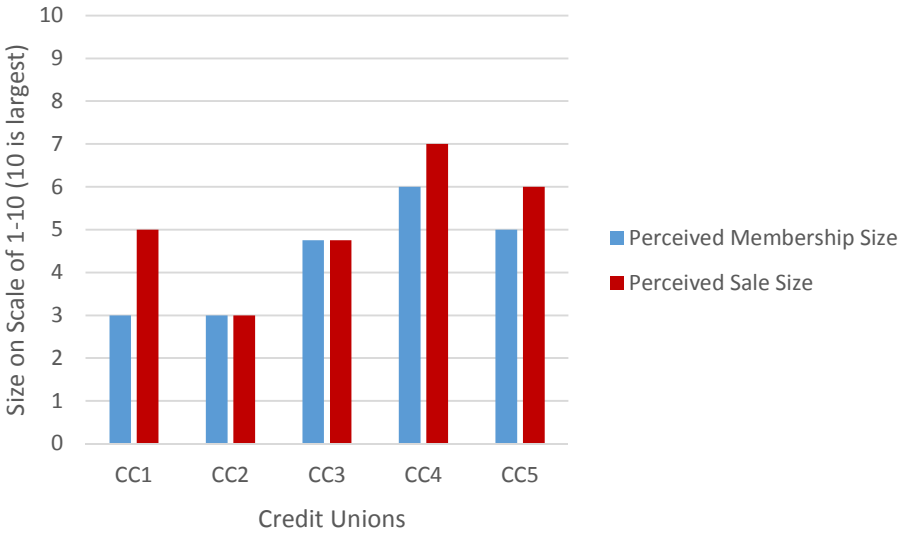

Figure 4.2 Employees' Perceived Relative Size of Credit Unions

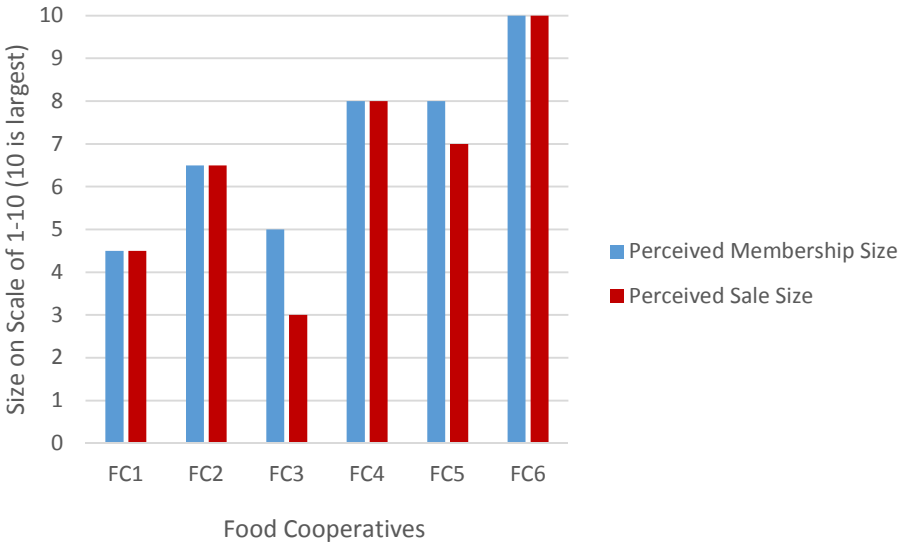

Figure 4.3 Employees' Perceived Relative Size of Food Cooperatives

The cooperatives sampled were also asked for their member market penetration and wallet share in the form of a percentage. Notice from the three column graphs below (Figure 4.4, Figure 4.5, and Figure 4.6) that agricultural cooperative employees think that they have, on average, a relatively

higher member market penetration and wallet share compared to credit unions and food cooperatives. One noticeable member market penetration is 10% for AC3. This means that for every one member, there are nine potential members. The lowest average agricultural cooperative wallet share stated was just below 60%. AC2 stated that they capture 100% of their members' wallet share, but AC2 is also located in a very small, community-oriented, rural town. Therefore, members use AC2 to meet 100% of their agricultural needs that AC2 provides.

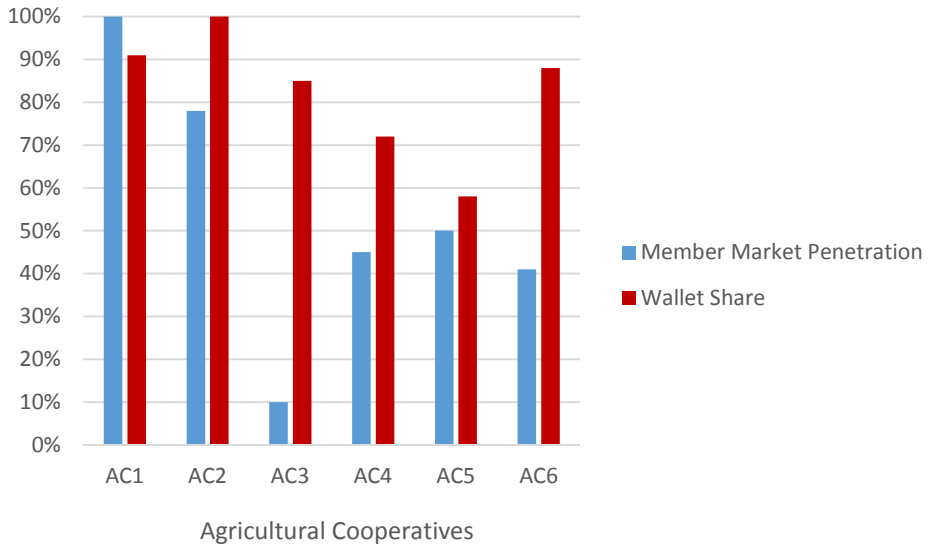

Figure 4.4 Employees' Perceived Member Market Penetration and Wallet Share of Agricultural Cooperatives

The member market penetration for credit unions ranges from over 80% to under 5%. The average stated wallet share for the sampled credit unions does not reach above 50% for any of the credit unions. Therefore, members of the credit unions use these credit unions for 50% or less of their financial needs. Note, that no data was collected on the wallet share for CC4 (Figure 4.5).

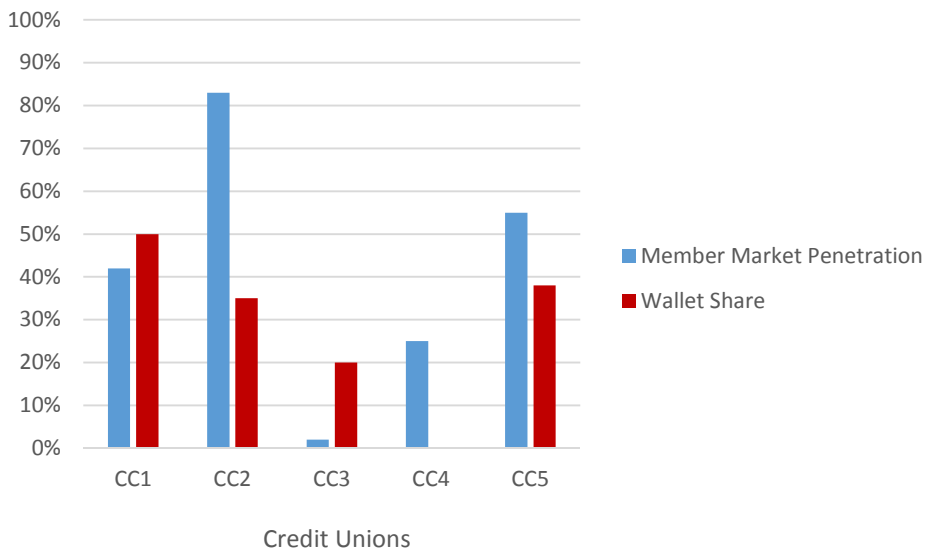

Figure 4.5 Employees' Perceived Member Market Penetration and Wallet Share of Credit Unions

Employees of food cooperatives think their member market penetration is below 25% for five of the six participating cooperatives. FC4 employees stated average member market penetration is 50%. Wallet share ranged from 20% to just over 60% (Figure 4.6).

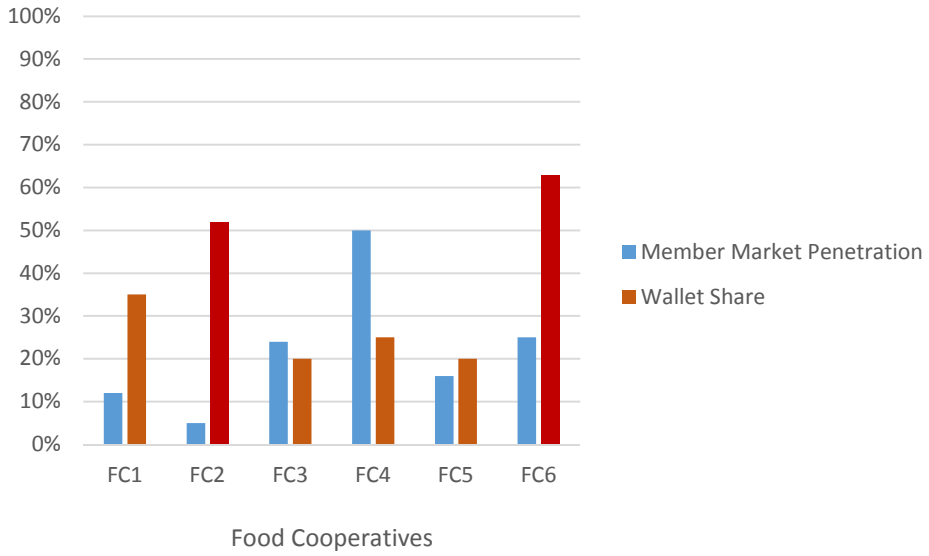

Figure 4.6 Employees' Perceived Member Market Penetration and Wallet Share of Food Cooperatives

4.2 Cooperative Information from the Employees

As discussed earlier, researchers interviewed six agricultural cooperatives, six food cooperatives, and five credit unions. The sampled cooperatives physical locations are geographically dispersed between Northwest Washington, Central Washington, Northwest Idaho, and Southwest Idaho. The participating cooperatives also vary in size (memberships, assets, and sales), product (only applies to agricultural cooperatives), member market penetration, and wallet share.

4.2.1 Mission Statement Understandings

In order to better understand the participating cooperatives and the employees' understanding of their cooperative, researchers asked the employees if they could state their cooperative's mission statement. Surprisingly, this is a difficult question for many employees. The researchers scored employee responses on a one to four scale. A score of four means that the employee knows the mission statement very well. A score of three means that they are able to accurately paraphrase the mission statement. A score of two means that the employee knows they have one but cannot paraphrase well, or accurately, and a score of one means that the employee has no idea about the mission statement. The cooperative employees were scored by the researchers using trained observations (Table 4.5).

The average score for all three types of cooperatives is between two and three, meaning cooperative employees are generally aware of their mission statement and can partially paraphrase it. Food cooperative employees, on average, understand their missions better than employees of credit unions and agricultural cooperatives.

Researchers are able to compare across position levels by splitting the interviewed employees within each cooperative into three groups: upper management, middle management, and entry level positions. Once split into position level groups within each type of cooperative a pattern is observed. For all three types of cooperatives, the upper management understand the mission statement the

best. For agricultural cooperatives and food cooperatives, the entry level position employees understand the mission statement the least with a score of 1.00 and 2.00, respectively. The entry level positions for credit unions only understand the mission statement slightly more than the middle management positions. Overall, the understanding of cooperative mission statement decreases with a decrease in position level (Table 4.5).

Table 4.5 Cooperative Employee Mission Understanding Score*

	Agricultural Cooperatives	Credit Unions	Food Cooperatives	Average
Average	2.30	2.46	2.72	2.49
Upper Management	3.75	2.75	3.33	3.28
Middle Management	2.14	2.29	2.83	2.42
Entry Level	1.00	2.33	2.00	1.78

* The scoring system is from one to four. Four means they knew the mission statement well. Three means they were able to accurately paraphrase it. Two means they knew about it but could not paraphrase it. One means they had no clue.

4.2.2 Cooperative One Word Descriptions

The researchers asked cooperative employees to provide one word or short phrase describing their type of cooperative (meaning agricultural cooperatives, credit unions, and food cooperatives) from three perspectives: their own, their members', and their potential members'. The researchers then clumped responses that were similar in meaning. For example, member-owned, member-owner, and members are owners are all counted under the phrase member-owned.

When agricultural cooperative employees interviewed think of agricultural cooperatives, they think of farmer-owned or customer service. Others think of "member-owned", and another thinks of "locally owned". Two agricultural cooperative employees also thought of "customer service". Similar

words can be found on what they think their members would say. Interestingly, three employees think that their potential members would say “lose independence” when thinking about agricultural cooperatives. This means that employees believe that potential members think that if they joined agricultural cooperatives then they would lose their independence when it comes to their agricultural operation. Other words and phrases include: unaggressive, unresponsive, competitive pricing, and something bigger. Therefore, agricultural cooperative employees believe that their members perceive them very similarly to how they perceive themselves and that their potential members may perceive them as a business that will result in a loss of their independence.

The responses of the employees of credit unions are a little more concentrated than the responses of agricultural cooperative employees. Three credit union employees think of “membership-owned” when they think of credit unions, two think of the “people helping people”, which is the well-recognized motto or social purpose of credit unions, and another two people said “helpful”. When credit union employees were asked what their members would say, four said “member-owned” and two said “membership”. Other words included “cheap”, “helping hand”, “love”, and “flexible”. When asked how their potential members would respond, six of the ten responses said something about potential members being unaware of the identity or even existence of credit unions. Four credit union employees think their potential members would say “who?” or “what?” and two think they would say “bank”. Therefore, credit union employees believe that members view them similarly to how they view themselves and potential members do not understand who they are.

The food cooperative employees’ responses are much more concentrated and consistent than the credit union and agricultural cooperative employee responses. When describing food cooperatives, four employees described them as a “locally-owned grocery”, three said “community”, and two said “trusted” (Table 4.6). When they were asked to look at it from their members’ perspective, over half of the responses are “health food store”. It is no surprise that eight of the

respondents, when asked what their potential members would say, think they would say “expensive”. Six responded “health/good food” and three responded “hippies”. From these responses, it is clear that food cooperative employees believe their members see food cooperatives very differently from their potential members.

Table 4.6 Descriptions of Cooperatives from Cooperative Employees

	Agricultural Cooperatives	Credit Unions	Food Cooperatives
Employee Word	Farmer-owned (2)* Customer service (2)* Member-owned Locally-owned Member-focused Family Community involvement	Membership-owner (3)* Helpful (2)* Family Membership based For the good Friendly Conservative Community-oriented Flexibility Partners Great People helping people (2)*	Community (3)* Trusted (2)* Community Sustainable Wholesome food Integrity Independently minded Youthful Delicious Unique Democratic Association Locally-owned grocery (4)*
Member (Perception)	Customer service (2) * Locally-owned Member-owned Safe Competitive Buyer/handler Community involvement	Member-owner (4)* Membership (2)* Friendly Cheap Helping hand Care Family Resource Love People Helping People Flexible Mine Stable Great	Health food store (9)* Locally-owned (4)* Trust/Knowledgeable (2)* Expensive Community Natural specialty store Real Justice Non-corporate Clickish Community
Potential (Perception)	Lose independence (3)* Unaggressive, un-responsive Competitive pricing Something bigger Customer-focused Customer service Community involvement	Who? (2)* Bank (2)* What? (2)* Savings and loans Old fashioned Inconvenient Low Service	Expensive (8)* Health/good food (6)* Hippies (3)* Elitist (2)* Local (2)* Specialty store (2)* Convenient Progressive Yuppie

* (#) where # is the number of employees that responded with that phrase or word.

4.2.3 Cooperative Non-member Business

The researchers asked cooperative employees what percentage of their business comes from non-member or potential business. They soon discovered that credit unions offer very few services, if any, to people that are not members of their credit union. Food cooperative employees believe that on average almost half, 48%, of their business comes from customers that are not members of their cooperative. On average, the agricultural cooperative employees think that 21% of their business comes from non-member customers. It is noteworthy that all employees interviewed from four of the six agricultural cooperatives stated that between 5% and 20% of their business comes from non-member business. Employees from one agricultural cooperative did not answer. One employee from AC6 stated that 80% of their business comes from non-member business; however, this is a purely supply retail cooperative. In summary, food cooperatives have the highest average non-member business, agricultural cooperatives fall second with just over 20%, and credit unions rarely serve customers that are not members.

4.3 Cooperative Employees Beliefs in How Cooperatives are Perceived

In this section, researchers explore reasons why cooperative employees believe some people choose to be members and why some people are not members of their cooperative. In addition, researchers discuss how cooperative employees think their members and potential members perceive the value they offer and, finally, researchers explore whether that value perception differs between cooperative employee position levels.

4.3.1 Reasons Why Members Join Cooperatives

The researchers asked the employees of cooperatives why they believe members join their cooperative. The participants were allowed to respond with more than one reason and many participants did. The researchers collapsed the varied responses into common responses, like price,

quality, relationship, convenience, secure market, and word of mouth. They then calculated the percentage of each category mentioned by each type of cooperative. It is important to note that when a respondent does not mention a certain category that does not necessarily mean the respondent does not believe that category is not a reason why members join. There is a total of 14 agricultural cooperative employees, 17 food cooperative employees, and 16 credit union employees that responded.

According the agricultural employees, the most common reason members join agricultural cooperatives is price. Thirty six percent of respondents mentioned price in their answer. Three factors are tied for second with 21%: quality, secure market, and control. Few respondents mentioned community, word of mouth, or the cooperative idea as a whole (i.e. members are owners, controllers, and benefiters). From the frequency of these responses, many agricultural employees believe price is very important to members joining an agricultural cooperative. They also believe that agricultural producers join agricultural cooperatives for the quality of their products and services, access to a secure market for their production, and their ability to control the cooperative.

The percentage of credit union employee that mentioned each category differs from the agricultural cooperative employee responses. Over half of the credit union employees mentioned word of mouth when asked why members join their credit union. Price is a close second with 44% of respondents and quality is third with 31%. Convenience also came to mind for 13% of the respondents. Therefore, most credit union employees believe that members join because of word of mouth with price also being a top reason.

The most consistent answers when asked why members join originated from food cooperative employees. Eighty two percent of the employees mentioned price as a reason why members join their cooperative. This category, by far, dominates with the second highest being 29% of employees mentioned quality of products and services. The community aspect and cooperative idea fall closely

behind the quality with 24% mentioning both of these categories. Therefore, food cooperative employees mostly believe price is the main reason why members join.

Comparing the different cooperatives against each other, food cooperative employees' responses are the most consistent with a high majority mentioning price (Table 4.7). In addition, price is either the most mentioned or second most mentioned category by the employees in all three cooperatives. The number one mentioned category by credit union employees was word of mouth. Word of mouth was only mentioned by a few agricultural cooperative employees and was not mentioned by any food cooperative employees. In addition, pride/loyalty was mentioned by 6% of credit union employees and 12% of food cooperative employees but was not mentioned by any agricultural cooperative employees. These results illustrate that employees of the different types of cooperatives believe members join their cooperatives for somewhat similar reasons but the importance of each of these reasons to members varies between types of cooperatives.

Table 4.7 Reasons Why Members Join Cooperatives by Percentage of Respondents within Each Cooperative Type*

	Agricultural Cooperatives	Credit Unions	Food Cooperatives
Price	36%	44%	82%
Quality	21%	31%	29%
Relationship	14%	0%	0%
Convenience	14%	19%	0%
Secure Market	21%	0%	12%
Community	7%	0%	24%
Word of Mouth	7%	56%	0%
Control	21%	6%	6%
The Cooperative Idea	7%	6%	24%
Pride/Loyalty	0%	6%	12%

* The columns do not necessarily sum to 100% because the participants were allowed to mention more than one reason why members join cooperatives.

4.3.2 Reasons Why Members Stay with Cooperatives

The researchers asked cooperative employees why members renew their membership. For those cooperatives that offer lifetime membership, researchers asked why members continue to do business with the cooperative. Henceforth, membership renewal also refers to members continuing to do business with a cooperative when the cooperative offers a lifetime membership. The participants were allowed to respond with more than one reason and many participants did. The researchers then categorized them into common responses including, price, quality, relationship, convenience, secure market, dislike change, etc. They then calculated what percentage of respondents from each type of cooperative mentioned each of the categories chosen. It is important to note that when an employee

does not mention a certain category that does not necessarily mean that the employee does not believe that that is not a reason why members join. Nine agricultural cooperative employees responded, 14 credit union employees responded, and 11 food cooperative employees responded. The categories that were mentioned the most by agricultural cooperative employees when asked why members renew their membership were price and a secure market (Table 4.8). Even though, price and a secure market were mentioned most, less than 35% of employees actually mentioned them. Quality and pride/loyalty were mentioned by 22% of the employees and community and relationship were only mentioned by 11% of the employees. There are many factors that were not even mentioned by any of the agricultural employees interviewed. These include convenience, word of mouth, control, dislike change, and the cooperative idea. Therefore, agricultural cooperative employees believe that price and access to a secure market are important to their members; however this is not consistent across all agricultural cooperatives.

Credit union employees told a little different story since 71% of the employees think that members renew their membership because of the quality of their products and services. Approximately half that number of employees mentioned price (deposit and loan rates) and relationship as a reasons why members renew. Fourteen percent of employees mentioned pride/loyalty and only 7% mentioned convenience and dislike change. It is worth mentioning that credit union employees did not mention community, word of mouth, control, or the cooperative idea as reasons why members renew. Most credit union employees believe that quality of their products and services is very important to their members.

Similar to credit union employees, quality is the highest mentioned factor for food cooperative employees. Almost 75% of the employees mentioned quality and 45% mentioned price. Twenty seven percent of employees mentioned community, while only 9% mentioned relationship, control, and the cooperative idea. Eighteen percent of employees mentioned that their members stay because they

dislike change. Therefore, food cooperatives believe that quality of their products and services are very important to their members in their renewing decision.

Comparing across cooperative types, at least 33% of employees within each type of cooperative mentioned price. Quality of products and services was mentioned by only 22% of agricultural cooperative employees while over 70% credit union and food cooperatives employees mentioned price. Therefore, it can be deduced that credit union and food cooperative employees believe quality is important to retain their member while few agricultural cooperative employees thought it was worth mentioning. In addition, food cooperatives employees were the only ones to mention control and the cooperative idea as factors influencing a member's decision to renew their membership.

Table 4.8 Why Members Stay with Cooperatives by Percentage of Respondents within Each Cooperative Type*

	Agricultural Cooperatives	Credit Unions	Food Cooperatives
Price	33%	36%	45%
Secure market	33%	0%	0%
Quality	22%	71%	73%
Pride/Loyalty	22%	14%	0%
Relationship	11%	43%	9%
Community	11%	0%	27%
Convenience	0%	7%	0%
Control	0%	0%	9%
Cooperative Idea	0%	0%	9%
Dislike change	0%	7%	18%

* The columns need not sum to 100% because the participants were allowed to mention more than one reason why members stay with cooperatives.

4.3.3 Reasons Why Potential Members are Not Members

Researchers asked cooperative employees why their potential members are not joining their cooperative. The participants were allowed to respond with more than one reason and many participants did. The researchers then categorized them into common responses including, price, lose independence, quality, inconvenience, unaware, etc. They then calculated what percentage of respondents from each type of cooperative mentioned each of the categories. It is important to note that when a respondent does not mention a certain category that does not necessarily mean that the respondent does not believe that that is not a reason why members join. There are a total of 13

agricultural cooperative employees that responded, 14 credit union employees responded, and 17 food cooperative employees responded.

The category that agricultural cooperative employees mentioned the most as a reason why potential members are not members was “lose independence”. Thirty eight percent of agricultural cooperative employees stated that they think potential members are not joining their cooperative because they fear that it would result in a loss of their independence, whether it’s where to market their product or what quality of supplies to purchase. Price comes in as a close second with 31%. This may in part be due to potential members not understanding agricultural cooperative cooperatives. Some employees said that their members and potential members do not understand that the less they pay for their members product, the higher the profit margin there will be to distribute back to the members as patronage. “Other relationships” and “unawareness” were also mentioned by a fair number of agricultural cooperative employees. “Image/perception” and “quality” were not mentioned by any agricultural cooperative employees as reasons why potential members are not joining their cooperative. Therefore, agricultural cooperative employees believe the fear of losing independence and price are their potential members’ greatest concerns with joining the cooperative.

Over half of the credit union employees said that “unawareness” is one of the reasons why potential members are not joining their credit union. This is consistent with how almost half of the employees think their potential members would describe credit unions, “who?”, “what?”, and “bank”. Over 35% of the employees mentioned “other relationships”, which is the second most popular reason. Fourteen percent of employees stated that one reason why potential members are not joining is because of their quality of service and/or products. Therefore, credit union employees think unawareness is a large reason why potential members are not joining.

Seventy one percent of food cooperative employees believe that price is at least one reason why their potential members are not joining. This is consistent with the one word descriptions where

food cooperative employees think their potential members would describe them as “expensive”. The second most mentioned reason is unawareness with almost 50%. Almost 30% of food cooperative employees mentioned “image/perception” as a reason why potential members do not join. Recall, that three employees think that potential members would describe food cooperatives as “hippies” and some other members mentioned “elitist” and “yuppie”. Therefore, most food cooperative employees think of price when they think of reasons why potential members are not joining; however, other ideas come to mind such as unawareness and the perception or image of the food cooperative.

The employee responses between the cooperative types are quite different. The reason why potential members are not joining mentioned by the largest number of agricultural cooperative employees is fear losing their independence; however, not even half the employees spoke of this. While over half of the employees of credit unions spoke of unawareness and almost 75% of food cooperative employees spoke of price. All three types of cooperatives believe their potential members are not joining for different reasons and agricultural cooperative employees have the least consistent answers (Table 4.9).

Table 4.9 Reasons Why Potential Members are Not Joining by Percentage of Respondents within Each Cooperative Type*

	Agricultural Cooperatives	Credit Unions	Food Cooperatives
Lose Independence	38%	0%	0%
Price	31%	0%	71%
Other Relationships	23%	36%	0%
Unawareness	23%	64%	47%
Inconvenience	8%	7%	24%
Equal Treatment	8%	0%	0%
Cooperative Idea	8%	0%	0%
Switching Costs	8%	7%	0%
Quality	0%	14%	12%
Image/Perception	0%	0%	29%
Does Not Qualify	0%	7%	6%

* The columns do need sum to 100% because the participants were allowed to mention more than one reason why potential members are not joining their cooperative.

4.3.4 Perceived Member Value of Cooperative Principles and Benefits

Researchers asked cooperative employees to distribute 100 points between the three cooperative principles: ownership, control, and benefit. The ownership principle means that the members also own the cooperative and its assets, this includes the pride of ownership. The control principle means that the members control the cooperative. One way this is accomplished is through electing the board of directors. The benefit principle is usually in the form of profits allocated but can also include the quality of products/service the cooperative offers and the relationship between the

member and the cooperative. Researchers asked them to allocate points according to how they think their members would distribute the points when thinking about renewing their membership.

Agricultural cooperative employees think there members would distribute the 100 points fairly evenly with 32 in ownership, 24 in control, and 44 in benefit (Figure 4.7). However, credit union employees and food cooperative employees believe that their members would put over 60 points into benefit. Therefore, employees of these cooperatives believe that their members primarily care about the benefits they have to offer rather than the control or the ownership of the cooperative. For both credit unions and food cooperatives, ownership has 10 more points than control (Figure 4.8 and Figure 4.9). Therefore, credit union and food cooperative employees think that their members would distribute the 100 points between cooperative principles with a heavy weight on benefit, while agricultural cooperative employees think their members would distribute them fairly evenly.

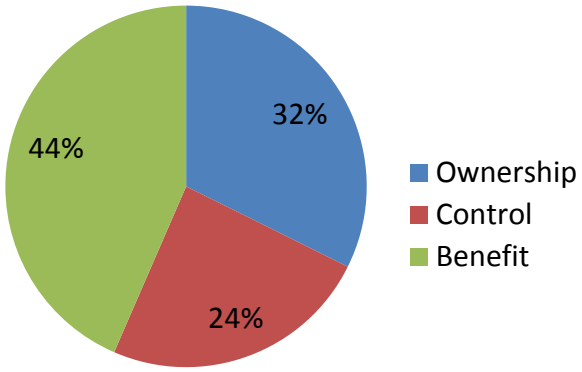

Figure 4.7 Agricultural Cooperative Employee Perception of How Members Value Principles

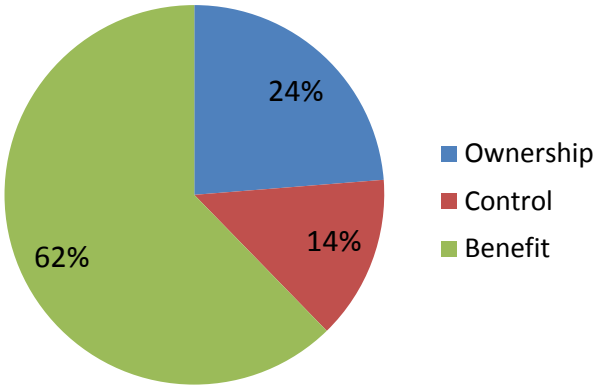

Figure 4.8 Credit Union Perception Employee of How Members Value Principles

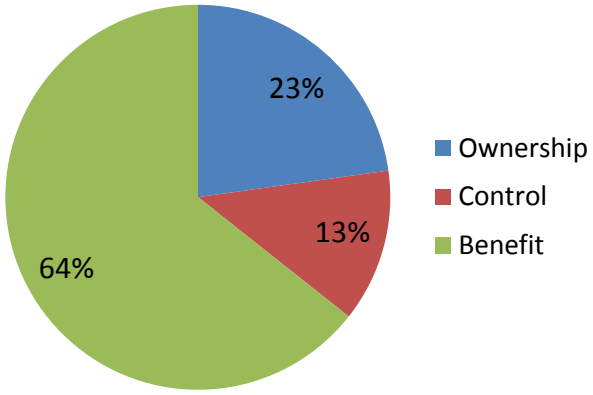

Figure 4.9 Food Cooperative Employee Perception of How Members Value Principles

The researchers then asked the cooperative employees to again distribute 100 points, as they think their members would distribute it, between three categories within the benefit principle: price, quality, and relationship. Here, price is defined as the economic benefits as well as the personal satisfaction members gain from pricing discounts or premiums offered them. Quality is the satisfaction members gain from the quality of the cooperative's products or services. The relationship is defined as the satisfaction members gain from their relationships with the cooperatives' employees.

Like before, agricultural cooperative employees think their members would distribute the 100 points fairly evenly between price, quality and relationship. Credit union employees think their members would put almost 50 points into relationship. One possible explanation for this is that the employees believe their members really value their relationship with credit union personnel and the credit union as a whole because the credit union is responsible for handling client sensitive information, financials. The credit union employees believe that trust is a significant factor in relationships. Price is second with 35 points and quality comes in third with 21 points. This is quite different from the way food cooperative employees believe their members would distribute the 100 points. They think their members would distribute almost half their points to quality. Food cooperatives pride themselves on their high quality healthy products and from this uneven distribution of points they believe their members highly value that quality. The rest of the points were then distributed fairly evenly between price and relationship, with slightly more in price (Figure 4.10, Figure 4.11, and Figure 4.12).

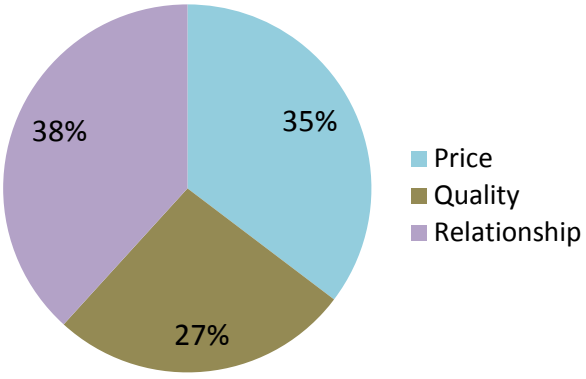

Figure 4.10 Agricultural Cooperative Employee Perception of How Members Value Benefits

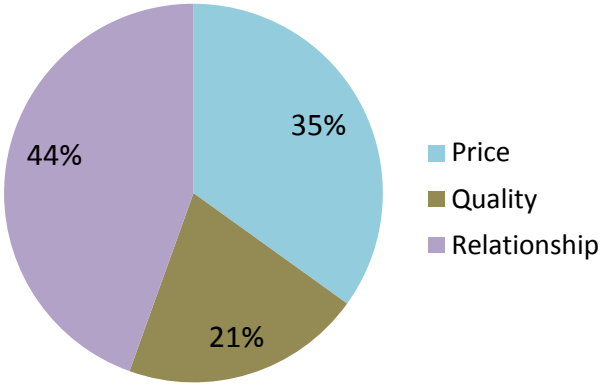

Figure 4.11 Credit Union Employee Perception of How Members Value Benefits

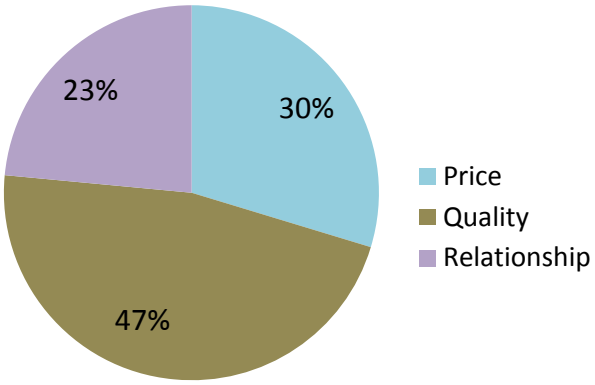

Figure 4.12 Food Cooperative Employee Perception of How Members Value Benefits

4.3.5 Perceived Potential Members Value of Cooperative Principles and Benefits

Next, researchers asked cooperative employees to distribute 100 points between the cooperative principles from their potential members' perspective, based on how the potential members would distribute them when thinking about joining a cooperative. This new perspective drastically changed the responses.

From the member perspective, agricultural cooperative employees distributed the points fairly evenly with a slight weight on benefit. However, from the potential member perspective, employees

distributed 78 of the 100 points to benefit (Figure 4.13). Therefore, agricultural cooperative employees believe their potential members value the benefit, compared to the other principles, much more than members. In fact, many of the reasons agricultural cooperative employees believe their potential members are not members is because the potential members are concerned with losing their independence and, therefore, sharing ownership and control of a cooperative with other members is not as appealing as it is to members.

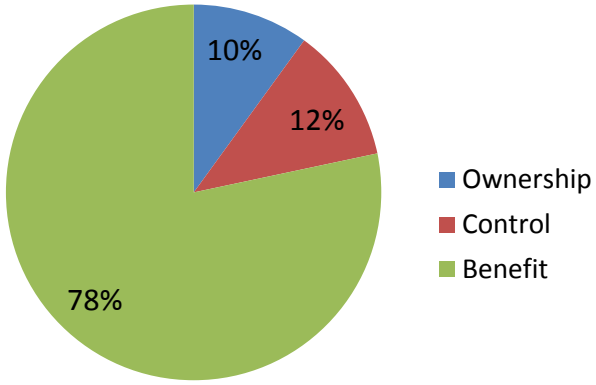

Figure 4.13 Agricultural Cooperative Employee Perception of How Potential Members Value Principles

Credit union employees think their potential members would distribute their 100 points fairly similarly to how agricultural cooperative employees think their potential members would distribute 100 points. However, instead of 78 points given to benefit, credit union employees think their members would give, on average, 65 points. Ownership received this 13 point difference for a total of 23 points, leaving control with 12 points. This distribution from the perspective of credit union potential members is almost identical to how credit union employees distributed the points from their members' perspective. Assuming this is true, credit union members value the three cooperative principle in the same proportion as credit union potential members (Figure 4.14).

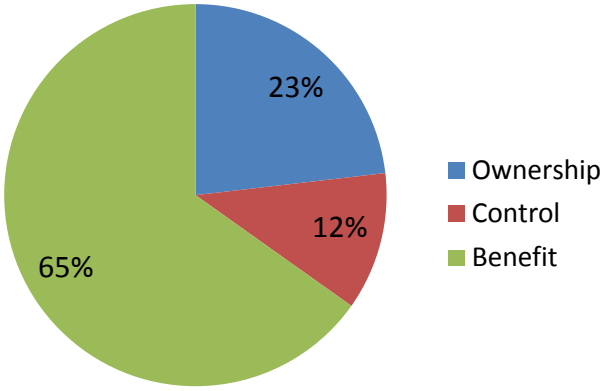

Figure 4.14 Credit Union Employee Perception of How Potential Members Value Principles

The distribution of points by the food cooperative employees is almost identical to the distribution by the agricultural cooperative employees when asked to look at it through their potential members' perspective. Food cooperative employees think their potential members would distribute 74 points to benefit, 14 to control, and 12 to benefit (Figure 4.15). Therefore, food cooperative employees believe their potential members value the ownership principle less, compared to the other principles, than their members.

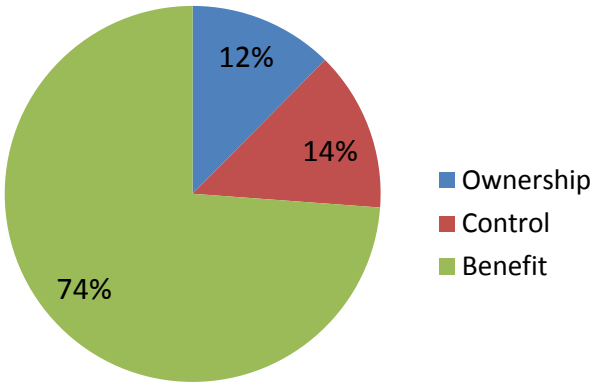

Figure 4.15 Food Cooperative Employee Perception of How Potential Members Value Principles

The responses to this question by the three types of cooperatives are much more consistent with each other than their responses to the previous question where they were asked to look at it from

their members' perspective. Therefore, assuming employee perceptions are true, members from different cooperatives value the cooperative principles differently and potential members value the benefit principle significantly more than the other principles regardless of the type of cooperative.

When the cooperative employees were asked how potential members value benefits, again, the agricultural cooperatives, on average, distributed the most points to price. Agricultural cooperative employees believe that their potential members would put 65 points in price, only 25 points in quality, and 10 points to relationship. Assuming these perceptions are true, agricultural cooperative members value the benefits fairly evenly while potential members heavily value price and place little importance on relationship (Figure 4.16). This is a key component to compare with what the potential agricultural producers actually think through surveys.

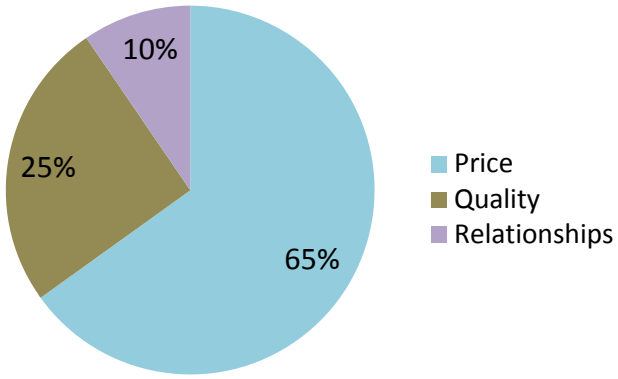

Figure 4.16 Agricultural Cooperative Employee Perception of How Potential Members Value Benefits

Credit union employees also think their potential members would put approximately half of their points under price. In addition, the remaining 50 points are fairly evenly distributed between quality and relationship. Recall that employees think their members value relationships the most. Thus, credit union employees believe their members value relationship, to the same proportionate degree that they believe potential members value price. Both groups are perceived to care about quality fairly equally, compared to the other benefits (Figure 4.17).

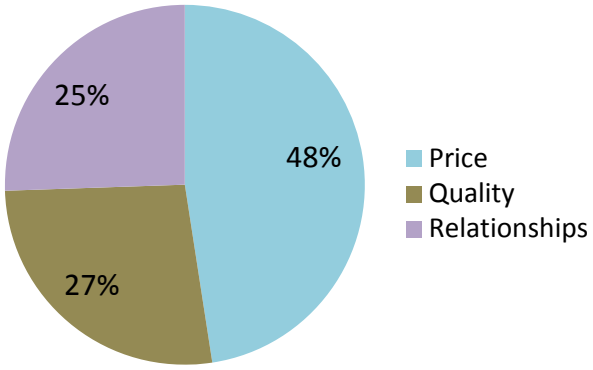

Figure 4.17 Credit Union Employee Perception of How Potential Members Value Benefits

Food cooperative employees think their potential members would distribute the 100 points very similar to how credit union employees think their potential members would distribute the points. Food cooperative employees think their potential members would put, on average, 47 points in price, 25 points in quality, and 18 points in relationship. Recall, food cooperative employees think their members would distribute 47 points to quality instead of price (only distributed 30 to price). Assuming this is accurate, members value quality most while potential members value price most (Figure 4.18).

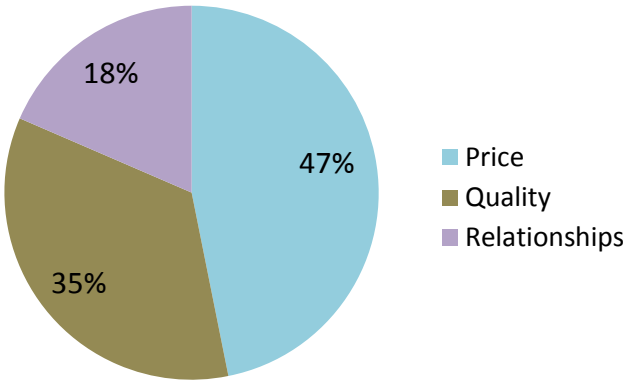

Figure 4.18 Food Cooperative Employee Perception of How Potential Members Value Benefits

It is not surprising that relationship is scored much lower by employees in all three types of cooperatives when asked to look at it from their potential members' perspective rather than members' perspective. This is particularly true for the agricultural cooperatives and credit unions. One reason

for this discrepancy between perspectives mentioned by some cooperative employees is that their potential members have not given them a chance to build that relationship and demonstrate the benefits of having a strong, trusting relationship with their cooperative, therefore they would not value relationship as much. Another possible explanation is that potential members actually do not value relationships so they do not consider that a benefit of joining cooperatives.

4.3.6 How Members Value of Cooperative Principles by Cooperative Employee Position

The researchers also categorized the cooperative employee responses according to the employee's management level. It should be noted that the researchers did not explicitly ask for management level; however, they did ask for position title. Therefore, the researchers assigned stated positions to one of three positional levels: upper-management, middle-management, and entry-level. In addition, not enough information was collected for this analysis from the potential member perspective due to interview time constraints.

This is not the focus of the research, therefore, little space is spent discussing it; however, it does merit some exploration. Agricultural cooperatives, credit unions, and food cooperatives all have the same pattern when their responses were distributed across management level. Every position in every cooperative, except entry-level in credit unions, placed the most points in benefit, then ownership, and lastly control. The entry-level employees of credit unions placed, on average, ownership slightly below control. In addition, for all three cooperative types, entry-level allocated more points to benefit than the two management levels. This is particularly true for agricultural cooperatives where entry-level, on average, allocated 70 points to benefit and upper-management only distributed 50 and middle-management allocated just under 40 points. This implies that entry-level markets the cooperative benefits, more than ownership and control, to members and potential members more than middle- and upper-management. In conclusion, when cooperative employees were asked to distribute 100 points between the cooperative principles according to how their

members would allocate them, there is little difference between the employees of different positions. The biggest difference falls under agricultural cooperatives where entry-level scored benefit significantly higher than the two management levels (Figure 4.19, Figure 4.20, and Figure 4.21).

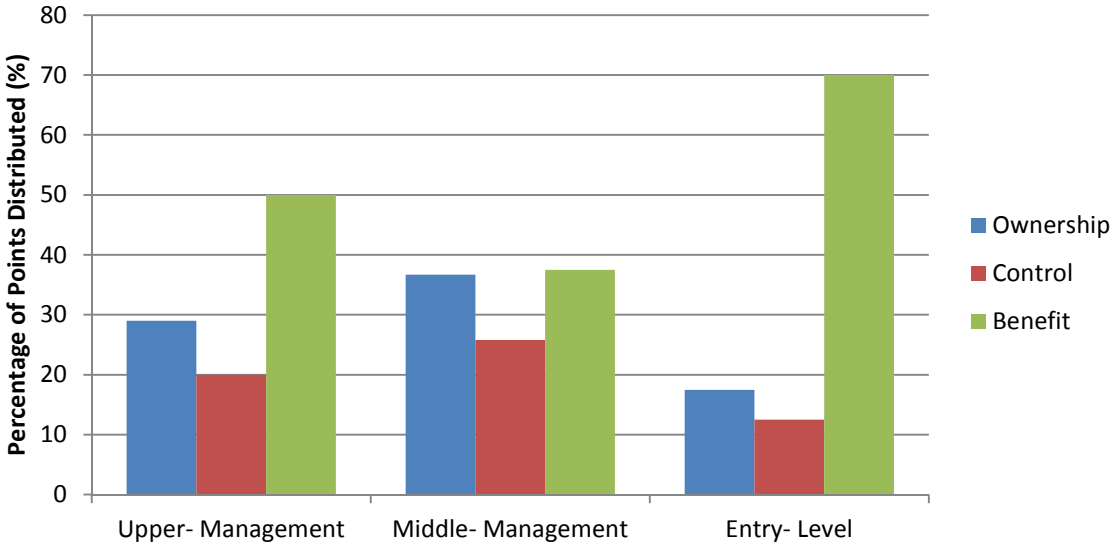

Figure 4.19 Agricultural Cooperative Employee Perception of How Members Value the Principles across Employee Positions

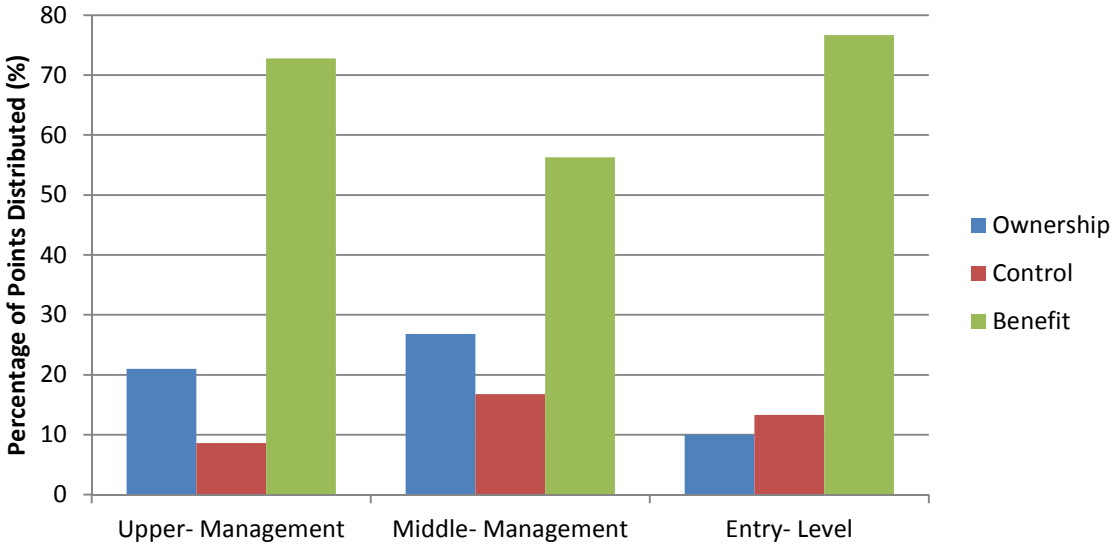

Figure 4.20 Credit Union Employee Perception of How Members Value the Principles across Employee Positions

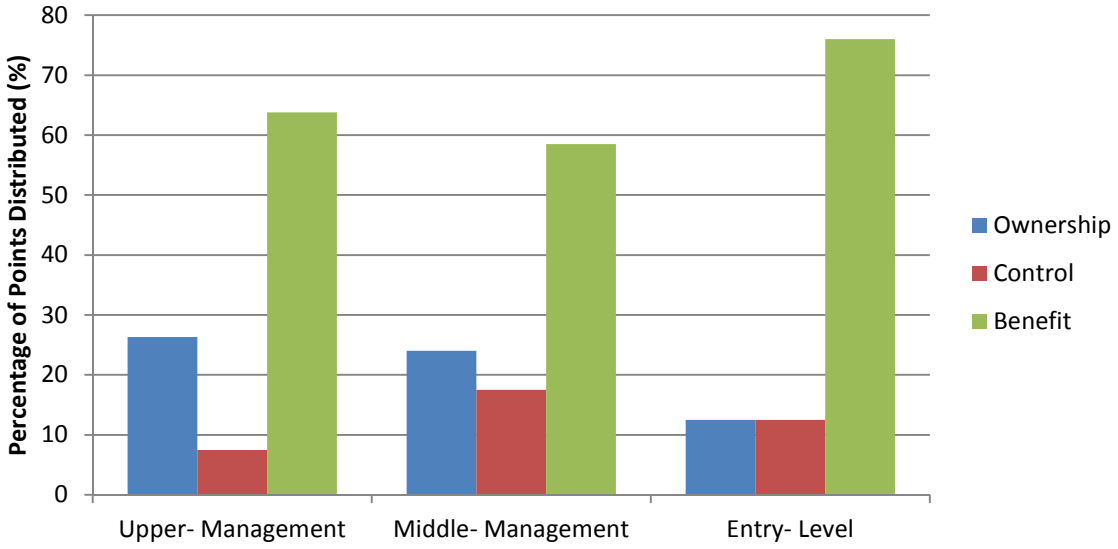

Figure 4.21 Food Cooperative Employee Perception of How Members Value the Principles across Employee Positions

4.3.7 How Members Value of Benefits by Cooperative Employee Position

The researchers use the same categories as outlined above and explore how these different management levels distributed the 100 points between three benefits: price, quality, and relationship. Again, this is not the focus of this research so little space is spent on this analysis.

The benefits are not distributed in the same manner across the different types of cooperatives, unlike the distribution of the cooperative principles. The entry-level agricultural cooperative employees placed the most points in price, over 50 points, while upper-management and middle-management placed the most points in relationship. Quality is the lowest in all three agricultural cooperative position levels except middle-management employees think it would be tied with price. However, entry-level employees think that price would have approximately 30 points more than quality. There is a significant difference in how the different position levels in agricultural cooperatives think their members value benefits. Which position level is most accurate is not explored in this study (Figure 4.22).

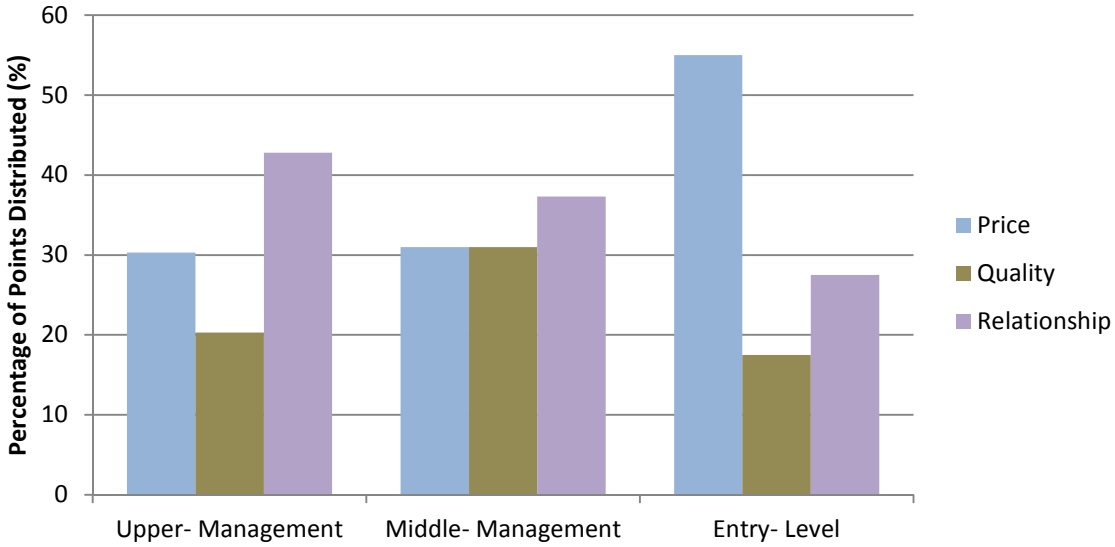

Figure 4.22 Agricultural Cooperative Employee Perception of How Members Value Benefits across Employee Positions

Credit union employees in middle- and upper-management distributed the points fairly similarly between the two positions. Both positions placed quality with around 20 points and both price and relationship around 40 points each. Credit union entry-level employees think their members would allocate the points differently. They think their members would place over 50 points in relationships, about 30 points in price, and just under 20 in quality. Again, which management level is correct is not explored in this study (Figure 4.23).

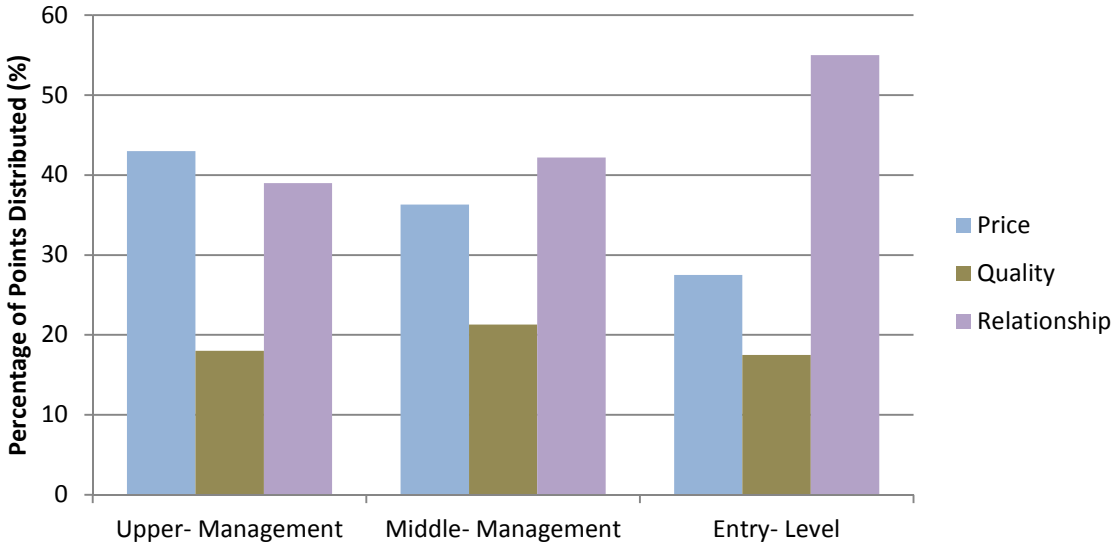

Figure 4.23 Credit Union Employee Perception of How Members Value Benefits across Employee Positions

The employees in all three levels of food cooperatives think that quality means the most to their members compared to price and relationship. For food cooperatives, quality mostly is defined by their food and may include words such as “natural”, “organic”, or “non-GMO”. However, the gap between price and the other two benefits drastically decreases as position levels increases. Entry-level employees think their members would distribute around 70 points to quality and approximately 15 points to price and relationship each. Moving up to middle-management, they think members would distribute 50 points to quality and just over 20 points each to the other two benefits. Upper-management employees think that members would only distribute about 40 points to quality with just under 40 points to price and about 20 points to relationship. While an interesting finding, more exploration that is not within the scope of this study (Figure 4.24).

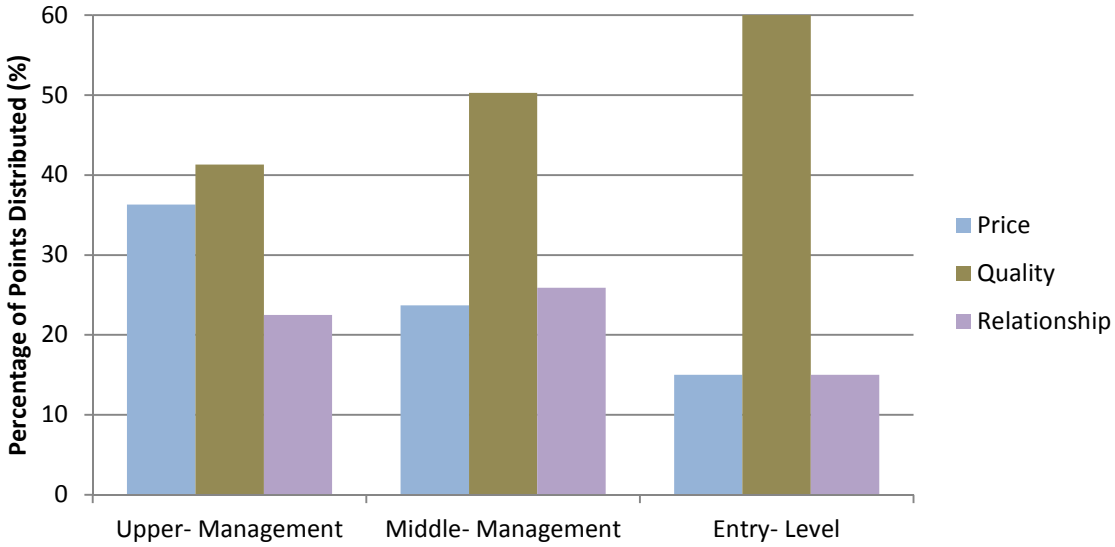

Figure 4.24 Food Cooperative Employee Perception of How Members Value Benefits Across Employee Positions

4.4 Cooperative Communication

Researchers asked the cooperative employees not only what channels they use to communicate value but what value they communicate, do not communicate, and what value factors members and/or potential members often misunderstand. In this section, the reader should keep in mind that if a communication channel or value is not mentioned that does not necessarily mean it is not used or communicated. Throughout this section the researchers are assuming that if at least one employee mentions a method or value then it is true, whether or not the other employees mention it. The researchers believe that employees are more likely to not mention or miss something that is true rather than state something that is untrue. In addition, the respondents were allowed to respond with more than one channel or value, therefore, the percentages below may sum to greater than 100%.

4.4.1 Means of Value Communication

Researchers asked the cooperative employees what channels or methods their cooperative uses to communicate to its members and/or potential members. The researchers then categorized their responses into ten categories: newsletter, non-annual meetings, social media, website, email

blasts, phone, face-to-face, texts, snail mail, and presentations. The researchers calculated the percentage of cooperatives in that particular type of cooperative that use that communication channel, as stated by at least one employee. Every employee within each type of cooperative mentioned a newsletter.

One hundred percent of the credit unions also mentioned face-to-face interaction. This may decrease in future years due to an increase in technology and web-based services. In addition, all the credit unions employees mentioned a website. This may not be true if the research sample had included some of the smaller credit unions that have less than 2,000 members. Over 50% of credit unions also mentioned phone and snail mail. Credit unions are the only cooperative to mention presentations. In fact, only one credit union mentioned presentations; however, this communication method is such an integral part of their marketing plan that is was included in this analysis.

Most food cooperative employees mentioned social media, which is more than double the agricultural cooperatives and credit unions. A lot of food cooperatives are moving towards Facebook and Twitter to reach a younger audience. Half the food cooperative employees mentioned face-to-face and snail mail. Food cooperatives do not use phone, texts, presentations, or non-annual meetings.

Agricultural cooperatives are the only type of cooperative to mention non-annual meetings and text messages. Often times, cooperative employees text growers the current commodity market prices. Half the agricultural cooperative employees mentioned using text messaging as a communication method. One third of agricultural cooperatives also mentioned non-annual meetings, social media, and phone. Very few mentioned website, email blasts, and face-to-face (Table 4.10).

Table 4.10 Percentage of Each Type of Cooperative's Use of Communication Channels

	Agricultural Cooperatives	Credit Unions	Food Cooperatives
Newsletter	100%	100%	100%
Non-annual Meetings	33%	0%	0%
Social Media	33%	40%	83%
Website	17%	100%	33%
Email Blasts	17%	20%	33%
Phone	33%	60%	0%
Face-to-face	17%	100%	50%
Texts	50%	0%	0%
Snail Mail	0%	60%	50%
Presentations	0%	20%	0%

4.4.2 The Value Cooperatives Communicate

Researchers also asked cooperative employees when they use those communication channels, what value they communicate. The researchers received a variety of answers, of which they separated into categories. The categories include the cooperative principles and the three components of benefits. They categorized a response under benefits if it was unclear what particular benefit the respondent was actually referring to.

No agricultural cooperative employees mentioned ownership or control as a value that they communicate. Fifty percent of the agricultural cooperatives had employee that employees mentioned quality of products and services they offer and very few mentioned relationship. Price was the most commonly mentioned value and was mentioned by over 60% of the agricultural cooperative. Even

though 65% is the high for agricultural cooperatives, one hundred percent of credit unions and food cooperative employees mentioned price and quality, respectively. This means that price is, by far, the most commonly communicated value for credit unions. Price for credit unions includes deposit rates, interest rates, and fees. The next most commonly mentioned value is relationship at 60% of the cooperatives. Credit unions also did not mention ownership as a value that they communicate. However, half the food cooperatives interviewed mentioned ownership as a value they communicate. Almost 70% mentioned price and all the food cooperatives mentioned quality (Figure 4.25).

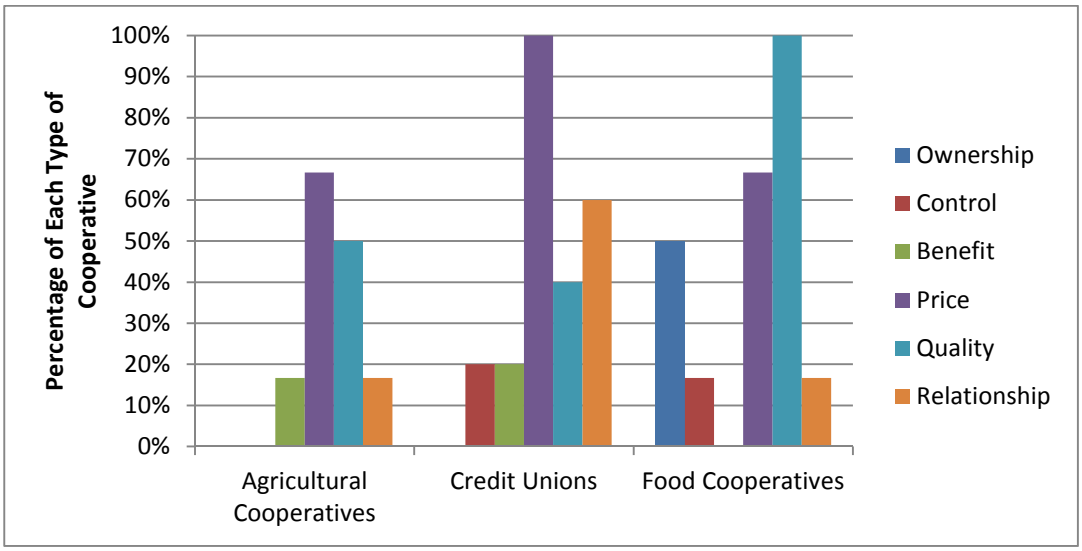

Figure 4.25 Percentage of Each Type of Cooperative that Communicates Each Value Factor

4.4.3 The Value Not Communicated by Cooperatives

After asking what value the cooperatives communicate, the researchers asked if there are any value factors that the employees feel are not communicated. Again, the researchers categorized the responses into the cooperative principles and benefits subcategories.

Fifty percent of agricultural cooperative had employees that stated that there are no value factors that they do not communicate, in other words they communicate all the value they have to offer. Partitioning this out into the number of employees that mentioned “none” as their answer, 67% percent of employees mentioned none. Twenty five percent of the agricultural cooperatives had

employees that said that they do not communicate ownership and twenty five percent said that they do not communicate all their benefits.

Eighty percent of the credit unions said they communicate all their value factors. However, only 50% of the actual credit union employees stated this. Therefore, there is a higher inconsistency within these credit unions than between them. Sixty percent of the credit unions think that they do not communicate price enough and 20% said relationship.

Eighty three percent of food cooperatives had employees that stated they communicate all their value factors while only 38% of the total employees agreed with this. This means that only one or two employees from each cooperative feel this way. There is a very high inconsistency of what value is not communicated within food cooperatives. In addition, 50% of food cooperatives mentioned control and 33% mentioned price and ownership (Table 4.11).

Table 4.11 Percentage of Each Type of Cooperative Not Communicating What Value Factor

	Agricultural Cooperatives	Credit Unions	Food Cooperatives
Ownership	25%	0%	33%
Control	0%	0%	50%
Benefit	25%	0%	0%
Price	0%	60%	33%
Quality	0%	0%	17%
Relationship	0%	20%	17%
None	50%	80%	83%

4.4.4 Misunderstandings by Members and/or Potential Members

Cooperative employees were asked what their members and potential members commonly misunderstand about their cooperative. The researchers then categorized their responses between the cooperative principles and the subcategories and this time included "none" in their analysis where "none" means that the employees believe there are no misunderstandings by their members and/or potential members. Unlike the previous analyses in this section, this analysis is performed by looking at the percentage of employees (rather than cooperatives) that mentioned a particular factor that is misunderstood. This section is analyzed by employee because there exists a high discrepancy in answers even between the employees of the same cooperative.

Ownership is the most commonly stated misunderstanding between all three types of cooperatives with 50% of the employees within each type of cooperative mentioning ownership (Figure 4.26). In addition, 50% of food cooperative employees also mentioned control as a commonly misunderstood factor. Control was only mentioned by a couple of agricultural cooperative employees and credit unions. However, almost 45% of agricultural cooperative employees mentioned price. Very few agricultural cooperative employees and credit union employees think their members and/or potential members understand everything. There are no employees in food cooperatives that think their members and/or potential members understand everything.

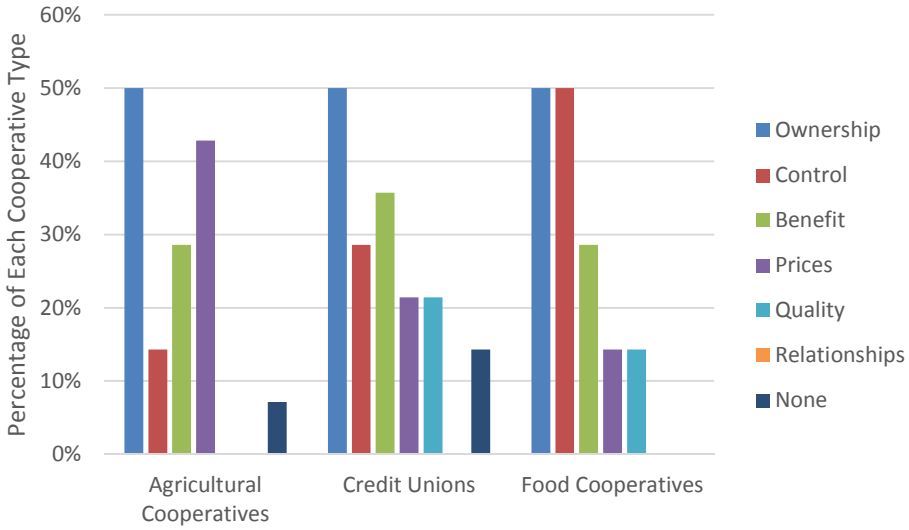

Figure 4.26 Member and Potential Member Misunderstandings by Cooperative Type

Since the extended portion of the study focuses on agricultural cooperatives, the actual misunderstandings stated by the employees of the agricultural cooperatives is explored further. Patronage is the most commonly stated factor that employees think their members and/or potential members misunderstand. Almost 50% of respondents mentioned patronage as a misunderstanding. The next most commonly mentioned misunderstanding is retiring stock and the general topic of stock shortly follows that. The big picture of cooperatives and everything they do was also mentioned by just under 15% of employees. Buying, equity, financials, and marketing rights were also mentioned as misunderstandings (Figure 4.27).

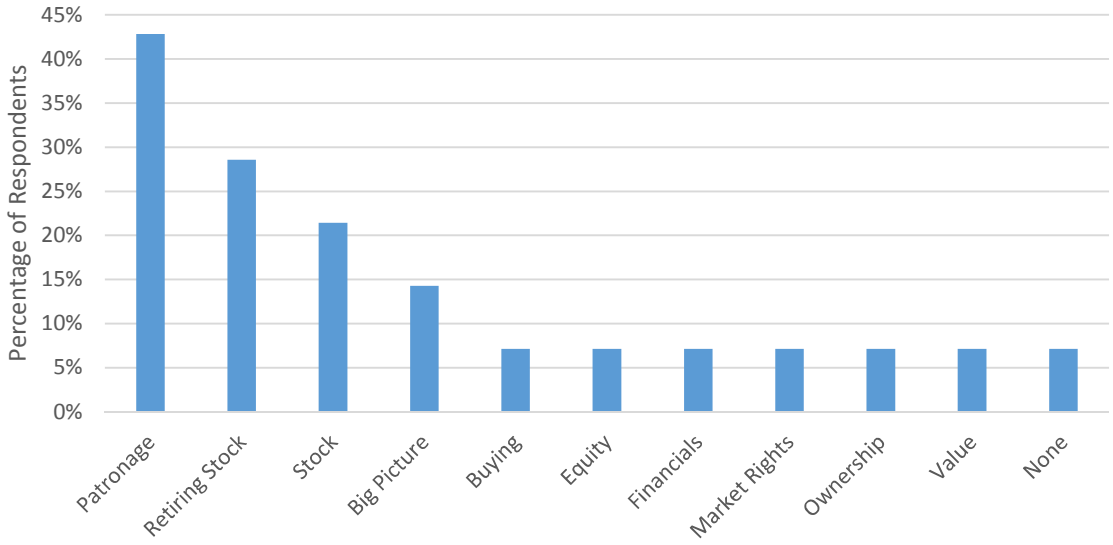

Figure 4.27 Agricultural Cooperative Misunderstandings

CHAPTER 5 INTERPRETATION OF SURVEY RESULTS

In this chapter, researchers explore survey response bias and outline the characteristics of the agricultural producers surveyed. These characteristics include education, income, details of their agricultural operation, and cooperative memberships. In addition, researchers examine the differences between agricultural cooperative member and potential member knowledge and opinion of agricultural cooperatives. The perspective of agricultural cooperatives in terms of value and benefits is also examined between member and potential member producers. Finally, reasons why some agricultural producers are not members of agricultural cooperatives is discussed.

5.1 Survey Sample Information

The survey was emailed to a total of 6,935 agricultural producers. The researchers purchased from Farm Market iD agricultural producer data and agricultural producer email addresses. Only agricultural producers that farmed orchards, row crops, or owned livestock were included in the agricultural producer list. The agricultural producer data includes name, address, phone, city, state, zip, county, planted acres, head of livestock, commodity-type, and gross farm income. However, due to the short-comings of Farm Market iD during the survey process and the number of emails that were out-of-date, the researchers decided that the production data purchased was unreliable and did not include this in the analysis.

Most of the respondents that did not finish the survey stopped answering questions after they were asked if they are a member of an agricultural cooperative or not. This may be due to length of the survey or the type of questions that followed this question. The questions following this question were either directed toward the members or potential members specifically (depending on their answer to the question asking if they are a member). Because of the location where the dropout respondents ended their participation and the importance of the questions that were not answered,

the researchers only analyze those 165 respondents that completed the survey. Here, completed does not mean that the respondents answered every question they were asked; it means that they reached the end of the survey and clicked the submit button. Therefore, the 165 respondents whose responses were analyzed all finished the survey, but may have skipped individual questions.

Before looking into the demographics and the characteristics of the respondents, the researchers tested for non-response bias. Non-response bias occurs when the responses are not representative of the entire population (Ferber, 1948). Since the response rate to the agricultural producer survey was so low, the possibility of non-response bias is concerning. There are a couple of different methods to determine if there is a non-response bias; however the most promising method is a response time based method. Using this method, the returns are divided into various groups according to when they returned the survey. For example, the responses may be divided into quarter groups where the quartiles are based on the time in which responses are received. Bias is assumed to exist if the distribution of results is significantly different between the first responders and the late responders (Ferber, 1948).

The researchers initially proposed breaking the responses into three groups based on the dates that the survey was deployed. However, given that there was only 21 complete responses to the initial SurveyMonkey survey and 64 complete responses to the second Qualtrics survey deployed, the researchers decided to compare the first 21 responses to the last 21 responses. Using the statistical program SPSS, researchers performed an independent sample T-Test.

But before performing the T-test researchers look at basic statistics, including the means, of early and late responders of most demographic variables, not including a few that they felt were least important. Table 5.1 shows the grouping statistics for each variable. The grouping by time value of 1.00 indicates the responses to the SurveyMonkey survey or the first 21 responses to complete the survey. The grouping of 3.00 indicates the last 21 responses to complete the final survey deployed

through Qualtrics. N indicates the number of valid responses in each group, mean is the average within each group, similarly with standard deviation and standard error of the mean. Notice that there are no means between the two groups that are exactly the same; however, most are very similar. Next, the researchers determine if these slight differences in means are significant enough to claim that the means are statistically different between the two groups, which would mean non-response bias.

Table 5.1 Statistics on Select Variables for Early and Late Responding Groups

	Grouping	N	Mean	Std. Dev.	Std. Error
What is the highest level of education you have COMPLETED?	Early	21	4.48	1.504	.328
	Late	21	5.05	1.359	.297
How many years have you been working in agriculture?	Early	21	4.57	1.502	.328
	Late	20	4.10	1.447	.324
Approximately, what was your GROSS INCOME from AGRICULTURE in 2014?	Early	20	2.40	1.353	.303
	Late	21	2.05	1.431	.312
Is your agricultural operation family owned?	Early	21	2.00	.000	.000
	Late	21	1.95	.218	.048
Were previous generations involved with agricultural cooperatives?	Early	20	1.80	.523	.117
	Late	19	1.74	.452	.104
How many active partners do you have in your operation?	Early	21	2.62	1.532	.334
	Late	20	2.55	1.669	.373
Do you share equipment with other farmers/ranchers?	Early	21	1.43	.507	.111
	Late	20	1.35	.489	.109
Are you the owner?	Early	21	.90	.301	.066
	Late	21	.86	.359	.078
Are you a member of a (Federal) Credit Union?	1.00	19	.16	.375	.086
	3.00	21	.24	.436	.095

Before looking at the T-Test for equality of means, the researchers first determine if the assumptions of the T-test were met. If the assumptions are not met then a special form of the T-test is used. The T-test assumes that between groups, the variability is equal. Levene's Test for equality of variances is used to test this. The significance or p-value of the test is easily used to determine if the null hypothesis of equal variances is rejected or accepted. Levene's test in SPSS uses an alpha level of 0.05, therefore if the p-value is larger than alpha (0.05) then do not reject the null hypothesis and assume the variances are equal and thus the assumption for the T-test is met. After determining what form of T-statistic to analyze for each variable and the associated p-values for each, the null hypothesis for the T-test, which states that the means are equal, is tested by comparing the significance or p-value of the T-statistics to the alpha of 0.05. If the p-value is greater than 0.05 then the null hypothesis is not rejected and the means are assumed equal (University of Dayton, 2012).

Table 5.2 shows the statistics and p-values for Leven's Test and the T-Test. Notice that the only variable where the null hypothesis for equal variances is rejected is the variable asking if their operation is family owned. This hypothesis is rejected because the value of 0.042, under the Sig. column, is less than the alpha value of 0.05. Therefore, for this variable, the T-statistic where equal variances are not assumed is used. For all other variables variances are assumed to be equal. Looking at the appropriate p-value (column Sig. (2-tailed)) for each variable, the researchers discover that for all variables the null hypothesis of equal means between groups is not rejected (p-value < 0.05). Therefore, the researchers conclude that there is no non-response bias in this survey.

Table 5.2 Independent Variable Levene's Test and T-Test

		Levene's Test		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff.	SE Diff.
Highest level of education COMPLETED	Equal variances	.710	.404	-1.292	40.000	.204	-.571	.442
	Not equal			-1.292	39.598	.204	-.571	.442
Years worked in agriculture	Equal variances	.257	.615	1.022	39.000	.313	.471	.461
	Not equal			1.023	38.994	.312	.471	.461
Gross income from agriculture in 2014	Equal variances	.150	.701	.809	39.000	.423	.352	.435
	Not equal			.810	38.999	.423	.352	.435
Family owned?	Equal variances	4.432	.042	1.000	40.000	.323	.048	.048
	Not equal			1.000	20.000	.329	.048	.048
Previous generations and agricultural cooperatives	Equal variances	.019	.891	.402	37.000	.690	.063	.157
	Not equal			.404	36.689	.689	.063	.156
How many active partners do you have in your operation	Equal variances	.000	.990	.138	39.000	.891	.069	.500
	Not equal			.138	38.298	.891	.069	.501
Share equipment with other farmers/ranchers	Equal variances	.940	.338	.504	39.000	.617	.079	.156
	Not equal			.505	38.992	.616	.079	.156
Owner	Equal variances	.885	.352	.466	40.000	.644	.048	.102
	Not equal			.466	38.826	.644	.048	.102
Member of a (federal) credit union	Equal variances	1.597	.214	-.620	38.000	.539	-.080	.129
	Not equal			-.625	37.906	.536	-.080	.128
Member of a (federal) credit union	Equal variances	1.597	.214	-.620	38.000	.539	-.080	.129
	Not equal			-.625	37.906	.536	-.080	.128

Next, researchers analyzed the demographics. The 165 complete respondents were well dispersed amongst the three states of interest. Sixty two of the complete respondents live in Idaho, 40 in Oregon, and 63 in Washington. A third of the complete respondents graduated from a four-year college. About 15% attended a four-year college but never graduated and around the same number completed some form of two year college. Ten percent of the 165 respondents that completed the survey had some form of an advanced graduate work Figure 5.1.

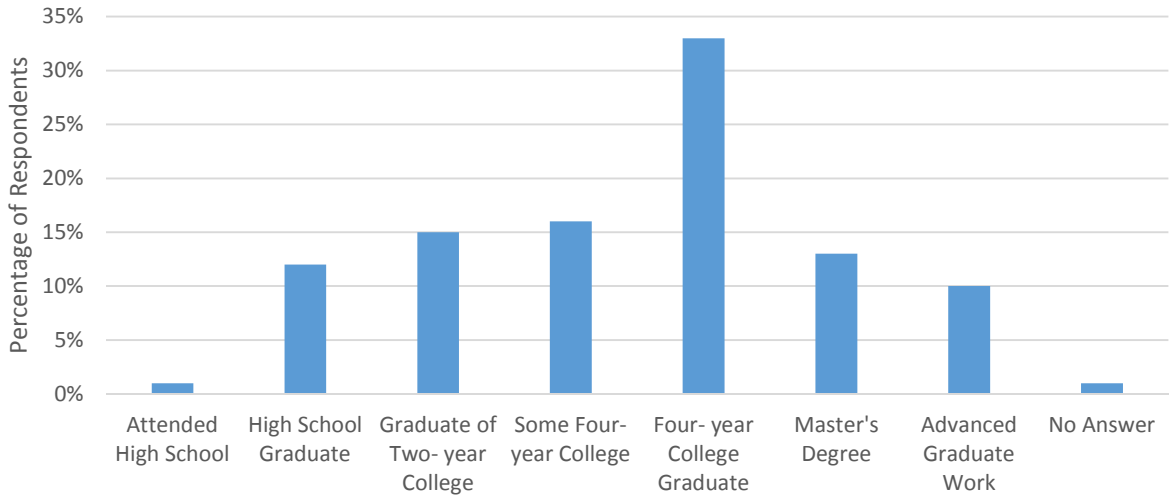

Figure 5.1 Highest Education Levels Completed by Survey Respondents

In addition, almost 50% of the respondents were between 56 and 70 years old. Almost a quarter were between the ages of 46 and 55 years old. Eighteen percent of the respondents were over 70 years old and only 1% was under 25 years old. This dispersion of ages varies slightly from the 2012 USDA NASS Census of Agriculture findings; however, the ages are grouped differently. For example, the 2012 USDA NASS Census of Agriculture found that just under 30% of principle farmers were between 55 and 64 years of age. Even though, 50% of the researchers' survey respondents were in a similar group, that grouping went up to 70 years of age. Therefore, since it is a wider group, a higher percentage of respondents is expected.

Figure 5.2 also shows the dispersion of respondent gender across the age groups. More than 75% of the respondents were male. This is very heavily weighted towards the male population. However, this is not surprising and is a good representation of overall population of farmers. According to the 2012 USDA NASS Census of Agriculture, 70% of farm operators are male and only 30% are female (USDA, 2014).

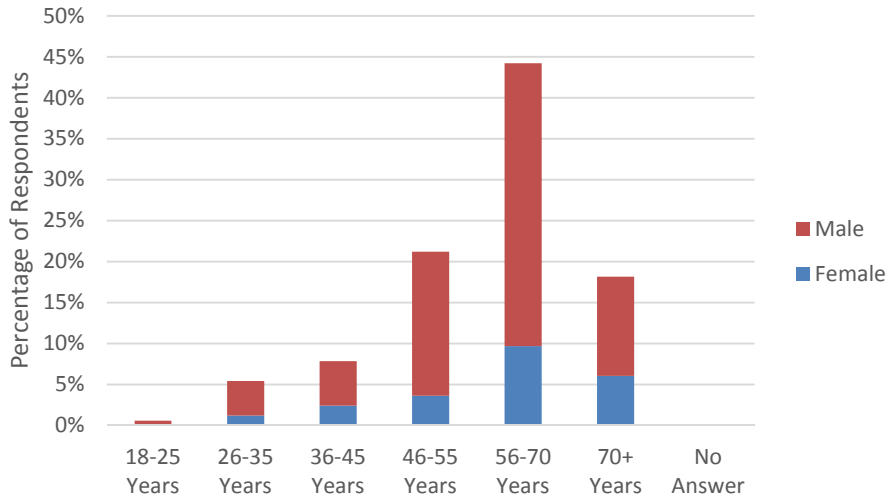

Figure 5.2 Age Group and Gender of Survey Respondents

Looking at the genders by state, Idaho has the least percentage of female respondents, 16%. This is a little bit higher than the percentage of female operators in Idaho, which is 12.1%, but the survey still managed to catch a good representation of the Idaho farming community in terms of gender (USDA, 2014). There was also a greater percentage of female respondents than the percentage of female principle operators in Oregon, 25% and 19.8% respectively (USDA, 2014). This pattern is also consistent with Washington where the survey had 29% female responses but statewide there is 20.1% females (USDA, 2014). Even though the percentage of female respondents is higher in every state compared to the percentage of female principle operators in each state, the difference is not high enough to cause concern.

The average age of the Idaho and Oregon respondents is approximately 50 years old. The average age of all Idaho and Oregon agricultural principle operators is 57.6 years old and 59.6, respectively. The average age of the respondents in Washington is 55 years old and the average age of all agricultural principle operators in Washington is 58.5 years old. It should also be noted that the average age of principle operators in all three states has been increasing since 1997 (USDA, 2014). Even though all the average age of respondents in all three states is lower than the average age of all agricultural producer principle operators in these states, the difference in averages is less than 10 years and this small difference does not concern the researchers.

In addition, the researchers asked respondents what their role was in the operation. The researchers gave the survey respondents an option of four choices: owner, operator, family employee, or employee. The respondents had the option to select more than one answer (therefore the total does not add up to 100%). Sixty two percent of the respondents replied that they were the owner of the farming operation, just over 25% answered that they were operator, only 8.8% replied that they were a family employee and almost 4% answered employee. Four respondents did not answer this question. The first column of Table 5.3 below lists the actual number of producers that responded yes to each question. Because the agricultural producers can answer yes to multiple roles to total number of N is not required to equal the actual number of respondents (161). The second column is the number of responses per selection divided by the total number of selections for that question (236). The third column is the number of actual responses per selection divided by the number of total respondents (161) for that question. Therefore, that total percentage may be greater than 100%.

Table 5.3 Role of Respondents

		Responses		Percent of Respondents
		N	Percent	
Role in Operation	What is your role in the operation (check all that apply)?-Owner	146	61.9%	90.7%
	What is your role in the operation (check all that apply)?-Operator	65	27.5%	40.4%
	What is your role in the operation (check all that apply)?-Family Employee	18	7.6%	11.2%
	What is your role in the operation (check all that apply)?-Employee	7	3.0%	4.3%
Total		236	100.0%	146.6%

When looking at how many years the complete respondents have been working in agriculture, over 50% said 30 or more years. Only nine percent of the respondents have been involved in agriculture for less than 10 years. The 2012 USDA NASS Census of agriculture found that there are fewer new farmers in the United States. In fact from 2007 to 2012 there has been a -23.3% change. The highest percentage of respondents actually had over 40 years of experience in agriculture (36%).

There is also a noticeable correlation between the years in agriculture and the gross income from agriculture. The higher the gross income from agriculture, the more years of experience they have. This is plainly shown in the graph below where the cases where no farmers made that amount of money and had that many years of experience is highlighted pink. The respondents that make over $100,000 have at least 10 years of experience and their income from agriculture only has the change to grow as they gain more years of experience (Table 5.4).

Table 5.4 Percentage of Respondents by Amount of Gross Income from Agriculture and Years of Experience in Agriculture

	Less than $50,000	$50,000-$99,999	$100,000-$499,999	$500,000-$999,999	$1M-$4.9 M	+$5 M	Grand Total
Less than 5 Years	5%	1%	0%	0%	0%	0%	**6%**
5-9 Years	2%	1%	0%	0%	0%	0%	**3%**
10-19 Years	6%	2%	2%	1%	0%	0%	**12%**
20-29 Years	3%	3%	5%	1%	3%	0%	**16%**
30-39 Years	7%	5%	6%	4%	1%	1%	**24%**
40+ Years	9%	10%	8%	2%	4%	1%	**36%**
Grand Total	**35%**	**22%**	**22%**	**7%**	**8%**	**1%**	**100%**

The researchers also asked how much additional gross income the agricultural producers are making from non-agricultural practices. Almost one fifth of respondents said that they do not receive any other additional income. Just over one tenth said make up to $10,000 more from non-agricultural practices. Thirty percent answered between $10,000 and $50,000 and 36% answered with greater than $50,000. Therefore, many agricultural producers do not rely solely on their agricultural operation for income.

Researchers are also interested in how many of the agricultural producers surveyed worked on family farms and the generations of those family farms. Out of 165 agricultural producers, four refused to answer the question that asked if they were family owned. One hundred fifty four (or 93%) respondents stated that they are working on a family farm and only seven stated they are not working on a family farm. The researchers then asked only those agricultural producers that are working on a

family farm, how many generations are involved in the farm, what generation the actual survey participant was (if any), and if previous generations are or were involved with cooperatives. Almost one third of the respondents that answered the above questions answered that their farm has been owned by four generations. Another 27% answered that they have been owned by three generations of family. Only 8% answered with one generation and 5% said more than six generations. One percent did not know. When asked what generation the respondent is, one third stated the third generation. Twenty two percent said fourth generation and 18% said second generation. Two percent said that this question is not applicable, meaning they are not a family employee. Finally, 73% of respondents revealed their previous generations are or were involved in cooperatives.

The researchers also asked respondents how many partners are actively involved in the operation because partnership is seen as a form of cooperation, which then may affect if they are a member of a cooperative or not. Over three quarters of the respondents answered that their farms have two or less partners, with an even distribution amongst zero, one, and two partners. Only eight percent answered that they had three partners, four percent have four partners, and five percent have five or more partners. For another indicator of cooperation, the respondents were asked if they share equipment with any other farmers. Over 50% of the respondents answered that they do not share equipment with other farmers.

Finally, the researchers asked if the respondents were members of certain types of cooperatives. The respondents could respond with multiple answers when asked if they are a member of an agricultural input cooperative, agricultural marketing cooperative, food cooperative, credit union, none, and other (any other cooperative that does not fit in one of the other categories). One hundred sixty one out of one hundred sixty five answered this question. Of those that answered 37.9% said they are members of an agricultural input cooperative and 37.3% are members of agricultural marketing cooperatives. Only 1.9% or 3 respondents answered that they are members of food

cooperatives. Many more respondents (n=31 or 19.3%) answered that they are members of credit unions. Even more producers answered that they are not members of any cooperatives, 31.7% of the respondents. Table 5.5 presents the number and percentage of respondents who were members of different types of cooperatives. Column two represents the percentage of responses for that selection out of the total 214 responses and column three is out of the total number of respondents, 161.

Table 5.5 Respondents' Memberships in Different Types of Cooperatives.

Are you a member of any of the types of cooperatives listed (check all that apply)?	Responses		Percent of Respondents
	N	Percent	
Agricultural Input Cooperative	61	28.5%	37.9%
Agricultural Marketing Cooperative	60	28.0%	37.3%
Food Cooperative	3	1.4%	1.9%
Federal) Credit Union	31	14.5%	19.3%
None	51	23.8%	31.7%
Other	8	3.7%	5.0%
Total	214	100.0%	132.9%

5.2 The Agricultural Producer Perspective on Cooperatives

In the survey, all agricultural producers, regardless of cooperative membership or not, were asked key questions to determine their perspective agricultural cooperatives. These questions were answered by members and potential members. These questions asked them to rate their knowledge of agricultural cooperatives, their opinion of agricultural cooperatives, and to rate the importance of certain value factors that agricultural cooperatives offer.

5.2.1 Knowledge and Opinion of Agricultural Cooperatives

The agricultural producers were asked to rate their knowledge of agricultural cooperatives on a five point scale of: not at all knowledgeable, slightly knowledgeable, moderately knowledgeable, very knowledgeable, and extremely knowledgeable. The distribution of the answers is consistent across the three states surveyed: Idaho, Oregon, and Washington. Of the 164 agricultural producers that answered this question (one producer did not answer), only three stated that they were extremely knowledgeable. The rating selected the most was moderately knowledgeable with just under 50% of the responses or 75 agricultural producers. From this middle ground the frequency of responses to each rating only decreases (Figure 5.3).

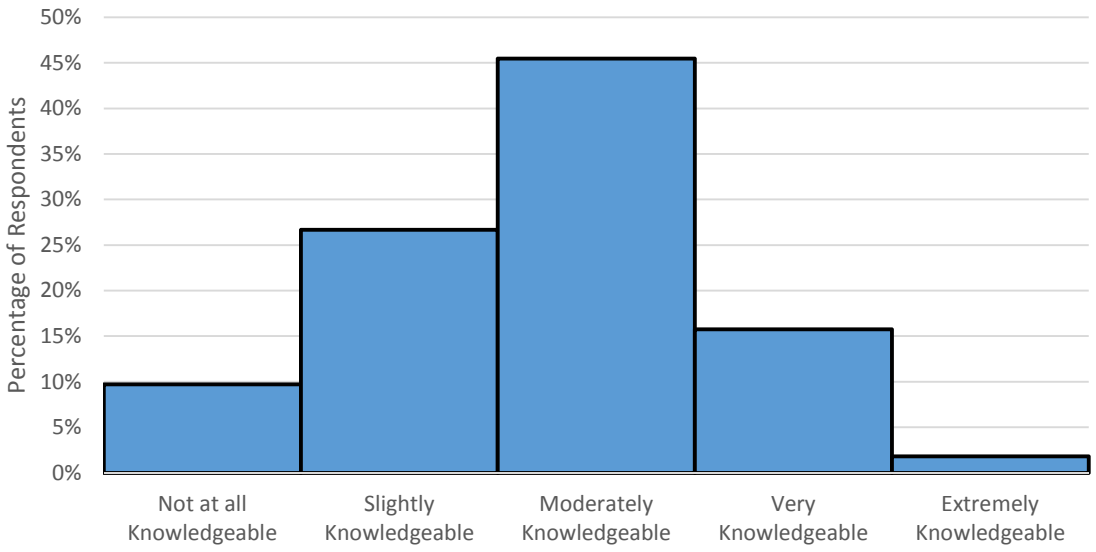

Figure 5.3 Agricultural Producer Knowledge of Agricultural Cooperatives

The distribution of how agricultural producers rated their agricultural cooperative knowledge was also interesting when the producers were split into two groups: members of agricultural cooperatives and potential members of agricultural cooperatives. As expected, the agricultural producers that stated they were members of agricultural cooperatives rated their knowledge of them higher than potential members. In fact, out of the 44 agricultural producers that stated they were not

member of an agricultural cooperative, zero said that they were extremely knowledgeable and only three said that they were very knowledgeable. The peak is at the slightly knowledgeable rating with 39% of the potential member (those who answered "no" when asked if they were a member of an agricultural cooperative). The responses from those who are members is a little more normally distributed with over 50% selecting moderately knowledgeable or 60 out of 117 agricultural cooperative members. The extremes on the rating scale were only selected by 3% of these agricultural producers (Figure 5.4). The T-test also confirms that these two groups have significantly different means when it comes to their rating of their knowledge of agricultural cooperatives.

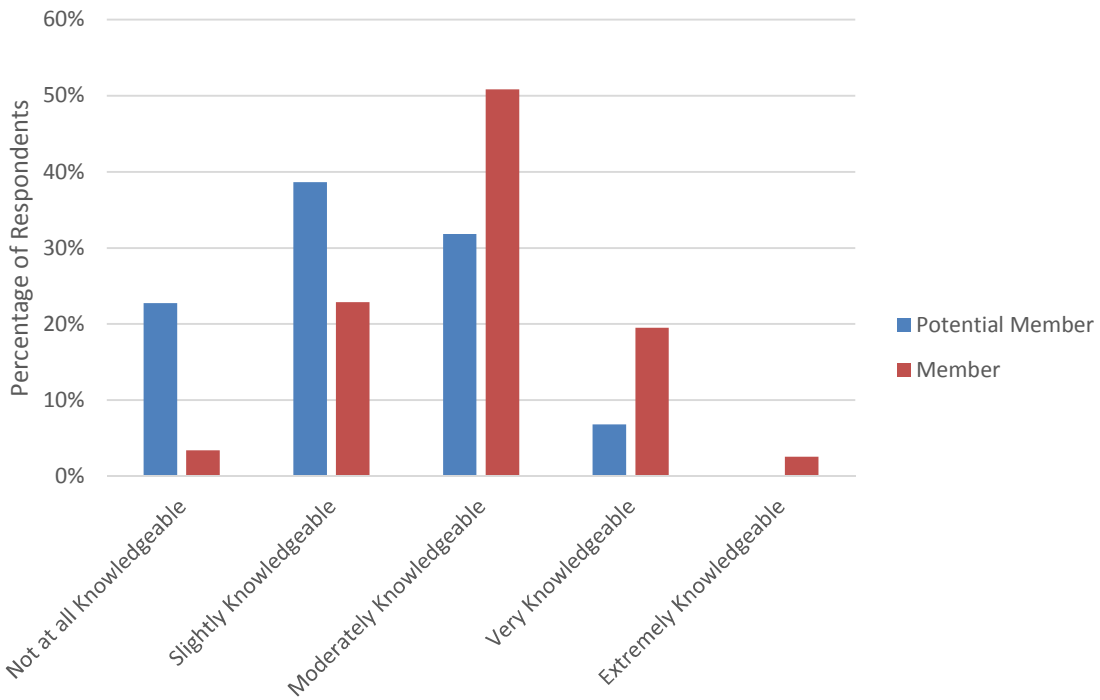

Figure 5.4 Agricultural Cooperative Knowledge across Members and Potential Members

The researchers also asked agricultural producers for their opinion of agricultural cooperatives. They asked them to rate their opinion on a five point scale: very unfavorable, unfavorable, neutral, favorable, and very favorable. Over 80% of the respondents answered neutral

or favorable. Two percent answered very unfavorable, two percent answered unfavorable, and 10% answered very favorable (Figure 5.5).

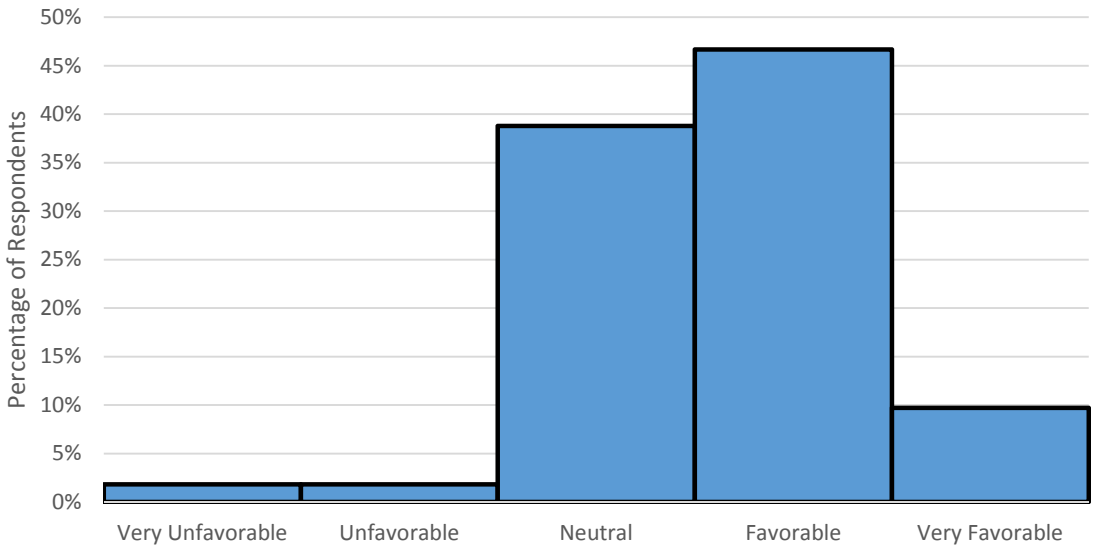

Figure 5.5 Agricultural Producers' Opinion of Agricultural Cooperatives

The means of opinion towards agricultural cooperatives do vary significantly between the agricultural cooperative members and potential members. Over 50% of the agricultural cooperative members said that they are favorable towards agricultural cooperatives and over 60% of the agricultural producers who are not members stated neutral (Figure 5.6). It is not surprising that those agricultural producers who are members view agricultural cooperative more favorably than those that are not members.

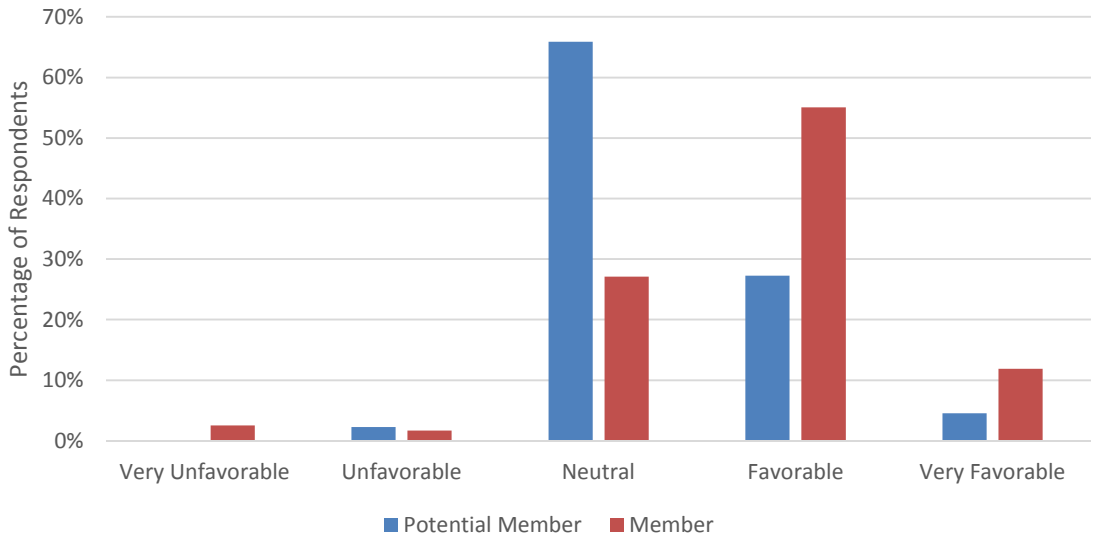

Figure 5.6 Members' and Potential Members' Opinions of Agricultural Cooperatives

5.2.2 Importance Ratings of Agricultural Cooperative Value Factors

The researchers also asked agricultural producers to rate the importance of certain value factors that agricultural cooperatives offer. These factors include pride/loyalty, access to market, community involvement, reputation of cooperative, ownership of the cooperative, patronage, control of the cooperative, relationship (i.e. trust), price competitiveness, and quality (products/services). The researchers asked the respondents to rate each of these factors on a four-point scale (with four being very important and one being not very important) when considering renewing or becoming a member of an agricultural cooperative. Table 5.6 below outlines the number of agricultural producers that rated each factor, as well as the mean and standard deviation of their ratings.

Table 5.6 Descriptive Statistics of Importance Ratings of Cooperative Value Factors

	N	Mean	Std. Deviation
Pride/loyalty	152	2.8191	1.01894
Patronage[1]	108	2.8519	.82104
Community	150	2.9100	.87675
Control	149	3.0839	.82896
Ownership	154	3.2565	.80285
Relationship	153	3.4575	.82905
Access	152	3.5132	.79931
Reputation	153	3.5196	.82295
Quality (products/services)	151	3.6060	.76944
Price Competitiveness	153	3.6307	.75387

[1] The majority of the value factors had around 150 responses while patronage only had 108 responses. As mentioned in the Sampling Procedures and Methodology section, patronage was mistakenly left off the Qualtrics Survey. Therefore, that question was later emailed to those survey respondents. Not all agricultural producers responded to the emails asking about the importance of patronage, which is why this number is lower than the rest.

The mean column in Table 5.6 averages all the rating values selected for that value factor. If a respondent selected “not very important” then that is a value of one, “somewhat important” is a value of two, “moderately important” is a value of three, “important” (which was only included on the SurveyMonkey survey), is a value of 3.5, and “extremely important” is a value of four. According to mean value the most important factor is price competitiveness. Quality of products and services, access to market space, and reputation of cooperative follow closely behind. Patronage, pride/loyalty, and community involvement all fall short compared to the other factors. Comparing the means of these factors, researchers identified no statistical difference between members and potential members of agricultural cooperatives.

5.2.3 Business with Agricultural Cooperatives

Researchers also asked all agricultural producers if they did business with an agricultural cooperative. Agricultural producers do not have to be members to do business with agricultural cooperatives and if they are a member, it does not necessarily mean that the agricultural producer does business with the agricultural cooperative of which they are a member. Looking at the crosstab in Table 5.7 below, 85% of respondents either responded with "no" to business and membership (15%) or "yes" to business and membership (70%). This was expected because even though one can occur without the other, often business and membership go hand-in-hand. Twelve percent of the 161 respondents to this question said that they do business with agricultural cooperatives but are not a member of any. Only one percent of agricultural producers stated that they are members of agricultural cooperative but do not do business with them.

Table 5.7 Agricultural Cooperative Business and Membership

Row Labels	Non-member	Member	No Answer	Grand Total
No Business	15%	1%	1%	17%
Business	12%	70%	0%	82%
No Answer	0%	1%	1%	1%
Grand Total	27%	72%	1%	100%

The last question that researchers asked all agricultural producers was: "Are you are member of an agricultural cooperative?" As shown by the table above, a high majority of respondents answered yes and only 27% answered no. The answer to this question dictated what question set that particular respondent would answer next. If agricultural producers answered that they are a member of an agricultural cooperative then they were asked a series of questions regarding their reasons for joining, loyalty, cooperative participation, how much they value the cooperative principles and benefits, and the channels used by the cooperative to communicate with the agricultural producer. If agricultural

producers answered that they are not members of agricultural cooperatives then they were asked a series of questions regarding why they are not a member and how much they value the cooperative principles and benefits.

5.3 The Agricultural Cooperative Member Perspective of Agricultural Cooperatives

The following sections discuss the loyalty of members to their cooperative(s) and to the cooperative idea as a whole. In addition, the level of member participation and how much the members value the cooperative principles and benefits are also discussed. Finally, researchers discuss how members are receiving information from their agricultural cooperative.

5.3.1 Loyalty

The researchers asked only the agricultural cooperative members how loyal they are to the cooperative(s) they are a member of and how loyal they are to the cooperative model. The researchers differentiated the two because Zeuli and Bentacor (2005) found that dairy farmers are more married to the cooperative idea than to a specific cooperative. However, agricultural cooperative members surveyed in this study are significantly more loyal to their specific cooperative than to the cooperative model/idea (Figure 5.7). These are opposite results than those found by Zeuli and Bentacor (2005). The fact that this study includes all kinds of agricultural producers, not just dairy, might account for the difference. However, the exact reason for this result is unknown and requires further study.

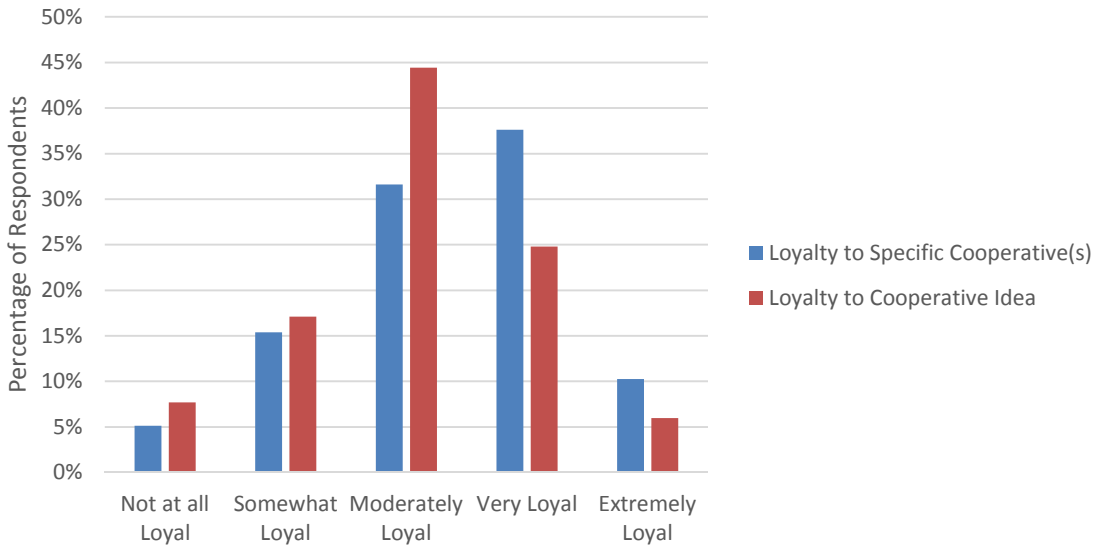

Figure 5.7 Agricultural Producer Cooperative Loyalty

5.3.2 Participation

Researchers also asked agricultural cooperative members to rate their personal level of participation. Researchers asked them to rate it on a five-point scale: not at all involved, slightly involved, moderately involved, very involved, and extremely involved. Seventy percent of the 118 responses stated that they are either slightly or moderately involved. Nineteen percent said not at all involved and only 11% said very or extremely involved.

Researchers also asked other questions to measure their actual level of participation rather than just perceived. When asked if they have ever or currently serve on the board of directors only 15% answered yes. When asked how many actually voted for the board of directors, almost 60% said yes, but just under 50% said they attended the annual meeting in 2014. Based off observations and researchers' own judgement, agricultural cooperative members' perceived participation is representative of their actual participation.

5.3.3 Actual Member Value of Cooperative Principles and Benefits

Like the interviews of agricultural cooperative employees, researchers asked the agricultural cooperative members to distribute 100 points between the three cooperative principles: ownership, control, and benefit. How the members actually distributed these points is very similar to how the agricultural employees thought they would distribute them. The members distributed over 50 of their points to benefit. Ownership is only valued slightly more than control (Figure 5.8). Recall that agricultural cooperative employees think they would distribute about 45 points to benefit and 24 and 32 points to control and ownership, respectively. Therefore, agricultural cooperative employees are correct in that members value benefit the most; however, members value it more than agricultural cooperative employees think.

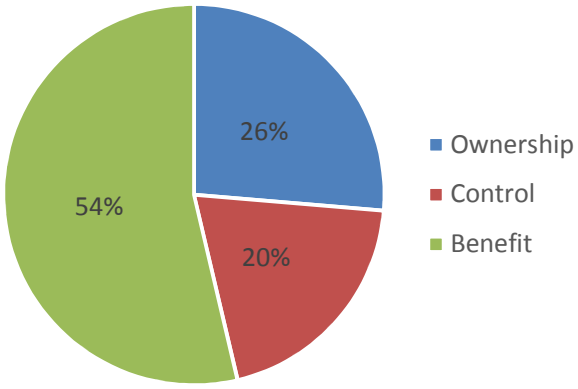

Figure 5.8 How Agricultural Cooperative Members Actually Value Cooperative Principles

They were also asked to distribute 100 points amongst the three categories of benefits: price, quality, and relationship. Recall that agricultural cooperative employees think their members would distribute the points fairly evenly between the three benefits. However, as shown below by Figure 5.9, agricultural cooperative members actually value price at almost 50% while quality and relationship are roughly 25% each. This shows that the agricultural cooperative employees do not fully understand how their members value benefits.

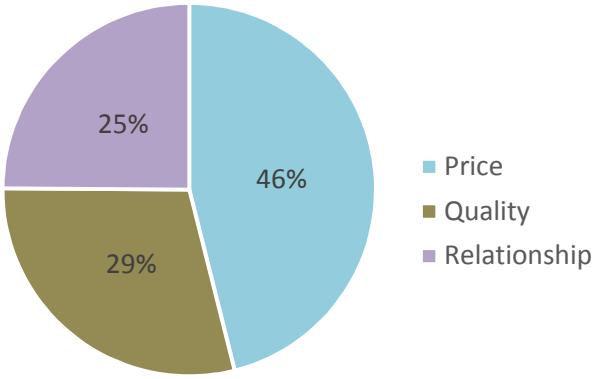

Figure 5.9 How Agricultural Cooperative Members Actually Value Benefits

5.3.4 Communication Channels' Importance

Lastly, researchers asked agricultural cooperative members to rate the importance of the communication methods that were outlined by the agricultural cooperative employees during the interviews. They were asked to rate the following communication avenues: face-to-face, newsletter, website, phone, email, social media, texts, annual meetings, and non-annual meetings. The agricultural cooperative members were asked to rate these methods on a scale of one to five of not very important, somewhat important, moderately important, important, and extremely important. Each of these scale factors has coded number value with not very important being one and extremely important being five. The communication method with the highest mean is, by far, face-to-face with a mean value of 3.77. Phone and email follow behind with their means being between moderately important and important. Social media certainly has the lowest mean of 1.73. The second lowest is texts with a mean of 2.36 (Table 5.8). This is interesting because the communication methods that are rated the highest was not mentioned by many of the agricultural cooperative employees. However, just because it was not mentioned does not mean that the agricultural cooperatives do not communicate through that avenue.

Table 5.8 Descriptive Statistics of How Agricultural Cooperative Members Value Communication Channels

		Agricultural cooperative member ratings of communication channels used by cooperatives			
	N	Minimum	Maximum	Mean	Std. Dev.
Face-to-face	110	1.00	5.00	3.7727	1.33862
Phone	113	1.00	5.00	3.3982	1.29242
Emails	109	1.00	5.00	3.1651	1.22106
Website	114	1.00	5.00	2.9825	1.29657
Newsletter	109	1.00	5.00	2.9358	1.16488
Annual Meeting	111	1.00	5.00	2.9189	1.37600
Non-annual Meeting	104	1.00	5.00	2.7788	1.23033
Texts	109	1.00	5.00	2.3578	1.33696
Social Media	107	1.00	4.00	1.7290	1.01470

5.4 The Agricultural Cooperative Potential Member Perspective of Agricultural Cooperatives

The following subsections describe why some agricultural producers are not members of agricultural cooperatives. In addition, researchers outline how potential members of agricultural cooperatives value the agricultural cooperative principles and the benefits. In this section, researchers explain the potential member agricultural producer perspective.

5.4.1 Reasons for Not Being a Member

The first question researchers asked those respondents who answered they were not a member of an agricultural cooperative was if they have ever been a member of an agricultural cooperative. Out of the possible 38 responses only four said that they have been a member of an agricultural cooperative in the past. Three of these four agricultural producers said that they are no

longer a member because they no longer need the cooperative's services since they either sold the farm or leased it out to another farmer. One agricultural producer said that their cooperative dissolved because of lack of use. However, researchers do not have enough data to make any conclusions why agricultural producers leave their agricultural cooperatives.

Researchers also asked the potential member agricultural producers to rate the importance of various factors. The coding scheme for the scale is as follows: one is not very important, two is somewhat important, three is moderately important, four is important, and five is extremely important. The factors researchers chose were those agricultural cooperative employees mentioned in the interviews as reasons why not all agricultural producers are members of agricultural cooperatives. These factors include: lose independence, dislike cooperative idea, prices, switching costs, other business relationships, inconvenience, unawareness, and feel undervalued. The mean of each of these factors does not exceed 3.0. Therefore, agricultural producers do not feel that any of the factors mentioned are very important reasons as to why they are not members of agricultural cooperatives. The factor with the largest mean is inconvenience with a mean of 2.72. Prices follow closely behind. The lowest factors are dislike cooperative idea and agricultural producers feeling undervalued (Table 5.9). Note that this does not necessarily mean that they like the cooperative idea or feel valued, it only means that the potential members believe that these two factors are not very important reasons explaining why they are not members of agricultural cooperatives. Three of the five agricultural producers that wrote in other reasons stated that cooperatives are not available to them, with two clarifying this as too far away. The other two respondents who wrote in answers said that they now lease or sold their farmland.

Table 5.9 Descriptive Statistics of Importance Ratings of Why Potential Members are Not Agricultural Cooperative Members

		Agricultural cooperative potential member ratings of reasons why not members			
	N	Minimum	Maximum	Mean	Std. Deviation
Inconvenience	25	1.0000	5.000	2.7200	1.64621
Prices	26	1.0000	5.000	2.5000	1.47648
Other Business Relationships	24	1.0000	5.000	2.3750	1.20911
Unawareness	21	1.0000	5.000	2.2381	1.17918
Switching Costs	24	1.0000	5.000	2.1667	1.37261
Lose Independence	24	1.0000	5.000	2.0417	1.26763
Undervalued	21	1.0000	5.000	1.9048	1.13599
Dislike Cooperative Idea	23	1.0000	5.000	1.5652	.94514

5.4.2 Actual Potential Members Value of Cooperative Principles and Benefits

Researchers then asked the agricultural producers that are not members of agricultural cooperatives to distribute 100 points between the three cooperative principles: ownership, control, and benefit. Surprisingly, the average allocation of points was fairly evenly distributed amongst the three cooperative principles. This is very different from how the agricultural cooperative employees think their potential members would allocate the points. Recall that agricultural cooperative employees think their potential members would distribute almost 80 points to benefit with the other two principles being almost equal. Looking at Figure 5.10, benefit does not even have the highest percentage. The potential members allocated 42% of their points to ownership, 35% to benefit, and 23% to control. This shows that the agricultural cooperative employees do not understand their potential members, at least when it comes to valuing the cooperative principles.

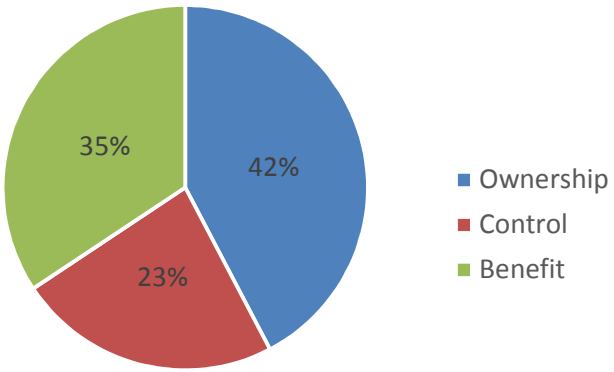

Figure 5.10 How Agricultural Cooperative Potential Members Actually Value the Cooperative Principles

The potential members were also asked to distribute 100 points amongst the benefit categories of price, quality, and relationship. Potential members value price more than control and ownership. They allocated 50 points to price. Quality is second most important to them with 31 points (Figure 5.11). Agricultural cooperative employees think potential members would rank the benefits in the same order; however, they think their potential members would place 15 more points in price. Agricultural cooperative employees also distributed 25 points to quality and only 10 to relationship. Hence, agricultural cooperative employees understand more of how their potential members value the benefits they offer than the cooperative principles; however, there is still room for improvement.

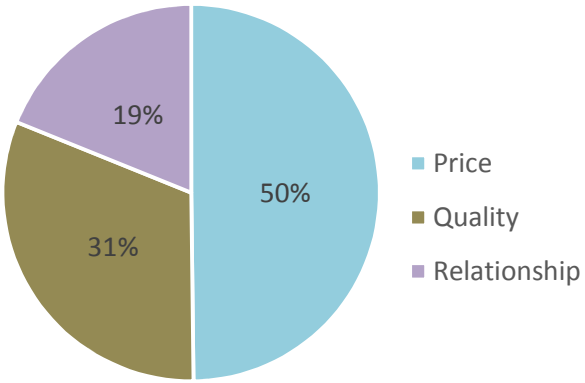

Figure 5.11 How Agricultural Cooperative Potential Members Actually Value the Benefits

CHAPTER 6 DATA ANALYSIS: METHODOLOGY AND RESULTS

In addition to looking at the data gathered by the surveys, the researchers also develop a Logit model based on the survey responses. Unlike the previous analysis where only the completed data is analyzed, the entire 258 case, or response, data set is used to create the model. Researchers only used only the respondents that completed all the question used in the analysis because using partial data would take away from the validity of the model. The researchers included all the cases for two reasons. The first reason is that the questions/variables included in the model were asked of all agricultural producers and were asked in the beginning of the survey. Therefore, even if respondents did not finish the survey they are more likely to have completed all the questions/variables needed to create the Logit model. Secondly, the more cases included in the model, the more robust the model. Cases are excluded list-wise, so the greater number of total cases the researchers start with in their modeling, the more likely there is to be a higher number of cases included in the model.

6.1 Logit Model Development

From the data gathered by the agricultural producer survey, researchers create a Logit model predicting if a particular agricultural producer is a member of an agricultural cooperative. To develop this model, the researchers use an analytical solutions software called SPSS. Researchers only input into the software the responses to the questions that were asked of all agricultural producers, regardless of agricultural cooperative membership. The potential variables to be used in this model include education, age, gender, income from agriculture, income from non-agriculture activities, agricultural farming experience, operation family owned, number of generations in operation, previous generation involvement with agricultural cooperatives, the number of partners in the operation, if operation shares equipment with other agricultural producers, if they are a member of a food cooperative or credit union, their knowledge of agricultural cooperatives, their opinion is of

agricultural cooperatives, if they do business with agricultural cooperatives, and their ratings of importance of agricultural cooperative value factors.

After looking at data frequencies, researchers decided to not include the variable asking if the agricultural producer is a member of a food cooperative because only four respondents (out of 195) answered "yes". With such a low response of "yes", including this variable in the analysis would decrease the validity of the model, therefore it is not included in the analysis.

In addition to the previously noted questions, several questions were asked of the respondents who answered "yes" to being family owned. Researchers asked these questions to uncover the history of the operations. Since all of these questions revolved around the core concept of being family owned and some were highly correlated, researchers decided to only include one of these variables in their model. Not surprisingly, the variable with the most significance in predicting whether an agricultural producer is a member of an agricultural cooperative is the question asking if previous generations were involved with agricultural cooperatives. Therefore only this variable in the set of family related variables will be included in the model.

Some of these variables were highly correlated to each other and were, therefore, not included in the model. As one may expect, gross income from agriculture and gross income from non-agricultural activities in 2014 are highly inversely correlated. Using a Pearson two-tailed correlation, these two variables are significantly correlated at a 0.01 level with a P-value of 0.000 and a correlation coefficient of -0.371. This means that the correlations coefficient is statistically significant and they are negatively correlated with -1 being perfectly inversely correlated. Therefore, gross income from agriculture is only included in the model. In addition, agricultural cooperative membership and how much business is done with agricultural cooperatives are highly correlated. Even though 30 respondents stated that they do business with agricultural cooperatives but are not members and four said that they are members but do not do business with agricultural cooperatives, the vast majority

(157) of respondents stated that they either do business and are a member or do not do business and are not a member. This leads to a very significant 2-tailed Pearson Correlation of a P-value of 0.000 and correlation coefficient of 0.596. Therefore, the question asking respondents if they do business with an agricultural cooperative is not included in the model to prevent multicollinearity.

Ten other variables are highly correlated; however, this may be because they are similar questions asking the respondents to rate the importance of various cooperative value factors. The only value factor that was not significantly correlated to the others was patronage (Table 6.1). However, recall that patronage was asked in an email after the survey was distributed. It is unknown why patronage is not correlated with the other importance value factors. Also, because the patronage question was emailed later than the survey and only emailed to the survey respondents, the total number of respondents to the patronage question is lower than the other questions. This means that the number of cases included in the analysis would decrease, if it were included it would decrease the number of cases by about 60 or 38% of our total cases, and it did not significantly improve the model. Therefore, patronage is not included in the model. In addition, since the other value factors are so highly correlated, they are not included in the model.

Table 6.1 Correlations of Ratings of Importance of Agricultural Cooperative Value Factors*

		Pride/ loyalty	Access to Market	Community	Reputation	Ownership	Patronage	Control	Relationship	Price	Quality
Pride/ loyalty	Correlation Coefficient	1	.602**	.738**	.533**	.654**	.122	.543**	.470**	.473**	.495**
	P-value		.000	.000	.000	.000	.187	.000	.000	.000	.000
Access to Market	Correlation Coefficient	.602**	1	.598**	.700**	.649**	.066	.579**	.652**	.726**	.746**
	P-value	.000		.000	.000	.000	.478	.000	.000	.000	.000
Community	Correlation Coefficient	.738**	.598**	1	.626**	.696**	.062	.605**	.590**	.555**	.598**
	P-value	.000	.000		.000	.000	.503	.000	.000	.000	.000
Reputation	Correlation Coefficient	.533**	.700**	.626**	1	.726**	-.015	.607**	.727**	.712**	.856**
	P-value	.000	.000	.000		.000	.869	.000	.000	.000	.000
Ownership	Correlation Coefficient	.654**	.649**	.696**	.726**	1	.093	.744**	.675**	.651**	.735**
	P-value	.000	.000	.000	.000		.314	.000	.000	.000	.000

		Pride/ loyalty	Access to Market	Community	Reputation	Ownership	Patronage	Control	Relationship	Price	Quality
Patronage	Correlation Coefficient	.122	.066	.062	-.015	.093	1	.089	.136	.069	.083
	P-value	.187	.478	.503	.869	.314		.333	.141	.453	.370
Control	Correlation Coefficient	.543**	.579**	.605**	.607**	.744**	.089	1	.662**	.598**	.656**
	P-value	.000	.000	.000	.000	.000	.333		.000	.000	.000
Relationship	Correlation Coefficient	.470**	.652**	.590**	.727**	.675**	.136	.662**	1	.825**	.814**
	P-value	.000	.000	.000	.000	.000	.141	.000		.000	.000
Price	Correlation Coefficient	.473**	.726**	.555**	.712**	.651**	.069	.598**	.825**	1	.828**
	P-value	.000	.000	.000	.000	.000	.453	.000	.000		.000
Quality	Correlation Coefficient	.495**	.746**	.598**	.856**	.735**	.083	.656**	.814**	.828**	1
	P-value	.000	.000	.000	.000	.000	.370	.000	.000	.000	

*Listwise N=119

** Correlation is significant at the 0.01 level (2-tailed).

6.1.1 Logit Model 1

After considering frequencies, descriptive statistics, correlations, and better judgement, a model is developed with the remaining variables. In the null model there are no variables and the model predicts that all agricultural producers are members of cooperatives. In this null model, the predictability capacity is 67.1%. Once the variables are added the predictability capacity raises to 80.7%, which is acceptable since it is greater than the predictability capacity of the null model but may be able to still be improved upon. Table 6.2 shows the coefficients (column B) for each of the variables, the Wald statistic, degrees of freedom, the significance for each variable based on the Wald Statistic, and the exponential of each coefficient.

Table 6.2 Variables and Related Statistics in Model 1

	B	Standard Error	Wald Statistics	Degrees of Freedom	Significance	Exp(B)
Education	.422	.161	6.890	1	.009	1.526
Age	-.057	.210	.074	1	.785	.944
Gender	.324	.506	.410	1	.522	1.382
Experience	.184	.151	1.484	1	.223	1.202
Agricultural Income	.509	.226	5.077	1	.024	1.663
Generations and Cooperatives	1.170	.484	5.830	1	.016	3.220
Active Partners	.219	.163	1.798	1	.180	1.244
Sharing Equipment	-.082	.390	.044	1	.833	.921
Credit Union Member	1.385	.605	5.234	1	.022	3.995
Agricultural Cooperative Knowledge	1.027	.285	12.931	1	.000	2.792
Agricultural Cooperative Opinion	.122	.305	.160	1	.689	1.130
Constant	-8.919	2.284	15.250	1	.000	.000

In addition to the statistics on the individual variables in the model, the number of cases (or events or responses) per variable is also important. As stated by one of the main resources for Logistic Regression, Hosmer and Lemeshow's *Applied Logistic Regression*, the minimum number of cases per independent variable is 10. However, many statisticians and econometricians prefer to use 20 or 30 cases per independent variable (Statistics Solutions, 2014; University of Texas at Austin). With 161 cases included in this analysis, there are just under 15 cases per variable. Even though this may be

acceptable, this ratio can be improved since some of these variables are severely insignificant. These variables include: age, gender, experience, active partners, sharing equipment, and agricultural cooperative opinion, which are not significant at the 0.05 level. In addition to not being significant some of these variables are correlated with each other, which can lead to a Multicollinearity issue.

Age is one of these variables and is significantly correlated with education at the 0.05 level. Therefore, age is not included in model 2. In addition, only 27% of the respondents are female and gender is significantly correlated at the 0.05 level with agricultural income, active partners, and is even more correlated at the 0.01 level with agricultural cooperative knowledge. Therefore, gender is not included in model 2 either. The agricultural cooperative opinion variable is not only insignificant but almost 90% of respondents said that they are either neutral or favorable towards agricultural cooperatives. Therefore, the agricultural cooperative opinion variable is removed from the model.

6.1.2 Logit Model 2

Model 2 has the following variables: education, experience, agricultural income, generations and cooperatives, active partners, sharing equipment, credit union member, and agricultural cooperative knowledge. The null model has a predictability capacity of 67.3%. The actual model with the variables has a weakened predictability capacity of 80.0%. However, this new model has about 21 cases per variable and the Nagelkerke R Square is 0.455, which suggests that the model can explain 45.5% of the variation in the outcome. Even though the Nagelkerke R Square and number of cases per variable is acceptable, improvements can still be made to the model. In this respect, it is much more reasonable than the other model. In this model, there are still three insignificant variables, experience, active partners, and sharing equipment (Table 6.3). Even though insignificant variables are acceptable to have in models, researchers feel it is worth exploring their exclusion.

Table 6.3 Variables and Related Statistics in Model 2

	B	S.E.	Wald	df	Sig.	Exp(B)
Education	.446	.159	7.850	1	.005	1.562
Experience	.184	.144	1.633	1	.201	1.201
Agricultural Income	.518	.217	5.713	1	.017	1.679
Generations and Cooperatives	1.263	.473	7.124	1	.008	3.536
Active Partners	.258	.160	2.593	1	.107	1.294
Sharing Equipment	-.109	.383	.081	1	.776	.897
Credit Union Member	1.411	.600	5.528	1	.019	4.102
Agricultural Cooperative Knowledge	1.039	.265	15.360	1	.000	2.825
Constant	-8.706	1.824	22.770	1	.000	.000

6.1.3 The Final Logit Model

The final model chosen by the researchers includes five variables, education, agricultural income, previous generation agricultural cooperative involvement, membership in credit unions, and knowledge of agricultural cooperatives. This model is chosen as the final model because the measures of fit are very similar to those of the previous model but it has fewer variables, which means there are more cases per variable, improving the robustness of the model.

In this final model two of the five independent variables are categorized using dummy variables. Researchers do not incorporate dummy variables until this point because the models above were continuing to be improved and if the actual categorical variable is far from significant then there

is no use implementing dummy variables. Education level and agricultural income are two variables that are not dichotomous or metric and are, therefore, categorized into their different levels using dummy variables. Ratings of knowledge of agricultural cooperatives are not categorized because it is similar to the Likert scale and so can be seen as metric. Because there are only four who answered that they did not complete high school and only three respondents stated that they make five million or more dollars from agricultural income these two categories are excluded as dummy variables. Dummy variables take either the value zero or one. The amount of dummy variables is the total amount of categories for that independent variable minus one. That category that is not a dummy variable is known as the base or reference category since that category has a value of zero. This is because the base category can be identified by setting all the other dummy variables to zero. Since the respondent has to fall into a category and all the other categories are zero, it can be determined that they selected the base category. Table 6.4 below outlines the dummy variables codings.

Table 6.4 Categorical Variable Codings

		Frequency	Parameter coding				
			(1)	(2)	(3)	(4)	(5)
Education	High School Graduate	17	.000	.000	.000	.000	.000
	Graduate of Two-year College/Technical/Trade Program	26	1.000	.000	.000	.000	.000
	Some Four-year College	28	.000	1.000	.000	.000	.000
	Four-year College Graduate	55	.000	.000	1.000	.000	.000
	Master's Degree	22	.000	.000	.000	1.000	.000
	Advanced Graduate Work	16	.000	.000	.000	.000	1.000
Agricultural Income	Less than $50,000	68	.000	.000	.000	.000	
	$50,000-$99,999	38	1.000	.000	.000	.000	
	$100,000-$499,999	33	.000	1.000	.000	.000	
	$500,000-$999,999	12	.000	.000	1.000	.000	
	$1 Million-$4.9 Million	13	.000	.000	.000	1.000	

There are 164 cases included in this model. The predictability of the null model (as described above) is 67.7% with 53 potential members and 111 members of agricultural cooperatives. This statistic means that if every agricultural producer is predicted to be a member of an agricultural cooperative then the model would be 67.7% correct. This statistic is only used to compare to the actual predictability of the model.

The actual predictability of the model is found in the classification table, which is one of the most important pieces of output for a logistic regression. This table tells you the actual predictability of the model. This model predicts just over 90% of the actual agricultural cooperative members correctly; however, it only predicts just over 60% of the non-agricultural cooperative members correctly. The model predicted that 20 of the potential members would be agricultural cooperative members (Table 6.5). This models total predictability of 82.3% is just over two percent greater than model 2. More importantly, for the final model, the inclusion of variables from the null model raises the predictability by almost 15%, while model 2 raised its predictability by the inclusion of variables by almost 13%. According to the University of Texas at Austin, a general rule to measure the goodness of fit is to see if the model predictability is greater than 1.25 times the null model predictability. According to this measure of goodness-of-fit, this model does not quite make it as a “good” model since the comparative predictability is (1.25 x 67.7) 84.6%.

Table 6.5 Classification Table

	Observed		Predicted		
			Are you a member of an agricultural cooperative?		Percentage Correct
			No	Yes	
Step 1	Are you a member of an agricultural cooperative?	No	33	20	62.3%
		Yes	9	102	91.9%
	Overall Percentage				82.3%

Another way to measure the fit of a model is to look at the Omnibus Test for model coefficients. Table 6.6 below has three rows (excluding headings): Step, Block, and Model. The Chi-square, degrees of freedom, and significance are all the same in these rows because the method used to form the logistic regression was “enter” and not “stepwise” (only one step is used in creating this model), therefore the Step and Block rows can be disregarded. The significance measures the probability of actually obtaining the Chi-square value given that the null hypothesis of there being no effect of the independent variables on the dependent variable is true. Since the p-value or Significance is less than 0.05, the model is statistically significant, in other words, the accuracy of the model improves when the researchers add the selected variables.

Table 6.6 Omnibus Test of Model Coefficients

		Chi-square	Degrees of Freedom	Significance
Step 1	Step	78.329	12	.000
	Block	78.329	12	.000
	Model	78.329	12	.000

Looking at some comparative measures of fit, this final model fits the data more than Model 2. The Nagelkerke R Square (pseudo R square) of Model 2 is 0.455 while the final model has a Nagelkerke R Square of 0.53 (Table 6.7). This suggests that the final model can explain 53% of the variation in the outcome, which is perfectly acceptable. The researchers only look at Nagelkerke R Square and not Cox & Snell R Square because these pseudo R squares measure very similar things but Nagelkerke R square has a maximum value of one while Cox & Snell does not.

Table 6.7 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	128.061[a]	.380	.530

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

The Hosmer & Lemeshow test examines the goodness of fit. This test arranges the cases in order of predictive probability and then puts them in groups (usually around 10) of similar probabilities. Within each group the predictive and actual group memberships are determined. To compute the Chi-square statistic, the observed frequencies are compared with those predicted under a linear model (Table 6.8). The null hypothesis of this Chi-square statistic is the predictions fit perfectly with the observed values. The p-value for the final model is 0.937 (associated with Chi-square 2.955), which indicates there is significant goodness of fit because the researchers fail to reject the null hypothesis. In fact, the higher the significance, or p-value, the better the fit. The Hosmer & Lemeshow test for the final model is better than that test for model 2 where the significance is 0.697. However, it should be noted that this test has many weaknesses associated with it including its vulnerability to sample size. Small sample sizes may produce a non-significant result but the model may still be a poor fit. It is said that even Hosmer and Lemeshow do not recommend using their test anymore (Wuensch, 2014).

Table 6.8 Contingency Table of Hosmer and Lemeshow Test

		Are you a member of an agricultural cooperative? = No		Are you a member of an agricultural cooperative? = Yes		Total
		Observed	Expected	Observed	Expected	
Step 1	1	15	15.774	2	1.226	17
	2	14	12.219	2	3.781	16
	3	8	8.892	9	8.108	17
	4	7	6.287	10	10.713	17
	5	4	4.297	15	14.703	19
	6	2	2.438	15	14.562	17
	7	1	1.544	15	14.456	16
	8	1	.910	15	15.090	16
	9	1	.496	15	15.504	16
	10	0	.143	13	12.857	13

It should be noted that the researchers also attempt to explore a version of the final model where the outliers that had studentized residuals greater than 2.58 (the z-score for p=0.01) are excluded; however, there do not exist any studentized residuals greater than 2.58.

The most important table in SPSS's output is the table analyzing each variable in the equation (Table 6.9). The B column of the table is the actual coefficient that is placed in front of the variable in the equation.

Table 6.9 Final Logit Model Variables and Related Statistics

	B	Standard Error	Wald Statistic	Degrees of Freedom	Significance	Exp(B)
Education			14.451	5	.013	
Graduate of two-year college/technical/trade program	2.215	.874	6.418	1	.011	9.162
Some four-year college	2.937	.950	9.564	1	.002	18.865
Four-year college graduate	3.114	.847	13.525	1	.000	22.513
Master's degree	3.144	1.070	8.627	1	.003	23.201
Advanced graduate work	2.558	1.035	6.116	1	.013	12.916
Agricultural Income			10.896	4	.028	
$50,000- $99,999	.785	.587	1.788	1	.181	2.193
$100,000- $499,999	2.486	.770	10.431	1	.001	12.019
$500,000- $999,999	.332	.939	.125	1	.724	1.393
$1 M- $4.9 M	.959	1.151	.694	1	.405	2.610
Generations and Agricultural Cooperatives	2.002	.560	12.790	1	.000	7.404
Credit Union Membership	1.793	.682	6.913	1	.009	6.010
Agricultural Cooperatives Knowledge	1.011	.280	13.010	1	.000	2.748
Constant	-5.767	1.139	25.653	1	.000	.003

These coefficients can be expressed in equation form as well. There are two ways to express this equation:

(1) $logit[p(x)] = log\left[\frac{p(x)}{1-p(x)}\right] = -5.767 + 2.215x_{two-year} + 2.937x_{some\ four-year} + 3.114x_{four-year} + 3.144x_{master's} + 2.558x_{advanced\ grad\ work} + 0.785x_{\$50,000-99,999} + 2.486x_{\$100,000-499,999} + 0.332x_{\$500,000-\$999,999} + 0.959x_{\$1\ M-4.9\ M} + 2.002x_{Generations\ and\ ag\ coops} + 1.793x_{Credit\ union\ membership} + 1.011x_{ag\ coop\ knowledge}$

where p = the probability that the agricultural producer is a member of an agricultural cooperative

Equation 6.1 Linear Form of the Logistic Regression Equation

(2) $p = \frac{e^z}{1+e^z} = \frac{1}{1+e^{-z}}$

$where\ z = -5.767 + 2.215x_{two-year} + 2.937x_{some\ four-year} + 3.114x_{four-year} + 3.144x_{master's} + 2.558x_{advanced\ grad\ work} + 0.785x_{\$50,000-99,999} + 2.486x_{\$100,000-499,999} + 0.332x_{\$500,000-\$999,999} + 0.959x_{\$1\ M-4.9\ M} + 2.002x_{Generations\ and\ ag\ coops} + 1.793x_{Credit\ union\ membership} + 1.011x_{ag\ coop\ knowledge}$

p = the probability that the agricultural producer is a member of an agricultural cooperative

e= the base of natural logarithms (approximately 2.72)

Equation 6.2 Non-Linear Form of the Logistic Regression Equation

Note that all the variables in this model move in the same direction, they increase the probability of the agricultural producer being an agricultural cooperative member. Keep in mind that, unlike ordinary least squares models, the coefficients above are only telling of the sign or direction of change, they cannot be interpreted as magnitude of change. The next column is the standard error,

which is used to calculate the Wald Statistic. The remaining columns are the degrees of freedom and significance or p-value. Looking at the significances, the general education and agricultural income variables are significant since the p-value is less than 0.05 but some of the agricultural income dummy variables fall short. In fact, the only significant dummy variable under agricultural income is the $100,000-$499,999 variable. The generations and agricultural cooperatives, credit union membership, and agricultural cooperative knowledge are all statistically significant.

The magnitude of change is under column Exp(B). This column is computed by raising the base of the natural log to the Bth power. For example $e^{2.215} = 9.162$ for the two-year education variable. This means that graduates of two-year college/technical/trade programs are 9.162 times more likely to be members of agricultural cooperatives than agricultural producers who only completed high school. Each dummy variable is compared to its corresponding reference variable. Recall, that for education the reference variable is attended high school and for agricultural income it's less than $50,000. For example, an agricultural producer that has had some four-year college is 18.865 times more likely to be an agricultural member than an agricultural producer who only completed high school.

The Exp(B) or odds ratio can also be computed for each variable. Take the member of a credit union or not as an example:

$$log\frac{p_i}{1-p_i} = -5.767 + 1.793x_{cu}$$

Exponentiate both sides to get:

$$ODDS = \frac{p_i}{1-p_i} = e^{-5.767+1.793(x_{cu})}$$

If not a member of a credit union then $x_{cu} = 0$

$$ODDS = \frac{p_i}{1-p_i} = e^{-5.767+1.793(0)}$$

$$ODDS = \frac{p_i}{1 - p_i} = 0.00313$$

Convert ODDS to probabilities by:

$$\hat{Y} = \frac{ODDS}{ODDS + 1} = \frac{0.00313}{1.00313} = 0.00312$$

So, the model predicts that 0.312% of agricultural producers that are not members of credit unions are members of agricultural cooperatives.

If a member of a credit union then $x_{cu} = 1$

$$ODDS = \frac{p_i}{1 - p_i} = e^{-5.767+1.793(1)}$$

$$ODDS = \frac{p_i}{1 - p_i} = 0.0188$$

The probability for credit union members is as follows:

$$\hat{Y} = \frac{ODDS}{ODDS + 1} = \frac{0.0188}{1.0188} = 0.0184$$

Therefore, the model predicts that 1.84% of credit union members are members of agricultural cooperatives. The odds ratio is just the division of the two odds:

$$\frac{0.0188}{0.00313} = 6.006$$

With rounding this is equal to the Exp(B) of 6.01 above. This same procedure can be followed for all the variables, including dummy variables, to check the odds ratio. For the agricultural cooperative knowledge variable, however, the x_i can be equal to more than just zero and one. The odds are calculated for two, three, and four. The odds ratio in the table is simply calculated by the exponential of the coefficient B.

Graphs can also be very useful in analyzing the fit of a model. Since the response in this Logit model is binary the error term is dichotomous. Recall that $e = Y_i - p_i$ so $\varepsilon_i = 1 - p_i \; when \; Y^i = 1$ and $\varepsilon_i = -p_i \; when \; Y^i = 0$.

Therefore, when the deviance residuals are graphed against the predicted probability there are two lines (Figure 6.1). The top line is for when the observed value $Y^i = 1$. This error is always positive because the predicted probability is always less than the observed value of one (see equation above). The line beneath it is for the observed value of $Y^i = 0$. This error value is always negative because the predicted probability is always greater than zero (see equation above). Both the lines are decreasing because as the probability increases for either observed value, the error term decreases.

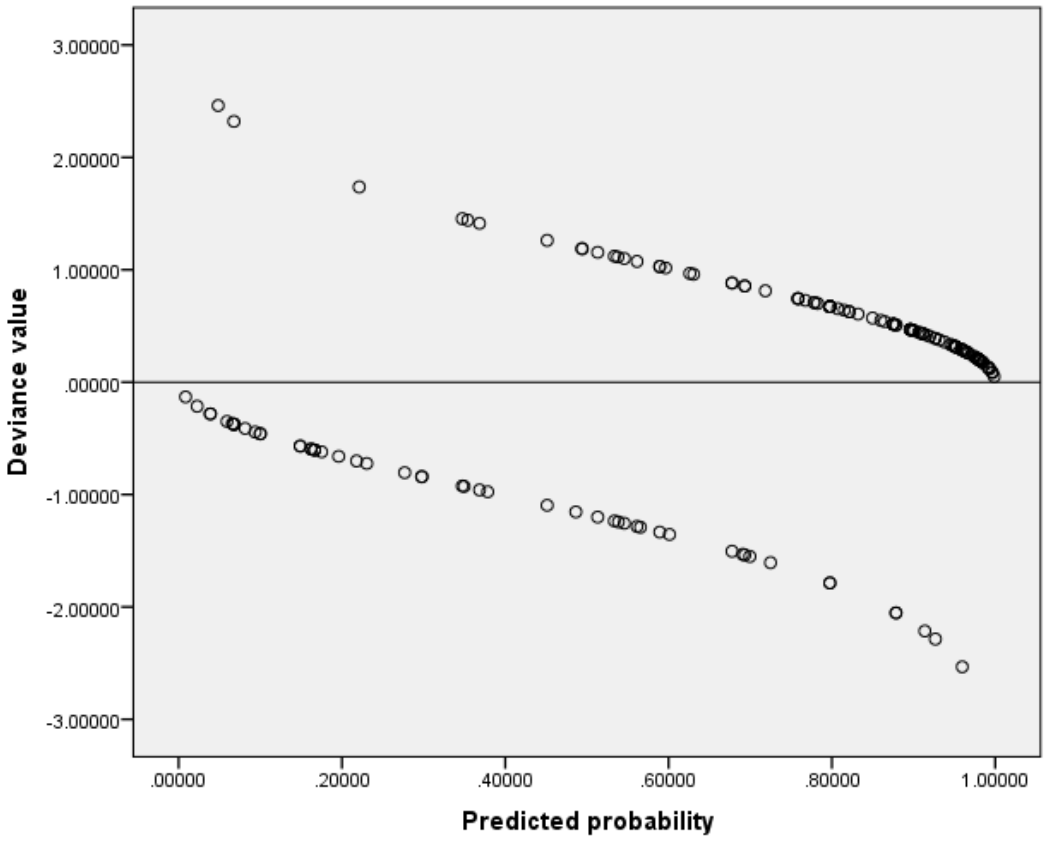

Figure 6.1 Deviance Residuals vs. Predicted Probabilities

From the graph above, most agricultural producers have a very high predictive probability of being members of an agricultural cooperative and actually are members of agricultural cooperatives. Therefore, many data points have a very low deviance value. The lower line where agricultural producers are not members of an agricultural cooperative are less concentrated on the end closest to the zero deviance line than the upper line. This means that the model has a higher accurate predictive capacity with the agricultural producers who are members than those who are not members of an agricultural cooperative. This is consistent with the classification table above.

In addition, graphs help the researchers understand the general characteristics of the model. For example, Figure 6.2 illustrates the number of cases that fall within each predictive probability group. From this column chart it is obvious that the predictive probability group with the most cases is the 90-100% group with over 50 cases. This group alone holds about 33% of all 164 cases. This means that the model predicts that one third of the agricultural producers are 90-100% likely to be members of an agricultural cooperative.

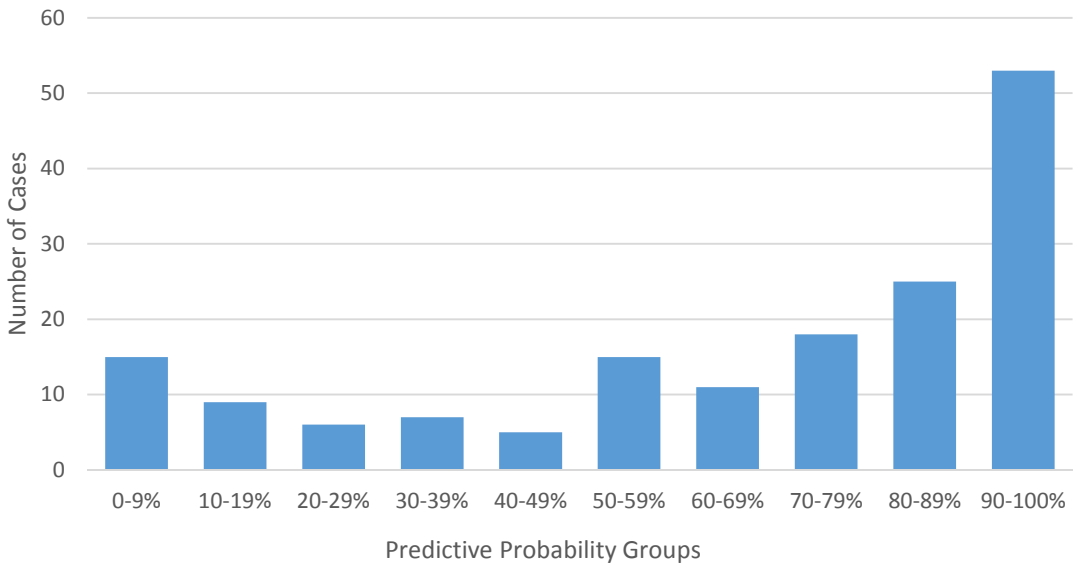

Figure 6.2 Number of Cases per Predictive Probability Group

Lastly, the researchers look at the rate of accurate predictions within each predictive probability group. Note that if the predictive probability is less than 50% then the model is predicting that the agricultural producer is not a member of an agricultural cooperative. If the predictive probability is equal to or greater than 50% then the model is predicting that the producer is a member. Researchers compare these values to the actual observed values. From Figure 6.3 below, it can be seen that the lowest accuracy rate level is the middle predictive probability groups. This makes sense because the closer to 50% the predictive probability is the less certain the model is of the predictive outcome, therefore, leading to more inaccurate predictions.

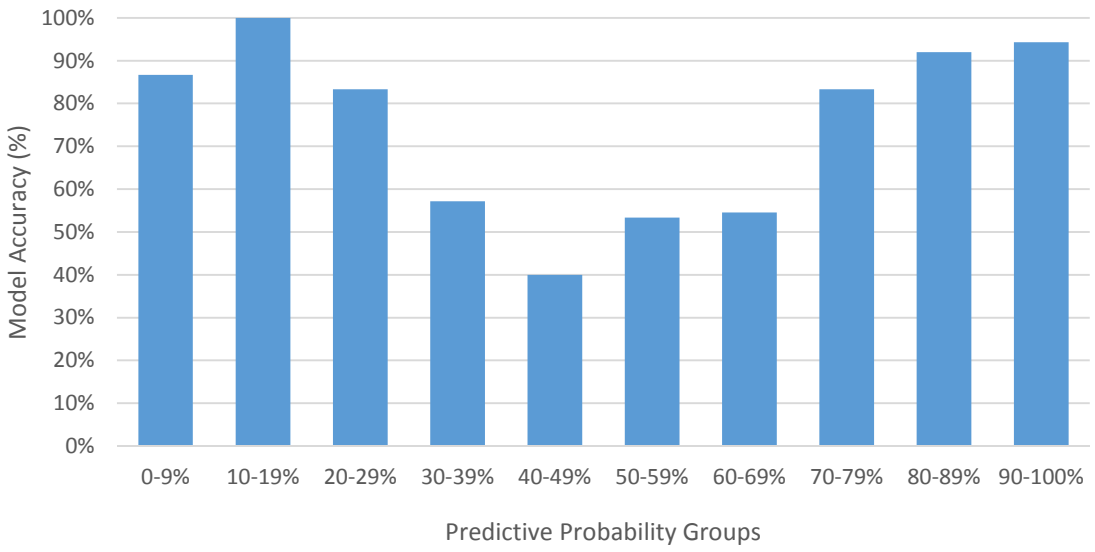

Figure 6.3 Predictive Probability Groups' Accuracy Rates

Overall, the final model is deemed the best Logit model out of numerous other models explored with the data set. However, just because it is a "good" model does not mean that the assumptions of a Logit model or Logistic regression are met. Therefore, these assumptions are checked.

6.2 Assumptions of the Logit Model

The assumptions of a Logit model are different from those of an Ordinary Least Squares regression. For example, a Logit model does not assume a linear relationship between dependent and independent variables. The non-linear log transformation allows for this freedom. In addition, the Logit model does not assume that the independent variables are multivariate normal. Also, unlike the Probit model, the errors terms do not need to be standard normal distributed. Finally, the homoscedasticity of the variances is not assumed and the independent variables are not limited to being metric (Statistics Solutions, 2014; University of Texas at Austin). However, the Logit model still has assumptions.

1. Since this is a binary Logistic regression, it assumes that the dependent variable is binary (Statistics Solutions, 2014). In this model the dependent variable is zero if not a member of an agricultural cooperative and one if a member of an agricultural cooperative. This assumption is met.
2. A logistic regression assumes that P(Y=1) is the probability of an event occurring (Statistics Solutions, 2014). In this model P(Y=1) is the probability of an agricultural producer being a member. This assumption is met.
3. The model fits the data (Eckel, 2007). Other than looking at the goodness-of-fit measures that are analyzed in the previous section, another way to measure how well the model fits the data is to look at it graphically. Figure 6.4 is a graph of the predicted probability from the model and the observed data. Note that researchers assume that at less than 0.50 or 50% the model is saying they are not a member of an agricultural cooperative and greater than 50% the agricultural producer is a member of an agricultural cooperative.

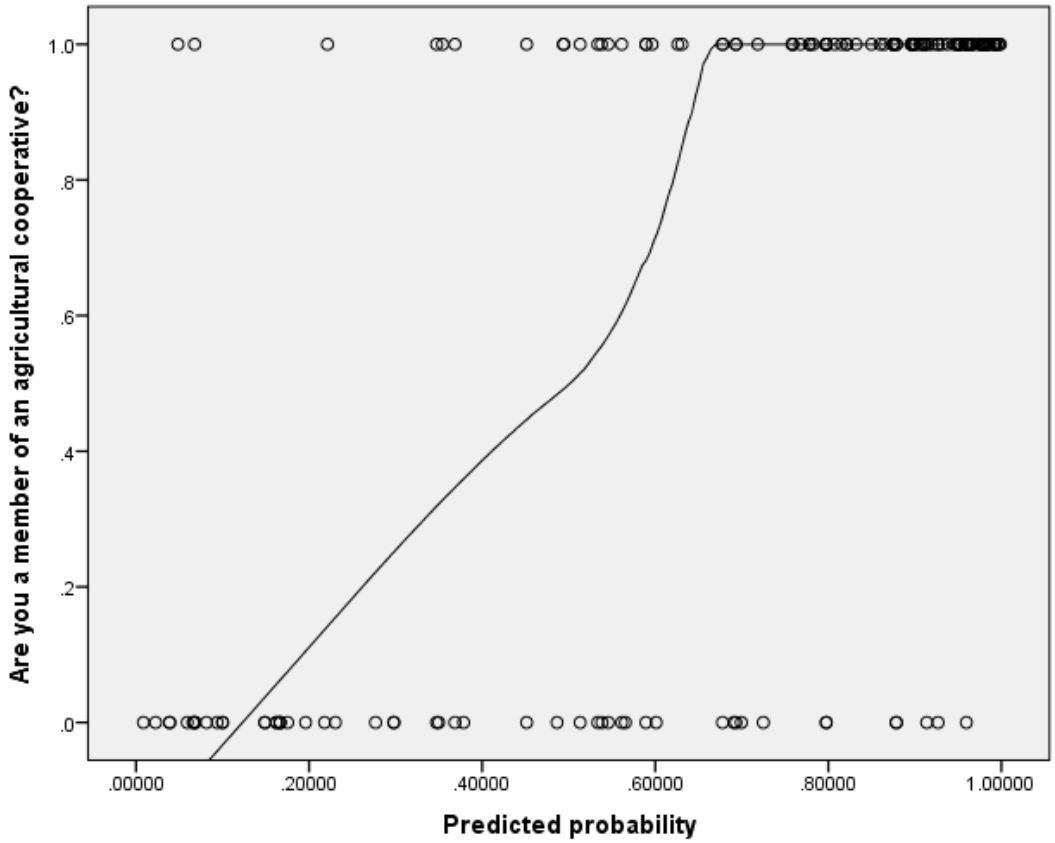

Figure 6.4 Model Predicted Probabilities and Observed Values

In the figure above, the data is positioned in two straight horizontal lines because the model is a binary logit where the dependent variable or observed value can either take the value zero, not member of an agricultural cooperative or one, member of an agricultural cooperative. Just by looking at the data points, most agricultural producers sampled are members of agricultural cooperatives and have a very high predicted probability of being members of agricultural cooperatives. Ideally, the fitted Loess curve above would be a straight line; however, it is being distorted by so many data points in that upper right corner. This can also be explained by the null model predictability being greater than 0.5 or 50%. In fact it was 0.67, which is rather high. That means that the majority of the respondents are members of agricultural cooperatives so the sample did not contain an equal distribution. Even though this Loess curve is not perfect, with the

null model predictability and the other goodness-of-fit measures, researchers consider it a good fit. This assumption is met.

4. Linearity between logit of independent variables and log odds or dependent variables (Anderson, 1982; Statistics Solutions, 2014). The log odds are calculated in SPSS by first calculating the odds, $\frac{p_i}{1-p_i}$. Then, the logarithmic with base ten is taken to produce the log odds. Since the dummy variables, credit union membership variable, and generations and agricultural cooperatives variable are binary, it is already assumed that these variables have a linear relationship with the log odds. Therefore, the only variable that needs to be checked for linearity against the log odds is the knowledge of agricultural cooperatives variable. The fitted smoothed Loess curve to this graph can be viewed in Figure 6.5.

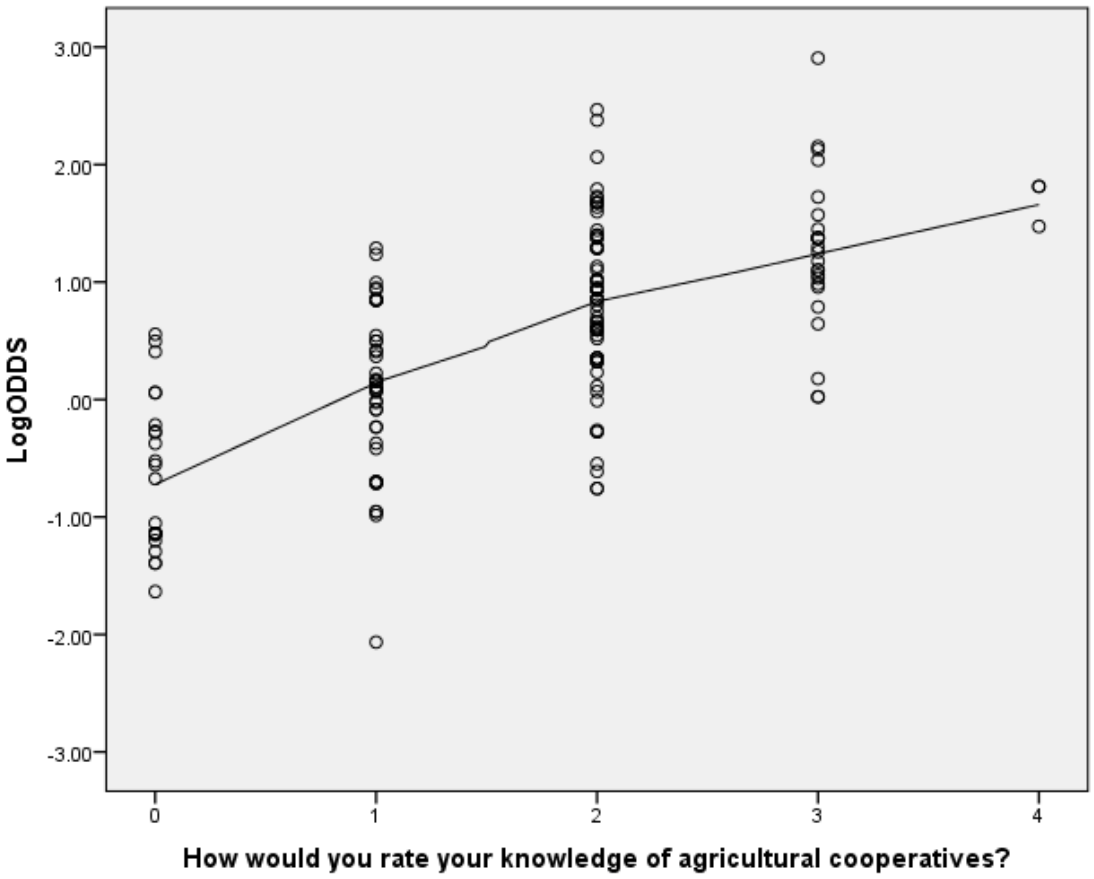

Figure 6.5 Log Odds and Knowledge of Agricultural Cooperatives Independent Variable

Notice that the Loess curve, which is fitted to 66% of the points, is mostly a straight line with very little curvature. Therefore, researchers conclude that there is a linear relationship between the log odds and the knowledge of agricultural cooperatives independent variable. Therefore, there is a linear relationship between the log odds and all independent variables. This assumption is met.

5. Independent variables are not linear functions of each other, thus no multicollinearity exists (Anderson, 1982; Statistics Solutions, 2014). To check for multicollinearity the researchers looked at the variance inflation factors (VIFs). Since determining the VIFs of the independent variables does not require the dependent variable, the VIFs can be found through a linear regression with the independent variables interchangeably replacing the dependent variable. If any VIFs are greater than three then there may exist some multicollinearity and if they are greater than five then there probably is a problem and greater than ten means there definitely is a problem. None of the VIFs for the independent variables of this model (including the dummy variables) reach above 2.5. Most VIFs are a little larger than one. Therefore, it can be concluded that there is no multicollinearity issues. This assumption is met.
6. Sample size is proportionally large for the number of variables (Anderson, 1982; Statistics Solutions, 2014). Since Logit models use maximum likelihood estimation there needs to be at least 10 cases per independent variables. The model researchers develop has 164 cases and 12 independent variables. Therefore, there are 13.7 cases per variable. This assumption is met.
7. The observations or cases are independent and the error terms are independent but do not need to be normally distributed (Institute for Digital Research and Education; Statistics Solutions, 2014). The observations to this study were collected randomly and independently of each other so the study design satisfies the first assumption. The second assumption of independent error terms is one of the more difficult assumptions to test. With that said, one method of test it is looking at

the index plots with deviance individuals. To develop an index plot the researchers assigned case numbers to the respondents based their survey starting time. Figure 6.6 shows the distribution of the error terms by case number.

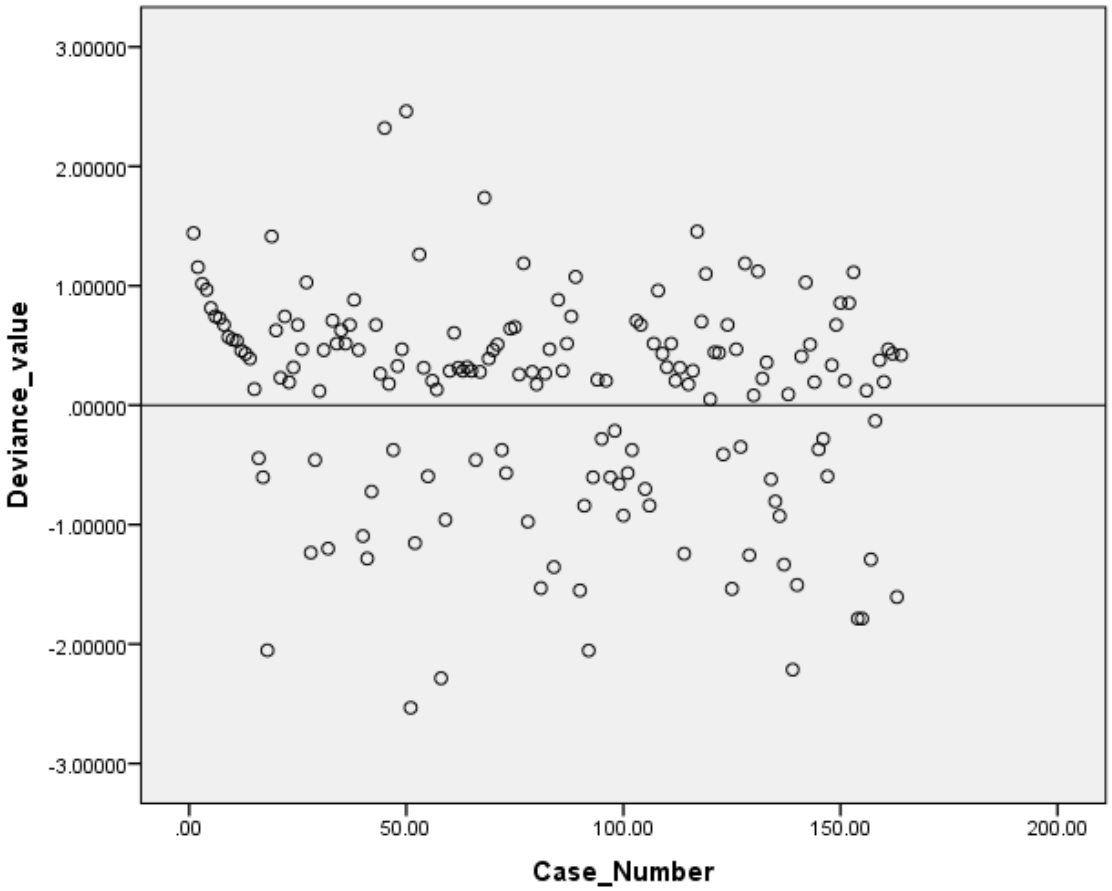

Figure 6.6 Index Plot of Deviance Residuals

There is no discernable pattern in the deviance residuals in the above graph. Because there is no pattern, researchers conclude that the error terms are independent of each other. This assumption is met.

Since all the assumptions of a Logit model are met, this Logit model is an acceptable model.

CHAPTER 7 CONCLUSIONS AND IMPLICATIONS

Cooperatives are member owned, member controlled, and member benefited. Maintaining members and gaining new ones are a constant challenge that cooperatives face because of their complex value package. Cooperative employees understanding of their member and potential member value perceptions is crucial to knowing how to effectively and efficiently communicate their value to these parties. This research concludes that cooperative members and potential members value the cooperative principles and benefits somewhat similarly across the three types of cooperatives, according to cooperative employees. However, as shown by agricultural producers, the agricultural cooperative employees do not fully understand how agricultural producers, members or potential members, value agricultural cooperatives. Therefore, agricultural cooperatives should put more effort towards understanding their members and potential members. This also leads researchers to question the accuracy of other cooperative employee perceptions but nothing can be concluded.

In addition, researchers develop a Logit model to predict the probability of an agricultural producer being a member of an agricultural cooperative. Significant variables in this model include five dummy variables regarding educational level, four dummy variables regarding agricultural income, credit union member, generations and agricultural cooperatives, and agricultural cooperative knowledge. Some of the most significant variables are four-year college graduate, previous generations involved with agricultural cooperatives and agricultural cooperatives knowledge. This model can help agricultural cooperatives' efforts in targeting agricultural producers that are most likely to become members and those members that are most likely to remain members.

7.1 Summary of Interview Data

This research involved interviewing cooperative employees in different positions across three different types of cooperatives: agricultural cooperatives, credit unions, and food cooperatives in the

Northwest. One objective of these interviews is to understand how their members and potential members value the cooperative principles and benefits according to the cooperative employees' perspective. The other objective is to understand what value is being communicated and how it is being communicated. Different types of cooperatives can use the information in this study to better understand what other cooperatives' members and potential members value and how and what value the cooperatives communicate to their members and potential members. This understanding will help them improve their own communication of their value package. This will in turn, hopefully, increase cooperative memberships.

The cooperative employee interviews revealed that employees believe their members and potential members view their values and benefits somewhat similarly across the three types of cooperatives; however, there are slight differences that merit noting. Credit union and food cooperative employees believe benefit was two to three times more important than ownership or control to their members while agricultural cooperative employees think their members would rate the principles more equally. In addition, food cooperatives think quality was significantly more important to their members than price or relationship while the other two cooperatives think their members would rate them somewhat equally with slightly heavier weight on relationship. This is not surprising since food cooperatives pride themselves on their natural, organic, non-GMO health food. Every type of cooperative think their potential members would value the benefit principle more than members with the sharpest increase being in agricultural cooperatives with an almost 40% increase. All cooperative types also think their potential members would value price more compared to their members. Again, agricultural cooperatives hold the sharpest increase with 30%. Therefore, even though the ranking of principles and benefits is similar across the three types of cooperatives, there are some notable differences between how the cooperative employees feel their members and potential members perceive their value.

The three types of cooperatives focus their communication efforts on similar value offerings. The majority of cooperatives attempt to communicate price with quality following with a close second. In addition, credit unions think that relationship is the most important benefit for their members so majority of credit unions in this study said that they communicate the relationship benefits. In general, cooperatives do not focus many of their communication efforts on the three cooperative principles. Food cooperatives are a small exception to this since half of them said they communicate ownership. Overall, cooperative communication efforts focus towards benefits and not the cooperative principles.

7.2 Summary of Survey Data

This research also involved surveying agricultural producers in the Northwest. The objective of these surveys is to uncover how agricultural producers perceive the agricultural cooperative value and compare their value perceptions to what agricultural cooperative employees believe they value. Understanding the difference between what agricultural producers value in agricultural cooperatives and what agricultural cooperative employees think they value will help agricultural cooperatives understand the accuracy of their perceptions, which will in turn improve their communication efforts and ultimately help them increase their memberships.

Surprisingly, regardless of membership, very few agricultural producers viewed agricultural cooperatives as unfavorable or very unfavorable. This is a good sign for agricultural cooperatives because this means they do not need to combat a bad image. Twelve percent of the agricultural producers responded that they were not a member of an agricultural cooperative but still do business with agricultural cooperatives. Researchers suggest that agricultural cooperatives target this twelve percent since these producers already see the value in doing business with agricultural cooperatives but do not yet see the value in becoming a member.

Even though agricultural cooperative members actively chose to be members, very few are heavily involved in the cooperatives. Once more, agricultural cooperative members know they are not

active participants. In addition, agricultural cooperative members value benefit twice as much as the other two cooperative principles control and ownership, which is greater than how much the employees think they would value benefit. Members also value price 10% more than how much the agricultural cooperative employees think they would value price. Therefore, benefits, in particular price, is much more important to members than agricultural cooperative employees realize.

The agricultural producers that are not a members of an agricultural cooperative stated that inconvenience and price are the two main reasons why they were not a member. Interestingly, the potential members stated that unawareness is between slightly important and moderately important as a reason why they are not members. Therefore, researchers suggest that agricultural cooperative employees work on their awareness campaign to capture those potential members that are not members for the main reason of just being unaware. Also, potential members value benefit less than half as much as the agricultural cooperative employees think they would value benefit. In fact, the potential members, on average, value ownership the most. In addition, potential members also value price 15% less than how much the agricultural employees think they would value price. Therefore, potential members do not value benefits and price as much as the agricultural cooperative employees believe. Since price is so heavily communicated, researchers recommend agricultural cooperatives change their focus when communicating value to potential members.

7.3 Summary of Model

From the survey data collected, a Logit model is developed to predict if an agricultural producer is an agricultural member based on different variables. The Logit model has 12 variables, five of which are in regards to education and four of which are in regards to agricultural income. The remaining variables include credit union member, generations and agricultural cooperatives, and agricultural cooperative knowledge. This model is used to identify factors that are important in

determining if an agricultural producer is likely to be a member of an agricultural cooperative and the significance of those factors.

In initially developing the model, the first objective is to trim down the variables to the most significant and influential ones that determine if an agricultural producer is a member of an agricultural cooperative. The model was trimmed down to the five most telling variables. These variables are: education, agricultural income, generations and agricultural cooperatives, credit union membership, and agricultural cooperative knowledge. Then, two of these variables, education and agricultural income, are split into dummy variables since one answer level is not necessarily better than the other and the difference between answer levels is not necessarily the same. Education is broken down to graduate of two-year college/technical/trade program, some four-year college, four-year college graduate, master's degree, and advanced graduate work. These variables are then compared to the reference dummy of high school graduate. Agricultural income is broken into four groups: $50,000- $99,999, $100,000- $499,999, $500,000- $999,999, and $1 M- $4.9 Million. These variables are also compared to a reference dummy, less than $50,000. These are the twelve most influential and significant components that are included in the model

The second objective is to determine the relationship between the components outlined above and the probability of being an agricultural cooperative member. This model shows that as the education level completed by an agricultural producer increases, the likelihood of them being a member of an agricultural cooperative also increases. The agricultural producers that completed advanced graduate work are the one exception to this since they are only 12.9 times more likely to be a member than those that only completed high school and those that completed a master's degree are 23.2 times more likely to be a member than those that completed high school. Those agricultural producers that make between $100,000 and $499,000 income from agriculture are much more likely to be members of an agricultural cooperative than those that make any other amount. This is probably

due to the fact that the agricultural producers that make less than $100,000 are more hobby farms and do not need agricultural cooperative services and agricultural producers that make more than $500,000 are large enough that they have their own resources to run their operation independently. In addition, if previous generations were involved with agricultural cooperatives or the agricultural producer is a member of a credit union, then they are much more likely to be a member of an agricultural cooperative. Finally, the more knowledge the agricultural producer has of agricultural cooperatives, the more likely they are to be a member of an agricultural cooperative. The Logit model meets all the assumptions and has a predictive probability of 82.3%.

7.4 Implications

This research helps cooperatives understand what various types of cooperatives' employees believe their members and potential members value. In addition, it helps cooperatives understand what value factors other cooperatives are communicating. Finally, this research focuses on agricultural cooperatives and compares what value factors agricultural cooperative employees think agricultural producers believe are important to what agricultural producers actually believe are important. From this, agricultural cooperatives are able to measure how well they understand their members and potential members.

7.4.1 Implications for Credit Unions and Food Cooperatives

Agricultural cooperatives, credit unions, and food cooperatives are very different in the products and services they offer and their customer base; however, they do have one thing in common. They are all cooperatives and rely on their membership to survive. They all share the three cooperative principles (ownership, control, and benefit) and benefits (price, quality, and relationship).

Based off the findings of this research, cooperative employees believe their members and potential members would rate the cooperative principles and benefit components similarly to how

other types of cooperative employees believe their members and potential members would rate them. However, there are differences, often depending on what that type of cooperative prides itself on. For example, credit unions pride themselves on relationships, therefore, they think their members would value relationship more than price and quality. Without surveying credit union members it is difficult to say if they value relationship as much as credit union employees think they do. The same can be said for food cooperatives and the quality benefit.

Researchers also find that credit unions and food cooperatives tend to communicate the value factors that they believe are most important to their members and potential members. This is a good marketing strategy, especially for the potential members, if what the cooperative employees believe is accurate. This is a question that is not answered in this study. In addition, it can be asked, do members and potential members value certain principles and/or benefits because of cooperative marketing and communication strategies or do cooperatives communicate and market those value factors because it's what they believe their members and potential members value? To answer this question requires further research.

7.4.2 Implications for Agricultural Cooperatives

Researchers are able to check the accuracy of agricultural cooperative employee beliefs of what their members and potential members value. Overall, agricultural cooperative members value benefit more than agricultural employees think compared to the other cooperative principles. In addition, members also value price more than the employees believe. Even though, members seem to be mostly understood by the agricultural cooperative employees, potential members are not. Employees think that benefit would be overwhelmingly important to potential members; however, potential members value the cooperative principles fairly evenly. In addition, agricultural cooperative employees think price would be more important than what potential members actually think. However, this difference is not quite as drastic as it was for benefit. Agricultural cooperative

employees understand what their members value fairly well but they could improve their understanding of what their potential members value. By understanding their potential members better, agricultural cooperatives will be able to increase their number of new members.

In addition, when potential members were asked to rate the importance of certain reasons why they are not members of an agricultural cooperative. Unawareness is between slightly and moderately important. This is important to recognize because many of the reasons on the list of reasons are out of agricultural cooperatives' control, such as other business relationships and inconvenience, especially in regards to location, but agricultural cooperatives can control awareness. The fact that unawareness was anywhere above not at all important is concerning. Therefore, agricultural cooperatives should put more of their communication efforts towards making their potential members aware of who they are and the value they offer.

Agricultural cooperatives communicate through a variety of channels; however, some are used more frequently by their members than others. Face-to-face, phone, and emails are very important communications channels to members. Not surprisingly, social media is rated the least important. Therefore, agricultural cooperatives should continue to use these top communication channels and may consider using them to communicate to potential members since these channels are so important to members.

Finally, potential members are not restricted from doing business with agricultural cooperatives and many take advantage of this opportunity. In fact, over 10% of the agricultural producers answered that they do business with agricultural cooperatives but are not members of agricultural cooperatives. It's these agricultural producers that researchers believe agricultural cooperatives should target for membership. These agricultural producers already value the service or products that agricultural cooperatives offer, but they do not see the value of joining as a member. In other words, they do not fully understand the value of ownership and control and they may not fully

understand the increased benefits if they joined. This may be due, in part to the fact that none of the agricultural cooperative employees interviewed said that they communicate ownership or control value factors. The majority of what they communicate is price and then quality. Therefore, researchers recommend that agricultural cooperatives focus their communication efforts more on the ownership and control aspects of being a member in order to capture that market that already does business with agricultural cooperatives but are not members.

7.5 Limitations

The biggest limitation of this research is the difficulty in generalizing the results. This is due to the small sample size of cooperative employee interview participants and especially the small sample size of the survey respondents. The interviews were only conducted in certain regions of the Northwest and time and money did not allow the researchers to interview any cooperatives in Oregon, even though many of the survey respondents are from Oregon. In addition, there are a wide variety of agricultural cooperatives that serve different commodity markets and many of these markets, such as sugar beets, are not included in this research. Therefore, findings from this research may not relate to every cooperative, this particularly applied to the agricultural cooperatives. In addition, the response rate to the survey is shockingly low, leaving researchers with a less than ideal sample size. Because of this small sample size, findings may not relate or be true for all agricultural producers. This small sample size also leads to a less reliable and robust the Logit model.

Another limitation of this research is that credit union and food cooperative members and potential members were not surveyed. This is a too large of an undertaking for this thesis project in terms of time and funds. Because of this limitation, the questions asking employees to answer from their member and potential member perspectives cannot be checked for accuracy. Therefore, there is no way of know if what was being said accurately represents their members and potential members.

7.6 Further Research

This research can be expanded in many ways. First, more thorough research can be performed in the Northwest but it can also be expanded to other regions of the United States. In addition to expanding the physical scope of the project, this project can be advanced by surveying the members and potential members of credit unions and food cooperatives. These surveys would provide a measure to see how well these types of cooperatives' employees understand their members and potential members.

In addition, assuming that the employees' perspectives on what their members value is accurate and since their marketing efforts often match what their members and potential members value, it is difficult to deduce which came first, the marketing efforts or what members and potential members value from cooperatives. In other words, did the marketing efforts define how members and potential members value cooperatives or do the value factors members and potential member deem important dictate cooperative marketing efforts? This is the same concept as the chicken and the egg idea. Which came first, the chicken or the egg? This study would reveal important pieces to understanding the relationships between members or potential members and cooperatives. A further understanding of this relationship can help cooperatives better heed to the demands of their members and potential members and help members and potential members better understand the value cooperatives offer. Members are key to cooperatives' success and understanding them is the first step towards succeeding.

REFERENCES

Ali, S., Penn, J. E., & Eversull, E. (2011). *COOPERATIVE STATISTICS, 2011.* Service Report 72, USDA, Rural Development, Washington, D.C. Retrieved from http://www.rd.usda.gov/files/rdBCPStatisticalReport2011.pdf

Anderson, J. A. (1982). Logistic Regression. *Handbook of Statistics. North-Holland, New York*, 169-191. Retrieved from Saint Joseph's University: http://schatz.sju.edu/multivar/guide/logistic.pdf

Babbi, E. (2013). *The Practice of Social Research* (14 ed.). Belmont: Cengage Learning. Retrieved from http://books.google.com/books?hl=en&lr=&id=bS9BBAAAQBAJ&oi=fnd&pg=PR5&dq=the+practice+of+social+research&ots=Pvr46TqpR_&sig=F5UL1LVkRbafUwrffCGTrJK01vQ

Barraud-Didier, V., Henninger, M.-C., & Akremi, A. E. (2012). The Relationship Between Members' Trust and Participation in the Governance of Cooperatives: The Role of Organizational Commitment. *International Food and Agribusiness Management Review, 15*(1), 1-24.

Barton, D. (1989). What is a Cooperative? In D. Cobia (Ed.), *Cooperatives in Agriculture* (pp. 1-20). Prentice-Hall, Inc.

Bettman, J. R. (1973). Perceived Risk and Its Components: A Model and Empirical Test. *Journal of Marketing Research, 10*(2), 184-190.

Bhuyan, S. (2007, August 9). The "People" Factor in Cooperatives: An Analysis of Members' Attitudes and Behavior. *Canadian Journal of Agricultural Economics, 55*(3), 275-298. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1744-7976.2007.00092.x/pdf

Birchall, J., & Simmons, R. (2004). What Motivates Members to Participate in Co-operative and Mutual Businesses? *Annals Of Public& Cooperative Economics, 75*(3), 465-495.

Borgen, S. O. (2011). Product Differentiation and Cooperative Governance. *The Journal of Socio-Economics, 40*(3), 327-333.

Bureau of Labor Satistics. (2012). *B-1. Employees on Nonfarm Payrolls by Major Industry Sector, 1962 to Date.* United States Department of Labor.

Cakmakyapan, S., & Goktas, A. (2013). A COMPARISON OF BINARY LOGIT AND PROBIT MODELS WITH A SIMULATION STUDY. *Journal of Social and Economic Statistics, 2*(1), 1-17.

Chaddad, F. R., & Cook, M. L. (2004). Understanding New Cooperative Models: An Ownership-Control Rights Typology. *Applied Economic Perspectives and Policy, 26*(3), 348-360.

Chang, T.-Z., & Wildt, A. R. (1994). Price, Product Information, and Purchase Intention: An Empirical Study. *Journal of the Academy of Marketing Science, 22*(1), 16-27.

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis.* Thousand Oaks: Sage Publications Inc.

Cox, D. F., & Rich, S. U. (1964). Perceived Risk and Consumer Decision-Making: The Case of Telephone Shopping. *Journal of Marketing Research, 1*(4), 32-39.

Creswell, J. W. (2012). *QUALITATIVE INQUIRY & RESEARCH DESIGN: Choosing Among Five Approaches.* Thousand Oaks: Sage Publications, Inc.

Cropp, R., & Gene, I. (1989). Structure and Scope of Agricultural Cooperatives. In D. Cobia (Ed.), *Cooperatives in Agriculture* (pp. 35-68). Prentice-Hall, Inc.

CUDATA. (2014). *Credit Union Data and Trends*. Retrieved from CUDATA.COM Online Credit Union Data Analytics: http://credituniondirectory.net/

Dakurah, H. A., Goddard, E., & Osuteye, N. (2005). Attitudes Towards and Satisfaction with Cooperatives in Alberta. A Survey Analysis. *American Agricultural Economics Association Annual Meeting.* Providence: Department of Rural Economy, University of Alberta.

Darigold, Inc. (2012). *About Us*. Retrieved from Darigold.

Davis, B., & Burge, L. (2008, November). *Collective Management: The People's Food Co-op experience*. Retrieved from Cooperative Grocer Network: http://www.grocer.coop/articles/collective-management

Davis, V. M., & Conley, S. P. (2011). Characterizing Extension Value, Computer Technology, and New Media Use of Midwest Soybean Growers. *Crop Management, 10*(1). doi:10.1094/CM-2011-0628-01-RS

Deller, S., Hoyt, A., Hueth, B., & Sundaram-Stukel, R. (2009, June 19). *Research on the Economic Impact of Cooperatives.* Madison (WI): University of Wisconsin Center for Cooperatives.

Department of Insurance and Financial Services. (2014). *Credit Union FAQ*. Retrieved from DIFS-Department of Insurance and Financial Services: http://www.michigan.gov/difs/0,5269,7-303-13648-26235--,00.html#q2

Dunn, J. R. (1988). Basic Cooperative Principles and Their Relationship to Selected Practices. *Journal of Agricultural Cooperation, 3*, 83-93.

Eckel, S. (2007, May 19). *Lecture 16: Logistic regression diagnostics, splines, and interactions.* Retrieved from USC Health Sciences Campus: http://www-hsc.usc.edu/~eckel/biostat2/notes/notes16.pdf

Engward, H. (2013). Understanding grounded theory. *Nursing Standard, 28*(7), 37-41.

Farm Market iD. (2015, February 8). *Home*. Retrieved February 8, 2015, from Farm Market iD: http://www.farmmarketid.com/

Ferber, R. (1948). The Problem of Bias in Mail Returns: A Solution. *Public Opinion Quarterly, 12*(4), 669-676. doi:10.1086/266009

Frame, W. S., & Coelli, T. J. (2001). U.S. Financial Services Consolidation: The Case of Corporate Credit Unions. *Review of Industrial Organization, 18*(2), 229-241.

Frederick, D. A. (1993). *What Are Patronage Refunds?* Cooperative Information Report 9, USDA, Agricultural Cooperative Service.

Froman, L. A. (1935). CREDIT UNIONS. *The Journal of Business of the University of Chicago, 8*(3), 284-296.

Fulton, J. R., & Adamowicz, W. L. (1993). Factors That Influence the Commitment of Members to Their Cooperative Organization. *Journal of Agricultural Cooperation, 8*, 39-53.

Fulton, M. (1989). Cooperatives in Oligopolistic Industries: The Western Canadian Fertilizer Industry. *Journal of Agricultural Cooperation, 4*(1).

Fulton, M. (1999). Co-Operatives and Member Commitment. *LTA, 4*(99), 418-437.

Fulton, M. (2000, November). *New Generation Co-operatives.* Retrieved from http://usaskstudies.coop/pdf-files/What%20Are%20NGCs%3F.pdf

Fulton, M., & Giannakas, K. (2001). ORGANIZATIONAL COMMITMENT IN A MIXED OLIGOPOLY: AGRICULTURAL COOPERATIVES AND INVESTOR-OWNED FIRMS. *American Journal of Agricultural Economics, 83*(5), 1258-1265. doi:10.1111/0002-9092.00276

Gensch, D. H. (1983). *Iowa Cooperative Fertilizer Retail Outlets: Farmers' Attitudes and Perceptions.* USDA ACS. Washington, D.C: K. C. Ling.

Hahn, E. D., & Soyer, R. (2005). Probit and Logit Models: Differences in the Multivariate Realm. *Submitted to Journal of the Royal Statistical Society, Series B*.

Harris, A., Stefanson, B., & Fulton, M. (1996). New Generation Cooperatives and Cooperative Theory. *Journal of Cooperatives, 11*.

Hausman, J. A., & Wise, D. A. (1978). A CONDITIONAL PROBIT MODEL FOR QUALITATIVE CHOICE: DISCRETE DECISIONS RECOGNIZING INTERDEPENDENCE AND HETEROGENEOUS PREFERENCES. *Econometrica: Journal of Econometric Society, 46*(2), 403-426.

Herrmann, R. O. (1993). The Tactics of Consumer Resistance: Group Action and Marketplace Exit. *Advances in Consumer Research, 20*(1), 130-134.

Hoyt, A. (1989). Cooperatives In Other Industries. In D. Cobia (Ed.), *Cooperatives in Agriculture* (pp. 68-80). Prentice-Hall Inc.

Hueth, B., & Reynolds, A. (2011). A Life-Cycle Perspecitve on Governing Cooperative Enterprises in Agriculutre. *Choices, 26*(3).

Humane Watch Team. (2013, September 20). *Why is SurveyMonkey Funding HSUS?* Retrieved April 2, 2015, from http://www.humanewatch.org/why-is-surveymonkey-funding-hsus/

Institute for Digital Research and Education. (n.d.). *Lesson 3 Logistic Regression Diagnostics.* Retrieved from University of California Los Angeles: http://www.ats.ucla.edu/stat/stata/webbooks/logistic/chapter3/statalog3.htm

Jensen, F. E. (2000). The Farm Credit System as a Government-Sponsored Enterprise. *Review of Agricultural Economics, 22*(2), 326-335.

Kamakura, W. A. (1989). The Estimation of Multinomial Probit Models: A New Calibration Algorithm. *Transportation Science, 23*(4), 253-265.

Kaushik, S. K., & Lopez, R. H. (1994). The Structure and Growth of the Credit Union Industry in the United States: Meeting Challenges of the Market. *American Journal of Economics and Sociology, 53*(2), 219-243.

Keane, M. P. (1992). A Note on Identification in the Multinomial Probit Model. *Journal of Business & Economic Statistics, 10*(2), 193-200.

Kenkel, P., & Park, J. (2011). THEME OVERVIEW: CRITICAL ISSUES FOR AGRICULTURAL COOPERATIVES. *Choices, The Magazine of Food, Farm and Resource Issues*.

Kyriakopoulos, K., Meulenber, M., & Nilson, J. (2004, October 5). The impact of cooperative structure and firm culture on market orientation and performance. *Agribusiness, 20*(4), 379-396.

Matthews, D. G. (1966). Value of Credit Unions. *Journal (American Water Works Association), 58*(4), 388-392.

Meehling, C. F. (1959, March). FEDERAL CREDIT UNIONS IN THE UNITED STATES AN ANALYSIS*. *The Journal of Finance, 14*(1), 93-94.

Mensah, E. R., Karatininis, K., Adegbidi, A., & Okello, J. J. (2012). Determinants of Commitment to Agricultural Cooperatives: Cashew Nuts Farmers in Benin. In. *Selected paper prepared for presentation at the International Association of Agricultural Economists (IAAE) Triennieal Conference, Foz do Iguacu, Brazil*.

Moore, C. (2013). *An Introduction to Logistic and Probit Regression Models*. Retrieved from University of Texas: http://www.utexas.edu/cola/centers/prc/_files/cs/Fall2013_Moore_Logistic_Probit_Regression.pdf

National Agricultural Law Center. (2014). *Cooperatives- An Overview*. Retrieved March 3, 2015, from NATIONAL AGRICULTURAL LAW CENTER: http://nationalaglawcenter.org/overview/cooperatives/

National Credit Union Administration. (n.d.). *Federally Versus Privately Insured Credit Uninos*. Retrieved from My CREDIT UNION.GOV: http://www.mycreditunion.gov/about-credit-unions/Pages/federal-vs-privately-insured-credit-unions.aspx

Novkovic, S. (2008). Defining the co-operative difference. *The Journal of Socio-Economics, 37*(6), 2168-2177.

Olympia Food Co-op. (2005, November). *ABOUT US*. Retrieved from Olympia FOOD CO-OP: http://www.olympiafood.coop/join-us/about-ofc/

Osterber, P., & Nilsson, J. (2009). Members' Perception of their Participation in the Governance of Cooperatives: The Key to Trust and Commitment in Agricultural Cooperatives. *Agribusiness, 25*(2), 181-197.

Park, H. M. (2009). *Regression Models for Binary Dependent Variables Using Stata, SAS, R, LIMPDEP, and SPSS.* Retrieved from The University Information Technology Services (UITS) Center for Statistical and Mathematical Conputing, Indiana University: http://www.indiana.edu/~statmath/stat/all/cdvm/index.html

Purdue University. (2012). *2012 Large Commercial Producer Project Questionnaire.* Purdue University, Center for Food and Agricultural Business.

Rodrigues, U. (2010). ENTITY AND IDENTITY. *Emory Law Journal, 60*(6), 1257-1322.

Roselius, T. (1971). Consumer Rankings of Risk Reduction Methods. *The Journal of Marketing, 35*(1), 56-61.

Schaars, M. A. (1971). *Cooperatives, Principles and Practices.*

Sexton, R. J., & Iskow, J. (1988). *FACTORS CRITICAL TO THE SUCCESS OR FAILURE OF EMERGING AGRICULTURAL COOPERATIVES.* (Vol. 88, No. 3) Division of Agriculture and Natural Resources, University of California.

Shipe, J. O. (1943). CREDIT UNIONS MOLD CHARACTER. *Journal of Educational Sociology, 16*(8), 518-520.

Simmons, O. E. (2006). Some Professional and Personal Notes on Research Methods, Systems Theory, and Grounded Action. *World Futures: The Journal of General Evolution, 62*(7), 481-490. doi:10.1080/02604020600912772

Smith, S. M. (2010, October 18). *COOPERATIVES 101- AN INTRODUCTION TO AGRICULTURAL COOPERATIVES AND THE FEDERAL REGULATIONS AND LEGAL CONCERNS THAT IMPACT THEM.* USDA, Rural Development. Retrieved from American Bar Association: http://www.americanbar.org/content/dam/aba/publishing/rpte_ereport/2010/5/te_smith.authcheckdam.pdf

Statistics Solutions. (2014). *Assumptions of Logistic Regression*. Retrieved from Statistics Solutions Advancement Through Clarity: http://www.statisticssolutions.com/assumptions-of-logistic-regression/

SurveyMonkey. (2009, October). *Everything You Wanted to Know, But Were Afraid to Ask*. Retrieved February 8, 2015, from SurveyMonkey: https://www.surveymonkey.com/mp/aboutus/

Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing, 77*(2), 203-220.

Sweeney, J. C., Soutar, G. N., & Johnson, L. W. (1999). The Role of Perceived Risk in the Quality-Value Relationship: A Study in a Retail Environment. *Journal of Retailing, 75*(1), 77-105.

Texas A&M University. (n.d.). *Logit and Probit Models with Discrete Dependent Variables*. Retrieved from http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=7&cad=rja&uact=8&ved=0CFIQFjAG&url=http%3A%2F%2Fpeople.tamu.edu%2F~b-wood%2FPOLS%2520209%2FLogit%2520and%2520Probit.ppt&ei=mg9BVdGwB4q4ogSC-4HYAg&usg=AFQjCNHbnCZqlGhbtAqZmKK3w3YgL-4y1A&bvm=bv.91

The Co-operative Commission. (2001). *the co-operative advantage: Creating a successful family of Co-operative businesses.* Co-operative News.

The University of Wisonsin Center for Cooperatives. (2012). *Types of Cooperatives*. Retrieved from Center for Cooperatives- fostering critical thinking and understanding about cooperatives.: http://www.uwcc.wisc.edu/whatisacoop/TypesofCooperatives/

Tongco, M. C. (2007). Purposive Sampling as a Tool for Informant Selection.

Tree Top Inc. (2013). Retrieved from Tree Top Grower Owned Since 1960: http://www.treetop.com/Default.aspx

University of California Cooperative Extension. (2012). *University of California Cooperative Extension UC Small Farm Program*. Retrieved from What is a Cooperative?: http://sfp.ucdavis.edu/cooperatives/what_is/

University of Dayton. (2012). *Using SPSS for t Tests*. Retrieved from http://academic.udayton.edu/gregelvers/psy216/spss/ttests.htm

University of Texas at Austin. (n.d.). *Logistic Regression - Basic Relationships.* Retrieved from University of Texas at Austin: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&cad=rja&uact=8&ved=0CDQQFjAE&url=http%3A%2F%2Fwww.utexas.edu%2Fcourses%2Fschwab%2Fsw388r7%2FSolvingProblems%2FLogisticRegression_BasicRelationships.ppt&ei=pL5FVcT0GsiSoQTux4HACA&usg=AFQjCNG3y

University of Wisconsin Center for Cooperatives. (n.d.). *Grocery Cooperatives*. Retrieved from University of Wisconsin Center for Cooperatives Research on the Economic Impact of Cooperatives: http://reic.uwcc.wisc.edu/groceries/

USDA. (1991). *Advising People About Cooperatives.* Cooperative Information Report 29, USDA, Agricultural Cooperative Service.

USDA. (2011). *Cooperatives in Agribusiness.* Washington, DC: USDA.

USDA. (2014). *2012 CENSUS OF AGRICULTURE.* USDA, Census of Agriculture. Retrieved from USDA CENSUS OF AGRICULTURE United States Department of Agriculture.

USDA. (2014). *Rural COOPERATIVES 3 IN A ROW!* USDA. Retrieved from USDA- Rural Development.

USDA. (2014, April 1). *The number of farms has leveled off at about 2.1 million*. Retrieved from United Stated Department of Agriculture Economic Research Service: http://www.ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=40036&ref=collection&embed=True

Wadsworth, J. (2001). Keep the co-op candle burning. *Rural Cooperatives, 68*(2), 19-20.

Walsh, G., & et al. (2013). Replicating, validating, and reducing the length of the consumer perceived value scale. *Journal of Business Research, 67*(3), 260-267.

Whellock, D. C., & Wilson, P. W. (2011). Are Credit Unions Too Small? *Review of Economics and Statistics, 93*(4), 1343-1359.

Williamson, L. (1987). Farmer and Consumer Cooperatives Structure and Classification. *AEC-Univeristy of Kentucky, Cooperative Extension Service (USA)*.

Wuensch, K. L. (2014). *Binary Logistic Regression with SPSS.* Retrieved from East Carolina University: http://core.ecu.edu/psyc/wuenschk/mv/multreg/logistic-spss.pdf

Zeithaml, V. A. (1988). Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *Journal of Marketing, 52*(3), 2-22.

Zeuli, K. A., Cropp, R., & Schaars, M. A. (2004). Cooperatives: Principles and practices in the 21st century.

Zeuli, K., & Bentancor, A. (2005). The Effects of Cooperative Competition on Member Loyalty. *NCERA-194 Research on Cooperatives.* Minneapolis.

Zylstra, R. (2014, February 17). *SurveyMonkey's relationship with the Humane Society*. Retrieved from Iowa Corn: http://www.iowacorn.org/index.cfm/30323/27860/surveymonkeys_relationship_with_the_humane_society

APPENDICES

Appendix A: Cooperative Employee Contact Initial Dialogue

Hi, my name is Hannah Hallock and I am a master's student at the University of Idaho. May I please speak with (insert name)? It's regarding a research project on cooperative value with hopes of improving cooperative memberships through improved value portrayal.

Hello, my name is Hannah Hallock. I am a graduate student in Applied Economics at the University of Idaho. I am working with Dr. Aaron Johnson at the University of Idaho and Dr. Scott Downey at Purdue University on a study evaluating the value cooperatives offer members and how they communicate that value to them. The study includes in-depth interviews with food, credit and agricultural cooperatives across the Northwest. In addition, we will be surveying agricultural producers to capture their perspectives of the value of cooperatives.

We would like to interview 3-4 employees with different responsibilities (i.e. general manager, front office/receptionist, and sales representative). Interviews are expected to take 50-60 minutes each. Information is reported as anonymous (no way to connect or link data back to individual). We will provide participating cooperatives with a general findings report. In addition, our analysis will be reported out in academic and trade press articles.

Would you be willing to have your cooperative participate in this study?

a. If YES
    i. Would you be willing to be one of the interviewees?
        1. If YES
            a. Thank you for your participation. Do you know of other employees that would be willing to participate in this study that have different responsibilities? Would you prefer that we contact them ourselves or would you like to contact them so we respect your corporate culture?

2. If NO

    a. Do you have any recommendations for employees with varying responsibilities and interactions with members that would be willing to participate in this study?

    b. Would you prefer that we contact them ourselves or would you like to contact them so we respect your corporate culture?

ii. Set up date for interview.

iii. Is there a place at your facility we could borrow to conduct the interviews?

b. If NO

i. Thank you for considering the invitation.

ii. In order to complete our records may I ask if there is a specific reason why?

iii. Thank you again and I hope you have a good day.

Appendix B: Cooperative Employee Informed Consent Form

INFORMED CONSENT FORM
COOP STUDY
UNIVERSITY OF IDAHO
2014

The objective of this research project is to better understand the value cooperatives offer their members and how they communicate that value to them and the public. From this study we will determine the differences and similarities in value factors offered by three different types of cooperatives – food, credit and agricultural.

Your participation involves a 45-60 minute interview. For accuracy, we would like to record the interview but you may elect not to have the interview recorded. Your participation in this research is voluntary and at any time during the survey/interview you may stop without being penalized. In addition, all your information will be kept confidential. Information gained will be reported in a manner that will not be tied to an individual entity. The results of this study will be used in a graduate student's thesis at the University of Idaho as well as published in a scholarly journal articles.

This research has been deemed "exempt" by the University of Idaho Institutional Review Board (IRB) procedures for research involving human subjects. If you have any questions regarding this research please contact Hannah Hallock at hall4100@vandals.uidaho.edu, or Dr. Aaron Johnson at aaronj@uidaho.edu or by phone at 208-885-5489.

By signing this informed consent, you are agreeing to these terms and volunteering to participate in the study.

_____
Name (please print)

_____
Signature

_____
Date

Appendix C: Agricultural Cooperative Interview Questions

Interviewee Info

1. What is your job title and what are your primary duties?
2. How many years have you been working for this cooperative?
3. Have you worked for other cooperatives in the past?
    a. If yes, which ones and for how long?
4. Have you worked in a non-cooperative agricultural business before?

Cooperative Info

5. What would you say is your cooperative's mission statement or primary purpose?
    a. If don't have a formal mission statement, why not?
    b. Has the mission been changing over the years?
    c. What does your coop do to bring this to reality?
6. What primary products/services does your coop handle, including the input side, marketing side, and any special services?
7. Where would you put yourself on a scale from one to ten, one being smallest and ten being largest agricultural cooperative in the Northwest with regards to sales?

    1 2 3 4 5 6 7 8 9 10 (largest)
8. Where would you put yourself on a scale from one to ten, one being smallest and ten being largest agricultural cooperative in the Northwest with regards to membership?

    1 2 3 4 5 6 7 8 9 10 (largest)
9. If you had to describe agricultural cooperatives in one word or a short phrase, what would that be?
    a. Would your members choose a different word or phrase?
    b. Would your potential members choose a different word or phrase?

Cooperative Memberships

10. Membership location:
    a. Where do you think 80% of your members live – what geographic boundaries?
    b. What geographic region(s) does your coop target for potential members?

11. What is the geographic distribution of your final product or marketing side?
    a. Are there primary target areas for your sales?
    b. If international, how much domestic versus foreign product in an average year?
12. Focusing on the geographic region your coop is in, what is your coop's…
    a. Ratio of members to potential members?
    b. Average share of wallet is the percentage of a grower's total expenditures on a product type, like fertilizer or herbicide that are sold by your company. What is your average share of wallet?
    c. Average share of marketing business?
13. How many of your members vote for the board of directors?
14. What do you believe are the primary reasons that new members join your coop?
    a. What is the **main** reason why growers choose to become members?
    b. Are there different reasons why members choose to retain their membership?
15. What do you believe are the primary reasons potential members are not joining?
16. How many people use your services or buy your products but aren't members?
17. On average, how many new members does your coop **gain** every year?
18. On average, how many members cancel their membership every year? How many members become inactive every year (if lifetime membership)? OR what is your membership retention rate?
    a. What is your cooperative's membership trend line over the last five years?
    b. What about in acreage?
19. Is it more difficult to encourage new memberships or retain memberships?

Cooperative Value

Focusing on only your **members** right now, NOT potential members.

20. There are three defining principles of cooperatives: ownership, control, and benefit. The ownership principle means that the members also own the cooperative and its assets. Pride of ownership is also included here. The control principle means that the members control the cooperatives (i.e. electing the board of directors). The benefit principle means that benefits, usually profits are allocated to its members depending on their degree of use. Of

the three defining principles of cooperatives, how would your members allocate 100 points between these principles for their reason for staying with your co-op? **Why**?

Ownership: _____% Control: _____% Benefit: _____%

21. Placing all benefits within the three categories: prices, quality, and relationships. The prices category is the economic benefits as well as personal satisfaction members gain from pricing discounts offered only to members, the quality category is the satisfaction members gain from the quality of the cooperative's products or service, and the relationship category is the satisfaction members gain from their relationships with the cooperatives employees.
    a. Which of the three categories does your coop use the most to retain members?
    b. How would your members allocate 100 points between prices, quality, and relationships for their reason for staying with your coop?

       Prices: _____% Quality: _____% Relationships: _____%
    c. On a ranking of one to ten, how sensitive is the price component for your members. For example, a ten would mean that if you changed your prices by just a fraction your members would definitely let you know that they notice.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    d. On a ranking of one to ten, how sensitive is the quality component for your members. For example, a ten would mean that if you changed your quality of service or product selection by just a fraction your members would definitely let you know that they notice.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    e. On a ranking of one to ten, how sensitive is the relationship component for your members. For example, a ten would mean that if you changed your relationship efforts with your members by just a fraction your members would definitely let you know that they notice.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)

Focusing only on your **potential members** right now, NOT members.

22. There are three defining principles of cooperatives: ownership, control, and benefit. The ownership principle means that the members also own the cooperative and its assets. Pride

of ownership is also included here. The control principle means that the members control the cooperatives (i.e. electing the board of directors). The benefit principle means that benefits, usually profits are allocated to its members depending on their degree of use. Of the three defining principles of cooperatives, what percentage would your potential members assign to each principle when considering joining your coop? **Why**?

Ownership: _____% Control: _____% Benefit: _____%

23. Placing all benefits within the three categories: prices, quality, and relationships. The prices category is the economic benefits as well as personal satisfaction members gain from pricing discounts offered only to members, the quality category is the satisfaction members gain from the quality of the co-operative's products or service, and the relationship category is the satisfaction members gain from their relationships with the cooperatives employees.
    a. Which of the three categories does your coop use the most to encourage new members?
    b. How would your potential members allocate 100 points between prices, quality and relationships when considering joining your coop? **Why**?

       Prices: _____% Quality: _____% Relationships: _____%
    c. On a ranking of one to ten, how sensitive is the price component for your potential members. For example, a ten would mean that if you changed your prices by just a fraction it would drastically affect your potential members' decision to join.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    d. On a ranking of one to ten, how sensitive is the quality component for your potential members. For example, a ten would mean that if you changed your quality of service or product selection by just a fraction it would drastically affect your potential members' decision to join.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    e. On a ranking of one to ten, how sensitive is the relationship component for your members. For example, a ten would mean that if you changed your relationship efforts with your members by just a fraction it would drastically affect your potential members' decision to join.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
24. How does your coop communicate the value that it offers to its members?

   a. In terms of communicating the value of you coop to your members, do you segment the members and craft tailored messages to each segment?
   b. Are there any communication efforts that specifically target potential members?
   c. What value factors does your coop actively communicate?
   d. Are there any benefits of joining that your coop does not actively communicate?
   e. Would you change anything about your coop's communication efforts? If so, what?
25. How do **you** sell your coop to retain your members' memberships?
26. How do **you** sell your coop to potential new members?
27. Are there any cooperative-specific characteristics that are often misunderstood by members and/or potential members?
28. How does your coop encourage interaction/community between its members?

Appendix D: Consumer Food Cooperative Interview Questions

Interviewee Info

1. What is your job title and what are your primary duties?
2. How many years have you been working for this co-operative?
3. Have you worked for other co-operatives in the past?
    a. If yes, which ones and for how long?
4. Have you worked in a non-cooperative consumer food business before?

Co-operative Info

5. What would you say is your co-operative's mission statement or primary purpose?
    a. If don't have a formal mission statement, why not?
    b. Has this mission been changing over the years?
    c. What does your co-op do to bring this to reality?
6. What primary products/services does your co-op offer? From food products to non-food products.
7. Where would you put your food coop on a scale from one to ten, one being smallest and ten being largest consumer food cooperatives in the Northwest with regards to total sales?

    1 2 3 4 5 6 7 8 9 10 (largest)
8. Where would you put your food coop on a scale from one to ten, one being smallest and ten being largest consumer food cooperatives in the Northwest with regards to total membership?

    1 2 3 4 5 6 7 8 9 10 (largest)
9. If you had to describe consumer food co-ops in one word or short phrase, what would that word be?
    a. Would your members choose a different word/phrase?
    b. Would your potential members choose a different word/phrase?

Co-operative Memberships

10. Membership location:
    a. Where do you think 80% of your members live- what geographic boundaries?

b. What geographic region(s) does your coop target for potential members?
c. What geographic region do your products come from?

11. Focusing on the geographic region your co-op is in, what is your co-op's …
    a. Ratio of members to potential members?
    b. Average share of wallet is the percentage of members' total purchases that are sold by your company. What is your average share of wallet or how much of their grocery bill do you own?
12. How many of your members vote for the board of directors?
13. What do you believe are the primary reasons that new members join your co-op?
    a. What would you say is the main reason why people choose to become members?
    b. Are there different reasons why members choose to retain their membership?
14. What do you believe are the primary reasons potential members are not joining?
15. How many people use your services or buy your products but aren't members?
16. On average, how many new members does your co-op **gain** every year?
17. On average, how many members cancel their membership every year? How many members become inactive every year? OR what is your membership retention rate?
    a. If can't answer, has your co-operative been growing in membership over the years?
    b. What about products sold (dollar amount)?
18. Is it more difficult to encourage new memberships or retain memberships? Why?

Co-operative Value

Focusing on only your **members** right now, NOT potential members.

19. There are three defining principles of cooperatives: ownership, control, and benefit. The ownership principle means that the members also own the cooperative. Pride of ownership is also included here. The control principle means that the members control the cooperatives (i.e. electing the board of directors). The benefit principle means that benefits, usually profits are allocated to its members depending on their degree of use. Of the three defining principles of co-operatives, how would your members allocate 100 points between these principles for their reason for staying with your co-op? **Why**?

    Ownership: _____% Control: _____% Benefit: _____%

20. Place all benefits within the three categories: prices, quality, and relationships. The prices category is the economic benefit as well as personal satisfaction members gain from pricing discounts offered only to members, the quality category is the satisfaction members gain from the quality of the co-operative's products and services, and the relationship category is the satisfaction members gain from their relationships with the co-operatives employees.
    a. Which of the three categories does your co-op use the most to retain members?
    b. How would your members allocate 100 points between prices, quality, and relationships for their reason for staying with your co-op? **Why**?
       Prices: _____% Quality: _____% Relationships: _____%
    c. On a ranking of one to ten, how sensitive is the price component for your members. For example, a ten would mean that if you changed your prices by just a fraction your members would definitely let you know that they notice.
       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    d. On a ranking of one to ten, how sensitive is the quality component for your members. For example, a ten would mean that if you changed your quality of service or product selection by just a fraction your members would definitely let you know that they notice.
       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    e. On a ranking of one to ten, how sensitive is the relationship component for your members. For example, a ten would mean that if you changed your relationship efforts with your members by just a fraction your members would definitely let you know that they notice.
       1 2 3 4 5 6 7 8 9 10 (most sensitive)

Focusing only on your **potential members** right now, NOT members.

21. There are three defining principles of co-operatives: ownership, control, and benefit. The ownership principle means that the members also own the co-operative and its assets. Pride of ownership is also included here. The control principle means that the members control the co-operatives (i.e. electing the board of directors). The benefit principle means that benefits, usually profits are allocated to its members depending on their degree of use. Of the three defining principles of co-operatives, how would your potential members allocate 100 points between these principles when considering joining your co-op? **Why**?
    Ownership: _____% Control: _____% Benefit: _____%

22. Place all benefits within the three categories: prices, quality, and relationships. The prices category is the economic benefits as well as personal satisfaction members gain from pricing discounts offered only to members, the quality category is the satisfaction members gain from the quality of the co-operative's products and services, and the relationship category is the satisfaction members gain from their relationships with the co-operatives employees.
    a. Which of the three categories does your co-op use most to encourage new memberships?
    b. How would your potential members allocate 100 points between prices, quality, and relationships when considering joining your co-op? **Why**?

       Prices: _____% Quality: _____% Relationships: _____%
    c. On a ranking of one to ten, how sensitive is the price component for your potential members. For example, a ten would mean that if you changed your prices by just a fraction it would drastically affect potential member's decision to join.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    d. On a ranking of one to ten, how sensitive is the quality component for your potential members. For example, a ten would mean that if you changed your quality of service or product selection by just a fraction it would drastically affect potential member's decision to join.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    e. On a ranking of one to ten, how sensitive is the relationship component for your members. For example, a ten would mean that if you changed your relationship efforts with your members by just a fraction it would drastically affect potential member's decision to join.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
23. How does your co-op communicate the value that it offers to its members?
    a. In term of communicating the value of the co-op to your members, do you segment the members and craft tailored messages to each segment?
    b. Are there any communication efforts that specifically target potential members?
    c. What value factors does your co-op actively communicate?
    d. Are there any benefits of joining that your co-op does not actively communicate?
    e. Would you change anything about your co-op's communication efforts? If so, what?
24. How do **you** sell your co-op to retain your members' memberships?

25. How do **you** sell your co-op to potential new members?
26. Are there any cooperative-specific characteristics of your co-op that are often misunderstood by members and/or potential members?
27. How does your co-op encourage interaction/community between its members?

Appendix E: Credit Union Interview Questions

Interviewee Info

1. What is your job title and what are your primary duties?
2. How many years have you been working for this credit union?
3. Have you worked for other credit unions or cooperatives in the past?
    a. If yes, which ones and for how long?
4. Have you worked in a banking business other than credit unions before?

Credit Union Info

5. What would you say is your credit union's mission statement or primary purpose?
    a. If don't have a formal mission statement, why not?
    b. Has the mission been changing over the years?
    c. What does your credit union do to bring this to reality?
6. What primary services does your credit union offer? (Mobile banking)?
    a. Does your credit union handle business accounts?
7. Where would you put your credit union on a scale from one to ten, one being smallest and ten being the largest credit unions in the Northwest with regards to assets?

    1 2 3 4 5 6 7 8 9 10 (largest)
8. Where would you put credit union on a scale from one to ten, one being smallest and ten being the largest credit unions in the Northwest with regards to membership?

    1 2 3 4 5 6 7 8 9 10 (largest)
9. If you had to describe credit unions in one word or a short phrase, what would that be?
    a. Would your members choose a different word or phrase?
    b. Would your potential non-members choose a different word or phrase?

Credit Union Memberships

10. Membership location:
    a. Where do you think 80% of your members live – what geographic boundaries?
    b. What geographic region(s) does your credit union target for potential members?
11. Focusing on the geographic region your credit union is in, what is your credit union's…

   a. Ratio of members to potential members?
   b. Average share of wallet is the percentage of a member's total banking that is done through your company. What is your average share of wallet?

12. What do you believe are the primary reasons that new members join your credit union?
   a. What is the main reason why people choose to become members?
   b. Are there different reasons why members choose to retain their membership?
13. How many of your members vote for the board of directors?
14. What do you believe are the primary reasons potential members are not joining?
15. Are there any services that your credit union offers that people who aren't members can use? If so, what?
   a. How many people use your services but aren't members?
16. On average, how many new members does your credit union **gain** every year?
17. On average, how many members does your credit union **lose** every year? OR what is your membership retention rate?
   a. What is your credit union's membership trend line over the last five years?
   b. What about asset size?
18. Is it more difficult to encourage new memberships or retain memberships?

Credit Union/Cooperative Value

<u>Focusing on only your members right now, NOT potential non-members.</u>

19. There are three defining principles of cooperatives: ownership, control, and benefit. The ownership principle means that the members also own the cooperative and its assets. Pride of ownership is also included here. The control principle means that the members control the cooperatives (i.e. electing the board of directors). The benefit principle means that benefits, usually profits are allocated to its members depending on their degree of use. Of the three defining principles of cooperatives, how would your members allocate 100 points between these principles for their reason for staying with your credit union? **Why**?

    Ownership: _____% Control: _____% Benefit: _____%

20. Placing all benefits within the three categories: prices, quality, and relationships. The prices category is the economic benefits as well as personal satisfaction members gain from pricing discounts offered only to members, the quality category is the satisfaction members gain

from the quality of the co-operative's products or service, and the relationship category is the satisfaction members gain from their relationships with the cooperatives employees.

a. Which of the three categories does your credit union use the most to retain members?

b. How would your members allocate 100 points between prices, quality, and relationships for their reason for staying with your credit union? **Why?**

   Prices: _____% Quality: _____% Relationships:_____%

c. On a ranking of one to ten, how sensitive is the price component for your members. For example, a ten would mean that if you changed your **interest rates** by just a fraction it would drastically affect your membership numbers.

   1 2 3 4 5 6 7 8 9 10 (most sensitive)

d. On a ranking of one to ten, how sensitive is the price component for your members. For example, a ten would mean that if you changed your **loan rates** by just a fraction it would drastically affect your membership numbers.

   1 2 3 4 5 6 7 8 9 10 (most sensitive)

e. On a ranking of one to ten, how sensitive is the quality component for your members. For example, a ten would mean that if you changed your quality of service by just a fraction it would drastically affect your membership numbers.

   1 2 3 4 5 6 7 8 9 10 (most sensitive)

f. On a ranking of one to ten, how sensitive is the relationship component for your members. For example, a ten would mean that if you changed your relationship efforts with your members by just a fraction it would drastically affect your membership numbers.

   1 2 3 4 5 6 7 8 9 10 (most sensitive)

Focusing only on your potential non-members right now, NOT members.

21. There are three defining principles of cooperatives: ownership, control, and benefit. The ownership principle means that the members also own the cooperative and its assets. Pride of ownership is also included here. The control principle means that the members control the cooperatives (i.e. electing the board of directors). The benefit principle means that benefits, usually profits are allocated to its members depending on their degree of use. Of the three defining principles of cooperatives, how would your potential members allocate 100 points between these principles when considering joining your credit union? **Why**?

Ownership: _____% Control: _____% Benefit: _____%

22. Placing all benefits within the three categories: prices, quality, and relationships. The prices category is the economic benefits as well as personal satisfaction members gain from pricing discounts offered only to members, the quality category is the satisfaction members gain from the quality of the co-operative's products or services, and the relationship category is the satisfaction members gain from their relationships with the cooperatives employees.
    a. Which of the three categories does your credit union use most to encourage new memberships?
    b. How would your potential members allocate 100 points between prices, quality, and relationships when considering joining your credit union? **Why?**

       Prices: _____% Quality: _____% Relationships:_____%
    c. On a ranking of one to ten, how sensitive is the price component for your potential members. For example, a ten would mean that if you changed your **interest rates** by just a fraction it would drastically affect your potential members' decision to join.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    d. On a ranking of one to ten, how sensitive is the price component for your potential members. For example, a ten would mean that if you changed your **loan rates** by just a fraction it would drastically affect your potential members' decision to join.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    e. On a ranking of one to ten, how sensitive is the quality component for your potential members. For example, a ten would mean that if you changed your quality of service by just a fraction it would drastically affect your potential members' decision to join.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
    f. On a ranking of one to ten, how sensitive is the relationship component for your potential members. For example, a ten would mean that if you changed your relationship efforts with your potential members by just a fraction it would drastically affect your potential members' decision to join.

       1 2 3 4 5 6 7 8 9 10 (most sensitive)
23. How does your credit union communicate the value that it offers to its members?
    a. In terms of communicating the value of the credit union to your members, do you segment the members and craft tailored messages to each segment?
    b. Are there any communication efforts that specifically target potential members?

   c. What value factors does your credit union actively communicate?
   d. Are there any benefits of joining that your credit union does not actively communicate?
   e. Would you change anything about your credit union's communication efforts? If so, what?

24. How do **you** sell your credit union to retain your members' memberships?
25. How do **you** sell your credit union to potential new members?
26. Are there any cooperative-specific characteristics of your credit union that are often misunderstood by members and/or potential members?
27. How does your credit union encourage interaction/community between its members?

Appendix F: Initial Farm Market iD Agricultural Producer Email Announcing Study

Subject: [BULK] Communication from the University of Idaho

Message:

Building on a rich and long history of conducting research that supports agricultural producers in improving their practices, the Department of Agricultural Economics and Rural Sociology at the University of Idaho is conducting a survey of agricultural producers.

The survey is part of a Masters student's project sponsored by CHS Foundation and Northwest Dairy Association. The project explores producer perceptions of suppliers, including cooperatives that provide goods and services needed in their operation. The information will help determine what producers expect and need from their suppliers. This project in turn will help you through improved value proposition offered by suppliers.

If you would like to participate in the study, simply do nothing. If you prefer not to receive emails from us, please click here.

Thank you,

Aaron Johnson
Associate Professor of Agribusiness
Agricultural Economics and Rural Sociology
University of Idaho
875 Perimeter Drive MS 2334
Moscow, ID 83844
208-885-5489
aaronj@uidaho.edu
www.uidaho.edu/cals/aers

Appendix G: Farm Market iD Agricultural Producer Email and Survey

Subject: University of Idaho Producer Survey

Message:

Building on a rich and long history of conducting research that supports agricultural producers in improving their practices, the Department of Agricultural Economics and Rural Sociology at the University of Idaho is conducting a survey of agricultural producers.

The survey is part of a Masters student's project sponsored by CHS Foundation and Northwest Dairy Association. The project explores producer perceptions of suppliers, including cooperatives that provide goods and services needed in their operation. The information will help determine what producers expect and need from their suppliers. This project in turn will help you through improved value proposition offered by suppliers.

If you would like to participate in the study, please follow the link XXXXXX.

If you prefer not to receive emails from us, please click here.

Thank you,

Aaron Johnson
Associate Professor of Agribusiness
Agricultural Economics and Rural Sociology
University of Idaho
875 Perimeter Drive MS 2334
Moscow, ID 83844
208-885-5489
aaronj@uidaho.edu
www.uidaho.edu/cals/aers

Appendix H: Initial University of Idaho Agricultural Producer Email Asking for Participation

Subject: Ag Producer Survey - University of Idaho

Message:

Dear <<NAME>>,

My name is Hannah Hallock and I am a graduate student in applied economics at the University of Idaho. I am working with Dr. Aaron Johnson, agribusiness professor at the University of Idaho, to research the value of input and service providers, including cooperatives, to agricultural producers in the Northwest. This study will help determine the value agricultural producers are seeking from their input and service suppliers and identify if and how cooperatives can fill a unique niche, thus increasing the value proposition from which producers can choose.

The survey will only take 5-10 minutes, and your responses are completely confidential. To take the survey simply click on the following link (if the web address is not a clickable link, you can copy and paste the text into your browser):

https://uidaho.co1.qualtrics.com/SE?Q_DL=6A7HvAJAy8mpJat_9sh4ppL9SYSc4It_MLRP_dhBvDVuLNhXVK8B

If you would like to opt out of the study, please respond to this email with "STOP" on the top line.

If you have any questions about the survey, please email Hannah Hallock (hall4100@vandals.uidaho.edu) or Dr. Aaron Johnson (aaronj@uidaho.edu). If you have concerns about the project, please contact Dr. Johnson (208-885-5489) or the University of Idaho's Institutional Review Board (208-885-6162).

Thank you in advance for your participation!

Hannah Hallock
Applied Economics Graduate Student
University of Idaho

Appendix I: Second University of Idaho Agricultural Producer Email Asking for Participation

Subject: Ag Producer Survey - University of Idaho

Message:

Dear <<NAME>>,

This is a follow-up to my email sent Monday, March 16th. My name is Hannah Hallock and I am a graduate student in applied economics at the University of Idaho. I need your help with my research on agricultural cooperative value proposition. Would you please consider participating in a survey on this topic? Your responses will help me obtain enough data for a meaningful analysis and complete my thesis work.

The survey will only take 5-10 minutes, and your responses are completely confidential. To take the survey simply click on the following link (if the web address is not a clickable link, you can copy and paste the text into your browser):

https://uidaho.co1.qualtrics.com/SE?Q_DL=0SsXm8X8LLHkpFj_9sh4ppL9SYSc4It_MLRP_aVnFGDs7Y0mNUJT

If you would like to opt out of the study, please respond to this email with "STOP" on the top line.

If you have any questions about the survey, please email Hannah Hallock (hall4100@vandals.uidaho.edu) or Dr. Aaron Johnson (aaronj@uidaho.edu). If you have concerns about the project, please contact Dr. Johnson (208-885-5489) or the University of Idaho's Institutional Review Board (208-885-6162).

Thank you in advance for your participation!

Hannah Hallock
Applied Economics Grad Student
University of Idaho

Appendix J: Initial Email Asking for Patronage Question Participation

Subject: UI Ag Producer Survey Follow-up

Message:

Dear <<NAME>>,

My name is Hannah Hallock and I am a master's student in Applied Economics at the University of Idaho. I recently conducted a survey regarding agricultural input suppliers. I want to thank you for taking that survey as it is people like you that make my thesis possible.

I want to apologize for bothering you again but I need to ask one more favor. The survey provided great information but an important question was mistakenly left off. Would you please reply to this email by simply typing 1,2,3,4,or 5 in answer to the following question:

How important is patronage when considering renewing or becoming a member of an agricultural cooperative?

1= Not Very Important

2= Somewhat Important

3= Moderately Important

4= Extremely Important

5= N/A

Thank you again for your participation and helping me complete my thesis. If you have any questions or concerns please feel free to contact me.

Thank you!

Hannah Hallock
Graduate Student in Applied Economics
Agricultural Economics and Rural Sociology
University of Idaho
875 Perimeter Dr. MS 2334
Moscow, Idaho 83844-2334
(208)-339-7151

Appendix K: Qualtrics Survey

Block 7

My name is Hannah Hallock and I am a graduate student in applied economics at the University of Idaho. I need your help to complete my thesis. I am working with Dr. Aaron Johnson, agribusiness professor at the University of Idaho. We are looking at the value input and service providers offer agricultural producers. This study will help increase the value proposition service providers offer, meaning better options for you.

The survey will only take 5-10 minutes, and your responses are completely confidential. YOU CAN CHOOSE TO NOT ANSWER ANY OR ALL QUESTIONS WITHOUT RISK OF PENALTY. You may also stop the survey at any point (although we would encourage you to fully complete the survey as partial surveys will provide limited usefulness).

If you have any questions about the survey, please email Hannah Hallock (hall4100@vandals.uidaho.edu) or Dr. Aaron Johnson (aaronj@uidaho.edu). If you have concerns about the project, please contact Dr. Johnson (208-885-5489) or the University of Idaho's Institutional Review Board (208-885-6162).

Thank you in advance for your participation!

Sincerely,
Hannah Hallock

Default Question Block

What is the highest level of education you have COMPLETED?

Attended High School
High School Graduate
Graduate of Two- year College/Technical/Trade Program
Some Four- year College

Four- year College Graduate
Master's Degree
Advanced Graduate Work

What is your age group?

18-25 Years
26-35 Years
36-45 Years
46-55 Years
56-70 Years
70+ Years

What is your gender?

Male
Female

How many years have you been working in agriculture?

Less than 5 Years
5-9 Years
10-19 Years
20-29 Years
30-39 Years
40+ Years

Approximately, what was your GROSS INCOME from AGRICULTURE in 2014?

Less than $50,000
$50,000-$99,999
$100,000-$499,999
$500,000-$999,999

$1 Million-$4.9 Million
+$5 Million

How much additional GROSS INCOME came from NON-AGRICULTURAL sources in 2014?

None
$0.01-$9,999
$10,000-$49,999
+$50,000

What is your role in the operation (check all that apply)?

Owner
Operator
Family Employee
Employee

Is your agricultural operation family owned (i.e. regardless of business structure, the owners are related)?

Yes
No

Block 1

How many generations have been involved with the family farm?

1
2
3
4
5

6+

Don't Know

What generation are you in the operation?

N/A

1

2

3

4

5

6+

Don't Know

Were previous generations involved with agricultural cooperatives?

Yes

No

How many active partners do you have in your operation?

0

1

2

3

4

5+

Don't Know

Do you share equipment with other farmers/ranchers (excluding custom harvesting, etc.)?

Yes

No

Don't Know

Block 2

Are you a member of any of the types of cooperatives listed (check all that apply)?

Agricultural Input Cooperative
Agricultural Marketing Cooperative
Consumer Food Cooperative
(Federal) Credit Union
None
Other (please specify)

How would you rate your knowledge of agricultural cooperatives?

Not at all Knowledgeable	Slightly Knowledgeable	Moderately Knowledgeable	Very Knowledgeable	Extremely Knowledgeable

What is your opinion of agricultural cooperatives?

Very Unfavorable	Unfavorable	Neutral	Favorable	Very Favorable

How important are the following when considering renewing or becoming a member of an agricultural cooperative?

	Not Very Important	Somewhat Important	Moderately Important	Extremely Important	N/A
Pride/loyalty	○	○	○	○	○
Access to Market	○	○	○	○	○
Community Involvement	○	○	○	○	○

Ownership	○	○	○	○	○
Control	○	○	○	○	○
Relationship (i.e. Trust)	○	○	○	○	○
Price Competitiveness	○	○	○	○	○
Quality (products/services)	○	○	○	○	○
Reputation of Cooperative	○	○	○	○	○
Other (optional)	○	○	○	○	○

Do you do business with an agricultural cooperative(s)?

Yes

No

Block 3

For each of the following, what percentage did you use agricultural cooperatives in 2014 (for example, 100% would be buying or selling all that product listed in a single row through agricultural cooperatives)?

	None	1-25%	26-50%	51-75%	76-100%	N/A
Purchase Animal Feed	○	○	○	○	○	○
Purchase Animal Health Products	○	○	○	○	○	○
Purchase Reproduction Services	○	○	○	○	○	○
Purchase Fertilizer/Manure	○	○	○	○	○	○

Application Services						
Purchase Other Inputs/Services	○	○	○	○	○	○
Sell Market Animal/Meat	○	○	○	○	○	○
Sell Dairy	○	○	○	○	○	○
Sell Other Animal Products	○	○	○	○	○	○

For each of the following, what percentage did you use agricultural cooperatives in 2014? (for example, 100% would be buying or selling all that product listed in a single row through agricultural cooperatives)?

	None	1-25%	26-50%	51-75%	76-100%	N/A
Purchase Fertilizer Application	○	○	○	○	○	○
Purchase Crop Protection Chemical Application	○	○	○	○	○	○
Purchase Seeding	○	○	○	○	○	○
Purchase/Rent Farming Equipment	○	○	○	○	○	○
Sell/Market Crops	○	○	○	○	○	○
Use Agronomist Services	○	○	○	○	○	○

Block 5

Are you a member of an agricultural cooperative?

Yes

No

Please list the agricultural cooperative(s) you are a member of:

Agricultural Cooperative 1	
Agricultural Cooperative 2	
Agricultural Cooperative 3	
Agricultural Cooperative 4	
If More, Please List (separated by a comma)	

How long have you been a member of each cooperative you listed above?

Agricultural Cooperative 1 (Years)	
Agricultural Cooperative 2 (Years)	
Agricultural Cooperative 3 (Years)	
Agricultural Cooperative 4 (Years)	
If More, Please List (separated by a comma, respectively)	

What do you consider the number one reason for being a member of any of the cooperatives you listed above?

In general, how loyal are you to the cooperative(s) you are a member of?

Not at all Loyal Somewhat Loyal Moderately Loyal Very Loyal Extremely Loyal

How loyal are you to cooperatives as a whole?

Not at all Loyal Somewhat Loyal Moderately Loyal Very Loyal Extremely Loyal

How would you rate your participation/involvement in your cooperative(s)?

Not at all Involved Slightly Involved Moderately Involved Very Involved Extremely Involved

Have you ever or do you currently serve on a board of directors for at least one of the cooperative you are a member of?

Yes
No

Did you vote for the board of directors in the last election for at least one of the cooperatives you are a member of?

Yes
No

Did you attend the last annual meeting for at least one of the cooperatives you are a member of?

Yes
No

Have you and/or a family member ever been employed by an agricultural cooperative?

Yes, Me
Yes, Family Member
No

When considering renewing your membership or joining an agricultural cooperative, how much do you value the following items? Please distribute 100 points, according to importance, across the cooperative principles of ownership (pride included), control (i.e. electing the board of directors), and benefit (price, products/services, and relationship). The

sum between the three must equal 100.

Ownership	0
Control	0
Benefit	0
Total	0

When considering renewing your membership or joining an agricultural cooperative, how much do you value the following items? Please distribute 100 points, according to importance, across the cooperative benefits of price (economic benefits including patronage and discounts), quality (quality of products/services), and relationship (relationship with cooperative employees and trust) The sum between the three must equal 100.

Price	0
Quality	0
Relationship	0
Total	0

How important are the following sources for receiving information from your cooperative(s)?

	Not Very Important	Somewhat Important	Moderately Important	Important	Extremely Important	N/A
Face-to-Face	○	○	○	○	○	○
Newsletter	○	○	○	○	○	○
Website	○	○	○	○	○	○
Phone	○	○	○	○	○	○
Email	○	○	○	○	○	○
Social Media	○	○	○	○	○	○
Texts	○	○	○	○	○	○

Annual Meeting	○	○	○	○	○	○
Non-annual Meetings	○	○	○	○	○	○
Other (optional)	○	○	○	○	○	○

Block 6

Have you ever been a member of an agricultural cooperative?

Yes, please explain why you left.

No

Why are you not a member of an agricultural cooperative?

	Not Very Important	Somewhat Important	Moderately Important	Important	Extremely Important	N/A
Lose Independence	○	○	○	○	○	○
Dislike Coop Idea	○	○	○	○	○	○
Prices	○	○	○	○	○	○
Switching Costs	○	○	○	○	○	○
Other Business Relationships	○	○	○	○	○	○
Inconvenience (i.e. Location)	○	○	○	○	○	○
Unawareness	○	○	○	○	○	○
Feel Undervalued	○	○	○	○	○	○
Other (optional)	○	○	○	○	○	○

When considering joining an agricultural cooperative, how much do you value the following items? Please distribute 100 points, according to importance, across the cooperative principles of ownership (pride included), control (i.e. electing the board of directors), and benefit (price, products/services, and relationship). The sum between the three must equal 100.

Ownership	0
Control	0
Benefit	0
Total	0

When considering joining an agricultural cooperative, how much do you value the following items? Please distribute 100 points, according to importance, across the cooperative benefits of price (economic benefits including patronage and discounts), quality (quality of products/services), and relationship (relationship with cooperative employees and trust) The sum between the three must equal 100.

Price	0
Quality	0
Relationship	0
Total	0

Appendix L: Anonymous Qualtrics Survey Add-in Questions

Default Question Block

What is your zip code?

Please list the number of acres planted for each crop and the number of head managed for animal products. If none, please indicate with a "0".

Wheat	
Row Crops	
Corn	
Fruit	
Beef	
Livestock	
Dairy	
Soy	