Partner Satisfaction and Renewal Likelihood in Consumer Supported Agriculture (CSA): A Case Study of The Equiterre CSA Network.

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ABSTRACT

Consumer supported agriculture (CSA) is a mutually beneficial food system that is based on forward contracts between a farmer and consumers. CSA emphasizes organic production methods, and local production for local consumption. A review of the literature on CSA indicates that it is thriving as an alternative to the conventional food system. Yet, the sustainable growth of the CSA food system is threatened by high partner turnover.

A case study of the Equiterre CSA network was done to identify causes of high partner turnover. 378 useable surveys, out of 500 sent out, were used to identify factors that influence satisfaction and the likelihood to renew the partnership. An ordered probit model was estimated for each dependent variable. Nine factors each were found to significantly influence satisfaction and the likelihood to renew partnership. Satisfaction with product quantity, quality and price, and partner perception of their ability to influence basket contents were statistically significant in the both models. Satisfaction with the location of delivery points was significant in the renewal model. In terms of socio-demographic variables, income and the number of children under 12 years in a household both had negative effects on satisfaction while age had a positive effect on renewal.

A high correlation (r=0.7) between global satisfaction and renewal suggests that CSAs can reduce the turnover rate by delivering in areas that influence global satisfaction with the system. The results suggest that the single most important area in this regard is that of choice and variety of produce. A more flexible system of constituting baskets and a more diversified selection of produce may be useful areas of focus on the farmers' part.

RÉSUMÉ

L'agriculture soutenue par la communauté (ASC) constitue un système alimentaire mutuellement bénéfique et basé sur des contrats futurs entre un producteur et des consommateurs. L'ASC accentue les méthodes de production biologique et la production locale pour une consommation locale. Une revue de la littérature sur l'ASC indique qu'elle se développe comme alternative au système alimentaire conventionnel. Toutefois, la croissance durable du système alimentaire ASC est menacée par une forte rotation des partenaires.

Une étude de cas du réseau d'ASC d'Équiterre fut menée afin d'identifier les causes de la forte rotation des partenaires. Des 500 questionnaires envoyés, 378 furent utilisés pour identifier les facteurs qui influencent la satisfaction et la probabilité de renouveler le partenariat. Un model ordonné de probit a été estimé pour chaque variable dépendante. Neuf facteurs sont apparus comme influençant significativement chacune des variables dépendantes. La satisfaction associée à la quantité, la qualité et le prix des produits, ainsi que la perception des partenaires de leur capacité à influencer le contenu des paniers se sont montrées statistiquement significatives pour les deux modèles. La satisfaction associée à l'emplacement des points de livraison s'est montrée significative dans le modèle sur le renouvellement. Au niveau des variables socio-démographiques, le revenu et le nombre d'enfants âgés de moins de 12 ans dans un foyer ont tous deux des effets négatifs sur la satisfaction alors que l'âge a un effet positif sur le renouvellement.

Une corrélation élevée (r=0,7) entre la satisfaction globale et le renouvellement suggère que les ASCs peuvent réduire le taux de rotation des partenaires en répondant à des aspects qui influencent la satisfaction globale envers le système. Nos résultats suggèrent que l'aspect le plus important à ce niveau tient au choix et à la variété des produits. Un système plus flexible de composition des paniers ainsi qu'une sélection plus diversifiée de produits sont deux aspects sur lesquels les producteurs pourraient porter attention à profit.

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1.1.1 Industrial Agriculture:

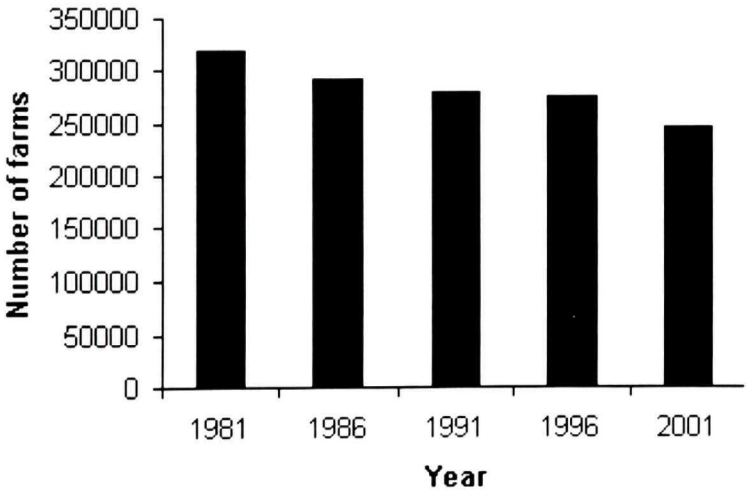
As agricultural production systems have become increasingly industrialized (Trobe et al 2000), food marketing has become more internationalized. Estimates show that each food item now travels fifty percent further than it did in 1979 (De Selincourt 1997 and Pretty, 1995). In the U.S. for example, the average pound of food is reported to travel 1200 miles from the original production site to the consumer's table (Norberg-Hodge 1995).

Industrial food production, characterized by the introduction of "miracle seeds" and machinery (Batie, 1989) and the dominance of chemical and technological processes over biological processes (Henderson and Van En, 1999 and Groh and McFFaden, 1997), has led to a continuous increase in food and fiber productivity globally (McCalla, 2001; Feenstra et al, 2000). Production in the U.S. has doubled over the last 50 years (US secretary of Agriculture, 2001). According to historical statistics from the USDA economics and statistics systems, total vegetable production in the US increased from 18.95 million tonnes in 1961 to 30.4 million tonnes in 1992. Canada, according to the same source, and during the same time interval, experienced a change in total vegetable production from 1.14 million tonnes to 1.9 million tonnes (USDA, 2003). Even sub-Saharan Africa, one of the poorest regions of the world, witnessed an nanual growth rate in food productivity of 1.7% between 1975 and 1985 (Alexandratos, 1989 as cited in Reijntjes et al 1992).

Despite this increase, some have expressed doubts regarding the long-term viability of conventional agriculture (Rigby et al, 2000), and the viability of a global food market (Hinrich, 2000; Lang and Hines, 1995). This doubt arises from the belief that this type of agriculture has imposed costs on humans and the environment that are yet to be fully understood (Conway and Pretty, 1991).

Several studies have criticized the industrial model of food production and marketing (e.g. Trobe et al, 2000; Portney, 1998 and Lang and Hines, 1995). Their criticisms focus on human and environmental costs that have traditionally not been included in analyzing the profitability of such systems. Not including costs such as pollution, losses of biodiversity, topsoil, and local employment, to name a few, leads to an underestimation of the real costs of the industrial agri-food system. Conway and Pretty (1991) have documented some of these negative effects. To farmers, these costs involve reduced returns, health problems related to exposure to agricultural chemicals and in some cases closure due to competitive pressures. Between 1960 and 1990, real food prices, world wide, declined by 50% (McCalla, 2001). Returns to primary producers in Canada fell by 80% between 1945 and 1995 (Pretty, 1995). Falling returns has made farm businesses less profitable resulting in a decrease in the number of farms as some farmers opt out. The number of farms in Canada has dropped by almost 50% compared to the 732,858 farms that existed in 1941 (Statistics Canada, 1983). The 2001 Census of Agriculture (Figure 1.0) counted 246,923 farms in Canada compared to 276,548 in the 1996 census. In Quebec alone, about 16000 farms were lost between 1981 and 2001(Statistics Canada, 2001).

Figure 1.0 Census farms in Canada: 1981-2001



Source: Statistics Canada, Census of Agriculture (2001)

Liberalization in food trade, which gives competitive advantage to low cost producing countries, appears to be linked to decreasing farm numbers. Liberalization has lead to an increasingly globalized food system and criticism from some authors who are concerned about the long-term viability of such a system. Lang and Hines (1995 p1) call it " A disaster for the environment, rural economies, food quality and food security". They argue that globalization of our food system will leave food production and distribution in the hands of a few multinational oligopolies to the detriment of small farms, with negative consequences to the environment, rural economies, food quality and food security. Moving food over increasingly long distances will lead to more air pollution and the depletion of non-renewable energy resources (Trobe et al, 2000; Portney, 1998).

On the consumer side, food scares during the past decade have fueled general concerns about food safety and the sustainability of the natural resource base (Batie, 1989). Two examples are the dioxin scare in Belgium in the late nineties and the recent (2000) Walkerton E-coli incident in Canada. As the evidence mounts, so too does the concern about our food system and the need to reformulate our strategies. It is therefore not surprising that non-traditional aspects such as safety, health and environmentally friendly production are increasingly driving food demand today. This change in demand constitutes an important new challenge for the agriculture and food sector. Responding to these challenges has led to increasing interest in alternative food systems, among which is community supported agriculture (CSA).

1.1.2 An alternative food system:

The concept of sustainability is garnering widespread support in mainstream agriculture (Feenstra et al, 2000). MacRae et al (1990) identified three factors that were responsible for the increasing attention received by sustainable agriculture during the late 1980's:

(i) Low commodity prices sent many producers looking for low input farming alternatives to cut costs,

(ii) Consumers' concern for food quality

(iii) A perception that the quality of rural life was deteriorating.

More recently, in addition to food safety, these same factors still help to explain the increasing interest in organic farming (Allen and Kovach, 2000; Feenstra et al, 2000 and Roddy et al 1994).

Common to the various definitions of sustainable agriculture are the goals of environmental health, economic profitability and social and economic equity (Feenstra et al 2000; Lockeretz, 1989). The goals of organic agriculture (Pretty, 1995) are in close correspondence with the above goals, leading to it's wide acceptance as a form of sustainable agriculture (Reynolds, 2000; Trobe et al, 2000) and as a potential contributor to food security and to wider environmental and social goals (De Selincourt, 1996). However, organic agriculture alone cannot address all the problems associated with intensive systems and the global nature of the agro-food system (Trobe et al, 2000).

As the demand for organic food increases, research is now focusing on how this demand can be met without compromising the integrity of organic products and the philosophical ideas of the organic farming movement. Several reports have indicated the adoption of conventional systems of finance, management and distribution in the organic industry in order to meet ever-increasing demand (Dimitri and Richman, 2000; Klonsky, 2000; Reynolds et al, 2000). As firms seek to meet rising demands by developing more "efficient" ways to bring larger quantities of organic products to the market, the potential for fraud increases (Dimitri and Richman, 2000). Competitive pressures are already beginning to lead some producers away from strict adherence to the goal of ecological soundness towards more profit maximization goals (Goodman, 2000). Marketing via multiple outlets is characteristic of mass production where technology and convenience dominate, as opposed to the organic philosophy where social and environmental concerns dominate production and marketing decisions (Latacz-Lohman and Foster, 1997).

Ensuring product integrity requires third party certification to provide credible assurance that the food was grown organically (Dimitri and Richman, 2000). A major shortcoming of such certification, however, has been the primary focus on allowable inputs (Allen and Kovach, 2000). Widespread dependence on external inputs purchased from specialist suppliers has been reported (Guthman, 2000; Altieri and Rosset, 1997). Community building, an important principle of organic agriculture, has largely been left out as a certification criterion (Browne et al, 2000). The danger with this trend, "is that the latent progressive environmental and social projects of sustainable agriculture will be subsumed by the technoscientific conceptualization of food safety" (Goodman, 2000 P.217). Such concerns are gradually being taken seriously. Beginning in 1997, the International Federation of Organic Agriculture Movements (IFOAM) began the process of incorporating issues of social justice into its accreditation program, despite the major challenge posed by the worldwide standardization of social criteria (IFOAM, 1997). According to Allen and Kovach (2000) in order to shed light on the complex, natural-social relations that are the root of the problems in our food system, transparency of production processes must be backed by transparency of social relations. For organic agriculture to provide a social framework for improving ecological soundness in agriculture, changes in political, social and economic structures and relationships are required

On a brighter note, community food security movements and urban antihunger activists have increasingly been taking up issues of equity, access, and social justice in agro-food networks (Goodman, 2000). Social movements centered on food are growing in numbers and covering wider territories around the globe (Groh and MacFadden, 1997). For organic agriculture to be socially sustainable, (Reynolds, 2000), it's techniques must be embedded in a social organization that furthers the goals of ecological sustainability. The need for a socially embedded food system has inspired the development of community supported agriculture (CSA), the focus of this research, as a marketing system in the organic industry (Hinrich, 2000).

Community supported agriculture (CSA), is a partnership between consumers and local farmers (Hunter, 1999; Wells and Gradwell, 2001), for organizing the distribution of farm produce. Originated in Japan in the 1960s (Wells and Gradwell, 2001), the concept became formalized into what is now called CSA in 1980 in Switzerland and Germany (Equiterre, 2001; Cooley and Lass, 1998) from where it moved to North America.

Produce offered and opportunities for involvement vary between CSA farms (Barss, 2001). However at the most basic level, CSAs are based on forward contracts between a farmer and consumers, known as "shareholders", "partners", "sharers" or "members" depending on the writer. The word partner will be used in the remainder of this report to ensure consistency in terminology. Partners pay a fee either at the beginning of the growing season, or periodically, in return for baskets of fresh, organic vegetables from their farm.

Compared to today's industrialized food system, the CSA represents an important new alternative relationship between farmers and consumers (Cooley and Lass, 1998) and supports, locality and seasonality over distance and durability (Friedman, 1993). With food as a focal point, CSA brings a growing circle of people into a closer relationship with farmers, nature and each other (Wells et al 1999). The philosophy here is to bring consumers closer to their primary food source and to nature. Groh and Mcfadden (1997) see it as a means to the democratize decision making as to what is eaten and how it is produced; in a world where globalization is making it more and more the responsibility of a few multinational corporations and their managers. CSA incorporates both environmentally sound and socially conscious economic practices, and challenges the conventional notion that economic growth has primacy over ecological concerns (Colby, 1990). There is little doubt, from a review of the recent literature on CSA, that this phenomenon has taken root and is thriving on the edge of the global, industrial food system (Cone and Mhyre, 2000, Sabih and Baker, 2000).

Various claims have been made regarding the benefits of CSAs to farmers, partners and the community as a whole (Reynolds, 2000; Welsh, 1997; Latacz-Lohman et al, 1997 and Gotlieb and Fisher, 1996). These benefits are elaborated in chapter 2.

Community supported agriculture is a relatively new concept in Quebec. Equiterre, a Montreal based, non-profit organization, began promoting the concept in 1995 as one of its projects. Starting with only seven farmers in 1995 (Hunter, 1999) the Equiterre network of CSA farms has grown over the years. By the end of 2000 the number of CSA farms in the network stood at 63, supplying fresh organic vegetables and fruits to over 7500 people (Equiterre, 2001). The Equiterre network of CSAs appears to be a unique case in the literature. CSA farms vary considerably in terms of their organization and what they offer. However, every farm must be producing organically and must be certified as doing so by an independent body. Also, most of the produce must be grown on the farm, partners must make financial commitments to the farm for the season, and social events such as harvest festivals, work days on the farm, initiated by the farmer or partners, must be part of the program. Part of the financial payments made by the partners goes to Equiterre to cover part of its operational costs.

Equiterre plays the vital role of liaison between potential consumers and producers and runs a database of existing and would be participants in the network. Mass media, flyers, field days and workshops are some of Equiterre's strategies for promoting the concept of community-supported agriculture in Quebec. A guide to CSA; *Je mange, tu cultive, nous partageons*' published in 2000, is the first reference document on CSA, in French, produced in North America, and several hundred copies have been distributed. A recent report by Equiterre shows an overwhelming increase in the demand for 'shares' (Equiterre, 2001). In the same report it is observed that many more farmers are exploring the idea of CSA. Thus, the future is very hopeful, despite the growth which has not been so smooth.

1.2 PROBLEM STATEMENT:

A common problem to most CSA's has been the high proportion of partners who abandon the partnership at the end of the season, hereinafter referred to as the turnover problem. Many sources show that partner turnover in CSAs is quite high in North America (Equiterre, 2001; Henderson and Van En, 1999, Salm, 1997). Kane et al (1996) as cited in Barss (2001) reports that turnover rates of 30-50% were not uncommon for many CSAs in the US. Salm (1997) reported that 44% of the farmers she interviewed in Canada reported turnover rates of over 20%. More recently a study of CSAs in Quebec (Equiterre, 2001) revealed that the turnover rate has increased steadily over the past three years, from 40% in 1998 to about 45% in 2000. The legitimacy of this problem, not unique to CSAs, is based on the idea that it is always more expensive to recruit new customers than to retain them.

Marketing researchers have come to the conclusion that consistent purchasing is an indicator of consumer loyalty, but that behavioral aspects are also vital in modeling loyalty (Oliver, 1997). Markets are seldom homogenous and people respond differently to different product characteristics, prices and services, and this difference has been linked to differences in socio-demographic profiles of consumers. Market segmentation studies have therefore been one powerful tool of the marketing researcher in identifying niche markets for products based on specific consumer segment requirements. This tool can also be useful in the study of the turnover problem in CSAs.

Studies have also shown that there is a positive correlation between consumer satisfaction and loyalty (Lien-Ti and Yu-Ching, 2001; Kolodinsky and Pelch, 1997b). Therefore information on the antecedents of consumer satisfaction with a product or service can provide useful insights into loyalty.

1.3 OBJECTIVES:

Addressing consumer demands for desired quantities of a diversity of produce has been identified as a significant operational challenge for many CSA farms (Groh and McFadden, 1997). For the CSA movement to grow sustainably, the loss of partners must be recognized as a symptom of poor market performance that requires remediation. Finding a lasting solution to any problem requires a reasonable understanding of the causes of that problem, and this requires research.

Therefore, the purpose of this research is to identify the causes of high partner turnover, and to suggest possible ways of mitigation. Specific objectives are:

(i) To define the characteristics associated with CSA as a product that most influence satisfaction, and likelihood to renew the partnership

(ii) To identify socio-demographic characteristics that influence satisfaction, and likelihood to renew the partnership

(iii) To suggest solutions and areas for further research

The results of this research will provide a better understanding of how consumers value their CSA membership; what components of the CSA package play a major role in customer satisfaction. It will also provide a better understanding of the segmentation of the CSA market so that Equiterre, as well as farmers, can use segment profiles to develop segment specific approaches in their planning and organization processes. Farmers stand to benefit if they can use the results of this research to plan production and services as a function of some representative assessment of shareholder desires and profiles.

1.4 THESIS STRUCTURE:

This thesis is organized into five chapters including the introduction. The next four chapters include the literature review, the methodology, the results and discussions, and the conclusions and recommendations. Chapter two examines work that has been done in the areas of consumer choice theory, consumer satisfaction, consumer

loyalty, data generation and statistical methods of data analysis, and their applicability to the CSA food system. Chapter three comprises a description of the methods employed in the study. In this chapter, the Lancaster model is used to describe CSA as a product: Survey development, implementation procedures as well as the analytical procedures for the data are then examined. In chapter four, the results are presented and discussed. Chapter five presents general conclusions drawn from the results and proposes recommendations.

2. LITERATURE REVIEW

2.1 INTRODUCTION:

This chapter consists of a review of work that has been done on consumer-supported agriculture and related issues. Section one examines standard consumer choice theory. This is immediately followed by an extension of this model to what is referred to in the literature as "the Lancaster model", which appears to be more relevant to the product under investigation here. The theory of consumer satisfaction/dissatisfaction is examined in section three. Section four examines the concept of consumer loyalty. In section five, the economics of community supported agriculture and the drivers of satisfaction in this food system are reviewed. Issues of data generation are examined in section six while section seven deals with statistical methods of modeling that are relevant to the study.

2.2 NEOCLASSICAL CHOICE THEORY:

Neoclassical choice theory applies to both the demand and the supply side of an economic system. On the demand side, the theory attempts to explain how people choose among alternative consumption goods or services, and how this choice is influenced by their preferences and endowments (budget constraint). It attempts to explain how consumption decisions are made. The consumer, as a basic unit of analysis in economics, is regarded as an individual who has to choose an amount of each commodity to consume, constrained by his/her initial stock of endowments. Nonetheless, consumer units are usually groups of two or more people comprising a household and decisions on purchases may well be group decisions. However, with the assumptions of rationality and consistency the decision making process, can be regarded, without loss of generality, as the work of a single abstract decision-taker (Gravelle and Rees, 1992).

The standard economic model of consumer behavior, as described in most microeconomic textbooks, is based on the assumption that people choose the "best things" they can afford. The phrase "they can afford" is typically described in terms

of a budget constraint (endowments) while the phrase "best things" is described in terms of preferences (Varian, 1996). The objective of the consumer is to maximize satisfaction or utility subject to a budget constraint. Sayre and Morris (1999) define utility as the satisfaction or pleasure derived from consumption of a product or service. The experience of such satisfaction is therefore the object of consumption (Gravelle and Rees, 1992).

Though choice theory can be based on the concept of preferences, requiring only indifference curves or surfaces and their assumed properties, some methods of analysis require a function, which provides a numerical representation of the preference ordering (Gravelle and Rees, 1992). It is in such cases that utility theory becomes useful as a way to describe preferences (Varian, 1996). A utility function is simply a way of attaching numbers to the consumer's indifference sets so that the numbers increase as more preferred sets are reached, and all that is needed is that utility can be represented by a positive monotonic function and any positive transformation of such a function (Gravelle and Rees, 1992).

One of the important assumptions in the development of consumer choice theory is that of rationality. Rationality, among other things, implies that the consumer tries to find the best alternatives out of those available (Gravelle and Rees, 1992). The consumer is an optimizer and the solution to his optimization problem depends on his preferences, the prices he faces and his money income.

Neoclassical consumer theory has always formulated the consumer problem in two ways leading to two types of demand functions; Marshallian and Hicksian demand functions. The Marshallian demand function arises as a solution to the consumer's attempt to maximize utility subject to a budget constraint (money income) and the prices he faces and can be represented as follows:

$X_i^* = D_i(P, M) \quad i = 1, \ldots\ldots, n$ (1.0)

Where, P = A vector of prices

M= Money income and

X_i^*=The quantity of product/service chosen

The Hicksian demand function arises as a solution to the consumer's desire to maximize utility subject to prices and money income as in the Marshallian case but with one important difference. Here utility depends on prices and money income rather than on the amount of product/service as in the former case. Based on equation (1.0) an indirect utility function can be derived where U*, the Optimal solution will also be a function of prices and income.

The maximized value of $U(X_i,\text{-----}X_n) = U(X_i^*,\text{-----}, X_n^*)$ can be written as

$$U(X_i^*,\text{-----}, X_n^*) = U(D_i(P, M),\text{------}, D_n(P, M)) = U^*(P,M) \qquad (2.0)$$

Since utility depends indirectly on prices (P) and income (M), equation 2 is referred to as an indirect utility function. By inverting the indirect utility function (2), an expenditure function, M= m (P, U), can be obtained. By reframing the consumer problem as that of minimizing expenditure subject to a given utility level, the Hicksian demand function is obtained by differentiating m(P, U) with respect to price.

$$H_i(P, U) = D_i(P, M) = D_i(P, M(P, U) \qquad (3.0)$$

The Hicksian demand function, though not directly observable, provides a means to draw conclusions about the effects of price changes compared to its Marshallian counterpart. However, the great thing about both types of demand functions is that they can, by the use of some mathematical identities, be derived from each other (Gravelle and Rees, 1992).

The Neoclassical or standard theory of consumer behavior has been widely used in many demand studies and is adequate for many purposes. However it has also been criticized for its limited focus on prices and income alone as determinants of demand. Antle (1999), describing this model as demand analysis in the "old economics" emphasizes the need for a "new economics" to give much more attention to understanding the effect of consumer characteristics and quality attributes on food demand and consumption. The Neoclassical model can only incorporate such attributes with much difficulty and has largely been unable to provide a fundamental

explanation of why goods are substitutes or compliments of each other (Gravelle and Rees, 1992). Allen and Kovach (2000) have observed that such a model conceals social and other relationships embedded in a commodity that are equally responsible in driving demand.

It has been suggested in the literature that there are other forces, beyond prices and income that drive demand. For example, Philips and Peterson (2001) suggest that when consumers make purchase decisions, they are concerned with the broader concept of value than price alone. This suggestion has prompted research in the area of defining what customer value is and this has produced a plethora of different definitions.

According to Woodruff and Gardial (1996), products and services are a means to accomplishing the customer's purpose of consumption or possession, and products create value by generating consequences, which could be positive or negative. They therefore define customer value as the ratio between the positive and negative consequences of consumption or possession as perceived by the consumer. Positive consequences include the desired outcomes or benefits that the consumer experiences as a result of consumption or possession. Negative consequences include price and the time and effort spent in acquiring and consuming the product or service. Costabile (2000) defines customer value as the subjective perception of the ratio between the products expected benefits and the different types of costs that have to be incurred in order to buy and enjoy the benefits. Both definitions represent a broader concept of value in that the cost of obtaining the benefits goes beyond the money price the consumer actually pays for the product. Allen and Pierson (1993) as cited in Philips and Peterson (2001) suggest a narrower value concept.

Customer value, according to Allen and Pierson (1993) as cited in Philips and Peterson (2001), can be denoted by the following expression:
Customer value perception = Expected Benefits / Price.

This definition is narrow in the sense that it does not elaborate what price constitutes, as is the case in the other two previous definitions.

The expected benefits of a product can be multidimensional. For example, in the fresh food industry, benefits include: freshness, appearance, safety, nutrition, social issues, trust, taste, variety, source, convenience, environment and others (Senauer, 2001, Feenstra et al, 2000, Huang, 1996). These are all attributes that are important in the consumer's choice process. (Senauer, 2001) has argued that the traditional focus on quantity demands for homogenous commodities has become less useful in high income countries, where consumers have become more affluent and have moved up Maslow's hierarchy of needs from basic physiological needs. He recommends that the focus should be on quality differentiated food products, pointing out that, although income elasticities in terms of quantity may be low, there is a high elasticity for many food attributes such as nutrition and health, safety, convenience and diversity. Antle (1999) has expressed similar concerns. Hence there is the need for a more sophisticated theory that can capture these drivers of food demand that are unaccounted for in the classical choice theory.

2.3 LANCASTER CONSUMER CHOICE THEORY:

It was these sorts of concerns that motivated Lancaster (1966) to propose an alternative approach to the standard theory of consumer behavior, in which he explored the concept that goods could be analyzed as bundles of attributes, based on the notion that it is not the good itself from which consumers derive utility, but from the attributes a product possesses. Consumers purchase the product because of the consumption services provided by the attributes, such as taste, satisfaction of appetite, nutritional qualities and ease of use (Baker, 1999). A number of researchers have proposed models based on the Lancaster theory to explain consumer product purchases (e.g. Baker, 1999; Baker and Crosbie, 1993; Lancaster, 1971). Such models have been used to capture consumer preferences for food safety attributes in fresh products, an aspect that is increasingly driving demand in the fresh food market in

many high-income countries today (Baker 1999; Huang et al 1999). Using such a model can therefore reasonably capture consumer perceptions of the CSA basket, compared to the standard theory.

Several factors, which represent specific attributes of this food system, have been identified as important drivers of demand in CSAs. These factors which constitute variables in the Lancaster type model include:

Freshness and taste: Vegetables and fruits, the main products in a typical CSA basket, are characterized by a relatively short shelf life and should preferably be consumed not long after harvest. However, technology has provided means of increasing this shelf life. This has made year round availability of many fruits and vegetables possible as supplies are freighted in from tropical areas to fill supply gaps in temperate countries in the winter. On the other hand, there are growing concerns as to the integrity of such produce and of the potential health risks carried by some other preservation procedures, for example the case of wax on apples. These concerns have prompted some consumers to redefine freshness, as is the case with CSA partners. Freshness to the CSA partner means coming directly from the farm without passing through other intermediaries and without any artificial preservation intervention. Natural freshness has been reported as an important attribute of the CSA package that drives demand in Massachusetts (Cooley and Lass, 1998). This is also the case in Canada (Sabih and Baker, 2000; Salm,1997).

Safety and Health: As concerns about the safety of conventional produce mount, consumers are exploring alternatives as they search for food with minimal safety threats. The centrality of organic production in the CSA food system has contributed immensely to increased consumer perception of the CSA product as safe and healthy. Mintel (1995) and Cooley (1996) as cited in Cooley and Lass (1998) have reported that concerns about food safety and health were top on the list of factors that motivated their partnership to a CSA farm.

Support for local Economy: By consuming local produce, CSA partners see themselves as playing an important role in keeping local farmers in business. This perception has been reported as a driver of CSA demand in Canada (Hunter, 1999; Fieldhouse, 1996).

Environmental Enhancement: Cooley (1996) as cited in Cooley and Lass (1998), and Fieldhouse (1996) have cited the desire to promote environmentally friendly food systems as an important factor from which partners derive interest in CSAs.

It is these aspects of the CSA package, which cannot be captured by the traditional demand analysis, that would make the Lancaster model useful in the study of the CSA food system. However, the use of the Lancaster model requires that these attributes be quantified, which is particularly difficult given that most of them are intangible. Yet, that does not prevent the use of the general idea behind Lancaster's model, to study consumer satisfaction as a funtion of their satisfaction with different CSA attributes. Consumers actually buy product characteristics rather than homogenous products.

2.4 CONSUMER SATISFACTION:

Consumer satisfaction remains one of the most widely studied constructs in marketing (Peterson and Wilson, 1992). Its importance derives from the belief that it is a major determinant of repeat purchases and brand loyalty (Gardner, 1996; Oliver and Linda, 1981).

Growth in the interest in this construct among researchers and marketing practitioners has been greatly enhanced by the growth in empirical evidence that there is a positive link between consumer satisfaction and business performance (Matanda, 2000; Fornell et al, 1996). According to Gardner (1996), private enterprise recognizes that profitability is completely dependent on consumer satisfaction, which is reflected by continued purchases of the same products. This construct, is now being used in the

design of defensive strategies aimed at retaining existing customers (Bloemer and Lemmick as cited in Reynolds and Simintiras, 2000) based on the belief that efficiency in acquiring and retaining customers is the key to long term financial health (Anderson et al, 1994).

2.4.1 Concept Definition:

There are significant differences in the literature on the definition of consumer satisfaction (Giese and Cote, 2000; Oliver, 1997; Peterson and Wilson, 1992). Studies of consumer satisfaction therefore can best be described by their lack of definitional and methodological standardization (Peterson and Wilson, 1992). Oliver (1980) defines consumer satisfaction as the after purchase judgment of a product or service. According to Tse and Wilton (1988) consumer satisfaction is the consumer's response to the post consumption evaluation of the perceived discrepancy between prior expectations and actual performance of the product. Though both definitions, like most, portray the concept as a response to an evaluation process, they differ in their nature. While the former portrays consumer satisfaction as a mental process the latter sees it as an affective process. Because the concept of satisfaction as a mental or an affective process cannot be directly measured, the use of constructs is inevitable in the measurement of satisfaction. As defined by Hair et al (2000), a construct is a hypothetical variable comprised of a set of component responses or behaviors that are thought to be related. The construct serves as a proxy for the concept.

Dissatisfaction, on the other hand, can be regarded as the negative satisfaction state; when the consumer's level of fulfillment is unpleasant, and it is more relevant when satisfaction and dissatisfaction are measured on the same continuum (Oliver 1997).

The lack of consensus in the definition of consumer satisfaction is fundamental to three problems in consumer satisfaction research: selecting an appropriate definition for a given study, operationalizing this definition and interpreting and comparing empirical results (Giese and Cote, 2000). However, Giese and Cote (2000) have suggested a context specific definition framework based on three commonalities in all

definitions of consumer satisfaction, to mitigate the problems of definition diversity. These commonalities are:

i) That consumer satisfaction is a response (emotional or cognitive)

ii) That the response pertains to a particular focus (expectations, products, consumption experience etc.)

iii) That the response occurs at a particular time (after consumption, after choice, based on accumulated experience etc)

The focus of the response identifies the object of consumer satisfaction and usually entails comparing performance to some benchmark. The focus can be anything; the product in general, specific attributes of the product, product benefits or any combination of them (Giese and Cote, 2000). Also, the benchmark can vary from very specific expectations (Oliver, 1980) to more general pre-purchase standards (Halstead et al, 1994) or use experience (Cardotte et al, 1987).

Though satisfaction can be measured at any time (Giese and Cote, 2000), it is generally accepted that it is a post purchase phenomenon (Yi, 1990; Tse and Wilton, 1988).

Of the few studies done on consumer satisfaction with CSA membership (e.g.Cooley and Lass, 1998; Kolodinsky and Pelch, 1997b), the focus has been attributes of the CSA package such as safety, health, environment, quality, support for local economy and others, while the timing has been post purchase.

2.5 CUSTOMER LOYALTY:

While satisfying the consumer is the immediate objective of the producer, the ultimate goal is to increase and maintain a healthy stream of loyal consumers of its product or service. Market relationships should ideally move towards a state of customer loyalty (Costabile, 2000). Prior to the 1970s, loyalty was regarded simply as being revealed through repeat purchase of a brand (Oliver, 1997). Confounded with

the inability to explain random elements in repeat purchase cycles, researchers began focusing on behavioral explanations for repeat purchase patterns in a product category. Prominent works in this domain are those of Dick and Basu (1994) and Jacoby and Chestnut (1978). Their works concentrated on adding a behavioral dimension to repeat purchasing in an attempt to explain brand loyalty.

Jacoby and Chestnut (1978) added a psychological perspective to loyalty, arguing that while repeat purchases enhance loyalty, the only way to observe true single brand loyalty is by examining the beliefs, attitudes and intentions of the consumer toward the focal brand. They also recognized the fact that inconsistent buying could mask loyalty if consumers had loyalty to several substitute brands in the same product category. Substitutes in this sense are determined in terms of quality, therefore single brand loyalty describes consistent repeat purchases of a product which has qualities, as seen by the consumer, that are relatively superior to those of its potential substitutes. When there is no relative superiority in quality, the consumer is indifferent to the brands or psychologically loyal to all of them. This is defined as "multibrand loyal". As shown in their framework (Table 2.1), true focal brand loyalty therefore only exists when the consumer is psychologically loyal to and repeat purchases the focal brand. On the other hand, a consumer who repeat purchases not because he thinks the product is superior to others but because his favorite brand is not available at the time is said to be a happenstance buyer. Costabile (2000) defines happenstance buying as purchase behavior that is not accompanied by a corresponding mental loyalty. It includes any repeat purchase sequence due to factors other than true psychological loyalty such as unavailability of one's favorite brand, surrogate purchasing and temporary constraints.

Table 2.1: Jacoby and Chestnut's loyalty categories.

Repeat Purchase of:	**Psychological loyalty to:**			
	Focal Brand	Multiple Brands	Other Brand	None
Focal Brand	*True Loyalty*	*Multibrand Loyalty*	*Non loyal repeater*	*Happenstance Buyer*
Other Brand	*Happenstance or other brand loyalty*	*Multibrand loyalty*	*Other brand loyalty*	*Happenstance Buyer*

Source: Jacoby and Chestnut (1978).

Dick and Basu (1994), Table 2.2, introduced the concept of relative attitude in the debate on loyalty. Relative attitude is the extent to which the consumer's evaluation of one alternative brand dominates that of another. This concept of relative attitude is similar to Jacoby and Chestnut's concept of quality evaluation. Thus, as shown in Table 2.2, sustainable (true) loyalty occurs when repeat purchase is accompanied by a high relative attitude, identical to superiority in quality in Jacoby and Chestnut's framework. At the other extreme is the case of unloyalty (no loyalty), which describes a situation of low relative attitude, and low repeat purchase. Between these extremes is spurious loyalty (happenstance buying) and latent loyalty. Happenstance buying or spurious loyalty exists when the consumer has a low relative attitude towards the focal brand but has a high repeat purchase rate. This may be due to temporal unavailability of the consumer's favorite brand. Latent loyalty describes a situation where the consumer has a high relative attitude towards the focal brand but a low repeat purchase rate, which can be as a result of his occasional use of the focal brand.

Table 2.2. Taxonomy of loyalty based on mental and behavioral dimensions

Relative attitude toward focal brand	**Repeat patronage of focal brand:**	
	High	Low
Positive	*Sustainable loyalty*	*Latent loyalty*
Negative	*Spurious loyalty*	*Unloyalty*

Source: Dick and Basu(1994).

Based on these frameworks Oliver (1997 p392) attempts a single definition of loyalty and defines it as " a deeply held commitment to repeat purchase of a preferred product or service consistently in the future despite situational influences and marketing efforts having the potential to cause switching behavior." However, (Hair et al., 2000; Woodruff and Gardial, 1996) are of the opinion that, having a deep commitment to repeat purchase is not enough to indicate loyalty, and that, recommending a brand to others, and providing suggestions on how to improve products and services are behaviors that reflect loyalty. They believe that loyalty is the result of a relationship between the customer and the firm built around the firm's offerings in a product and/or service. This relationship, like most relationships, grows in intensity over time, and is being fed by several mental and behavioral processes. This has given rise to the examination of loyalty in a relationship life cycle framework. This framework is important to this study as it allows us to situate customer satisfaction in the loyalty lifecycle.

Oliver (1997) and Costabile (2000) have proposed a four-phase model of loyalty development within the life cycle framework, each phase being characterized by different mental and behavioral processes. According to their model, the customer evaluates information available to him at each stage and uses the results of the evaluation to build a relationship that eventually culminates in true loyalty. True loyalty is signalled by repeat purchase, selling the idea of the brand or product to others, proposing changes that might improve on the product and more. The four phases according to their model are:

The Cognitive Loyalty phase: This is a vulnerable stage in loyalty development because it is based only on the consumer's knowledge that the firm's product offer is economically better than the offer of competing firms. Therefore a better offer by another firm can easily trigger switching behavior. Such loyalty (Costabile, 2000) is based on customer value alone.

The Affective loyalty phase: At this stage the consumer develops a particularly favorable attitude toward the brand as a result of repeated confirmation of

expectations developed at the cognitive phase. According to the expectancy-confirmation model of consumer satisfaction, it is at this stage that the consumer makes the mental evaluation of product based on his expectations and actual performance, an evaluation that is used to make a satisfaction judgement. Trust increases and so does the probability of repeat purchasing.

The Conative phase: At this stage there is a deep commitment to buy even though there are economic advantages that could be derived from switching to another supplier.

The Action Loyalty phase: This is the most intense stage of loyalty sustained by strong emotions that result in actions undertaken to overcome all forces that might provoke switching behavior. The customer is willing to cooperate with the firm by actively advertising the firm's product to other customers and providing suggestions for improvement. It is the state of true, ultimate or sustainable loyalty (Dick and Basu, 1994; Jacoby and Chestnut, 1978).

Customer satisfaction is a necessary but not sufficient component of loyal customers. It falls within the affective stage of the loyalty development life cycle, and it is only at the action phase of this cycle, that true loyalty occurs; when satisfaction translates into behavior such as promoting the focal product and suggesting ways of improvement. Though driven by satisfaction, customer loyalty involves a commitment on the part of the customer to make sustained investment in an ongoing relationship with a brand or company (Hair et al 1999). As observed by Kolodinsky and Pelch (1997b), satisfaction with CSA partnership is associated with increased years of membership. They concluded that keeping members satisfied is essential in ensuring a long-term relationship with customers. As members stay longer with their CSA farm, the potential for becoming loyal increases. This suggests that partner satisfaction with CSA is an important first step towards partner loyalty, and in the next section we examine the antecedents of consumer satisfaction and how this construct has been modeled.

2.6 MODELING CONSUMER SATISFACTION:

Numerous definitions of customer satisfaction appear in the literature accompanied by various theoretical structures that have been proposed for measuring the construct (Churchill and Suprenant, 1982). However, the most widely used model of consumer satisfaction is the expectancy-disconfirmation model (Torben and Solgaard 2001; Reynolds and Simintiras, 2000; Oliver, 1980).

This model uses four elements; expectations, performance, disconfirmation and satisfaction (Churchill and Suprenant, 1982), to explain how consumers respond to a consumption/possession experience (Torben and Solgaard, 1982). The model suggests that satisfaction is the result of a post consumption evaluation (cognitive) of the performance of a product or service by a consumer. The consumer compares post purchase performance to pre-purchase expectations and decides whether the product/service performed better than, just like or worse than was expected. Based on this assessment (disconfirmation), the consumer is either satisfied (positive disconfirmation) or dissatisfied (negative disconfirmation) or indifferent. Satisfaction, (Woodruff and gardial, 1996), is therefore the feeling (affect) that results from the disconfirmation process or the consumer's response to the performance comparison.

As presented by Oliver (1980) and Bearden and Teal (1983), consumers are believed to form expectations of a product's performance characteristics prior to purchase. Subsequent purchase and usage reveal actual performance levels that are compared to prepurchase expectation levels using a better-than, worse-than heuristic. As a result of this process a product is disconfirmed. A positive disconfirmation means satisfaction with the product, while a negative disconfirmation implies dissatisfaction with the product.

Despite widespread acceptance and use of the expectancy disconfirmation model, some writers have raised doubts as to the ubiquitous use of the model in all products and services and for all consumption situations (Oliver, 1997, Suprenant and

Churchill, 1982; Tse and Wilton, 1988). These writers are of the opinion that some elements of the model can operate alone, without necessarily passing through disconfirmation, in the consumer's satisfaction formation process. They cite cases in which expectations alone dominate and others in which post purchase performance alone dominate.

Expectations will dominate satisfaction formation when measuring performance is difficult to effect for reasons such as inability where it is technically difficult, and the absence of objective performance criteria such as in health foods, or when the consumer lacks motivation to measure performance (Oliver, 1997).

Tse and Wilton (1988) argue that there is enough theoretical support for including perceived performance as a direct determinant of consumer satisfaction/dissatisfaction. They use the case of happenstance buying to illustrate their point. They argue that a consumer forced to buy an inferior brand, in the absence of their favorite brand, may not necessarily, in this case, experience disconfirmation of a pre-experience comparison standard, but may, nonetheless, be dissatisfied because of it's inferior performance. This is the basis according to Churchill and Suprenant (1982) for inferring a direct link between perceived performance and customer satisfaction. They observed that while it was a vital determinant of satisfaction in durable goods, this was not the case for non-durable goods. However, they were careful not to generalize their results beyond the conditions that characterized their experiments (products used, exposure time of subjects to the produce).

In the field of consumer satisfaction, other areas where convergence among marketing researchers remain elusive include conceptualization of expectations and the operationalization of disconfirmation (Tse and Wilton, 1988; Oliver, 1980). The satisfaction literature suggests that consumers may use different types of expectations when forming opinions about a product's anticipated performance (Churchill and Suprenant, 1982). According to Woodruff and Gardial (1996) the various

conceptualizations of the expectations construct can lead to very different satisfaction judgements for the same product or service. They therefore proposed a framework of three approaches to conceptualizing expectations:

Expectations based on equitable performance: Expectations here are based on equity theory. The consumer uses a cost/benefit type of approach to form expectations about a product or service. Thus the expectation represents the performance level or the benefits the consumer expects to get at a perceived cost. It is related to customer value.

Expectations based on ideal performance: This represents how the consumer wishes the product to perform. The customer forms expectations based on what they think an ideal product should offer.

Expectations based on expected product performance: Based on past experience with the product, word of mouth communication, the consumer forms expectations based on past product performance.

Disconfirmation has continued to be regarded as a central intervening variable in satisfaction research literature since it is basically the degree of disconfirmation that generates satisfaction or dissatisfaction (Oliver and DeSarbo, 1988; Churchill and Suprenant, 1982). In the area of how consumers operationalize the construct of disconfirmtion, objective and subjective approaches have been suggested. According to Oliver (1997), disconfirmation is obtained through a self-reported score obtained through a survey or verbal communication, making it a subjective measure.

On the other hand La Tour and Peat (1979) as cited in Tse and Wilton (1988), argue that disconfirmation can be reported as the algebraic difference between perceived and expected performance. This approach suggests that the outcome of subtractive disconfirmation can be immediately interpreted in terms of satisfaction, as opposed to the outcome of subjective disconfirmation, which represents an intermediate state towards satisfaction judgement. (Oliver, 1980) argues that subtractive disconfirmation may be limited in use in cases where a product's attributes are not

subject to numeric evaluation as is the case with the environmental and health enhancing attributes of organic food. He also argues that only the consumer can attach direction to the disconfirmation outcome, therefore an algebraic outcome of disconfirmation is of limited use in determining satisfaction unless accompanied by a qualifying statement that indicates the direction of disconfirmation (positive or negative) and thus satisfaction of dissatisfaction. He concluded that, subjective disconfirmation offers a richer explanation of the complex process underlying consumer satisfaction/dissatisfaction formation.

2.7 CONSUMER SATISFACTION WITH CSA:

2.7.1 The Economics of CSA:

Community food security movements and urban antihunger activists have increasingly taken up issues of equity, access and social justice in agri-food networks (Goodman, 2000). These social movements, centered on food, are growing in number and covering wider territory, and have social sustainability as one of their goals (Groh and MacFadden, 1997). According to (Reynolds, 2000), for organic agriculture to be socially sustainable, it's techniques must be embedded in a social organization that furthers the goals of ecological sustainability. This need for a socially embedded food system has inspired the promotion of community supported agriculture (CSA) as a food system that is socially and ecologically sustainable (Hinrich, 2000). Advocates and practitioners of community supported agriculture believe that emphasis on organic production and intimacy between farmers and consumers can make the system socially and ecologically sustainable.

At the most basic level, CSAs are based on a forward contract between a farmer and consumers, known as partners. Partners pay a fee either at the beginning of, or by installment during, the growing season in return for baskets of fresh, organic vegetables from their farm (Wells and Gradwell, 2001; Hunter 1999; Salm, 1997). But, no two CSAs are alike just like other farms. Produce offered and opportunities for involvement differ among CSA farms (Barss, 2001). It represents an important

alternative relationship between farmers and consumers in today's industrialized food system (Cooley and Lass, 1998), one that advocates for locality and seasonality over distance and durability (Friedman, 1993).

Originated in Japan in the 1960s (Wells et al., 1999), the concept became formalized into what is now called CSA, in Switzerland and Germany (Equiterre, 2001; Cooley and Lass, 1998) from where it moved to North America. With food as a focal point, CSA brings a growing circle of people into a closer relationship with farmers, nature and each other (Wells et al., 1999). The philosophy here is to bring consumers or society closer to their primary food source and to nature. Groh and McFadden (1997) equates it to the democratization of decision making as to what is eaten and how it is produced; a process, which with globalization is increasingly becoming an affair of a few multinational corporations. However, farmers involved in CSA do not base their decision to be part of the system on issues of ecological and social sustainability alone. Economic viability is also a criteria for these farmers as these farms represent a major, and for some the only, source of income. The CSA farmer must get the prices right in order to persist and thrive, and at the same time remain accessible and affordable to their partners.

There is little doubt from a review of the recent literature on CSA, that this phenomenon has taken root and is thriving on the edge of the global, industrial food system (Cone and Myhre, 2000; Sabih and Baker, 2000). According to Colby (1990), CSA challenges the conventional notion that economic growth has primacy over ecological concerns. In her study of CSAs across Canada, Salm (1997), 62% of the farmers interviewed indicated an improvement in their income from CSAs since inception, 18% reported a decrease. Also, Sabih and Baker (2000) conducted a case study of a Canadian CSA and observed that, CSA increased revenues by 34%, reduced financial costs by up to 1.1% to 3.4% of total revenues, and yielded a net balance three times greater than conventional food systems. They concluded that CSA as an alternative financing system represented a win-win situation for both the farmer

and the consumer. Hunter (1999) is also of the opinion that the Quebec experience with CSA is at least as viable as other forms of marketing for small vegetable growers with the added advantage of having a predictable income.

Various claims have been made regarding the benefits of CSAs to farmers, shareholders and community as a whole.

Benefits to farmers include:

(i) Increased profit margins as a result of a shorter marketing chain, resulting from direct consumer-producer interaction (Reynolds, 2000; Latacz-Lohman et al, 1997; Welsh, 1997 and Gotlieb and Fisher, 1996).

(ii) Increased room for better planning thus reducing risk of spoilage, surplus production and absent markets, as well as reduced storage costs, all as a result of advanced ordering and knowledge of member preferences (Reynolds, 2000, Welsh, 1997 and Fieldhouse, 1996).

(iii) The pay-in-advance policy gives the farmer ready capital, early in the season, thus reducing the need for commercial loans (Reynolds, 2000; Cone and Myhre, 2000; Sabih and Baker, 2000; Cooley and Lass, 1998; Henderson and Van En, 1997; Fieldhouse, 1996).

(iv) Sharing the risks, more especially the price risks, inherent in farming over the partnership structure (Cone and Myhre, 2000; Cooley and Lass, 1998 and Henderson and Van En, 1997).

Consumer benefits include:

(i) The elimination of intermediary players allows consumers to enjoy fresh, local and organically produced farm produce at a reduced price. (Sabih and Baker, 2000; Hunter, 1999; Cooley and lass, 1998; Lockeretz, 1986).

(ii) Consumers are educated on how their food is produced through farm visits (Hunter, 1999; Fieldhouse, 1996).

Community benefits include:

(i) Increased local employment and more dollars circulating within local economies (Fieldhouse, 1996; Atkinson and Williams, 1994).

(ii) It is a form of direct marketing of agricultural products and can represent a more sustainable, locally based food system (Kolodinsky and Pelch, 1997a). More direct contact between farmers and consumers promote solidarity and builds community (Hunter, 1999).

(iii) Reduced energy costs as a result of a reduction in machinery use, processing and transportation, and reduced pollution (Wells and Gradwell, 2000).

(iv) Improved biodiversity (Kolodinsky and Pelch, 1997a; Fieldhouse, 1996).

(v) Community building through face-to-face contacts between farmers and consumers (Hunter, 1999; Fieldhouse, 1996).

(vi) Reinforcing food security by emphasizing local production to meet local needs (Fieldhouse, 1996).

There are also costs to the consumer or partner. These involve, choice limitations, having to accept what is on offer, having to pay in advance for shares of vegetables, the inconvenience with pick up times and locations, and the opportunity cost of time spent on CSA related activities such as farm visits.

2.7.2 Drivers of Satisfaction in CSA:

Most of the literature on community supported agriculture is descriptive and based on anecdotal accounts, rather than on reliable research data (Kolodinsky and Pelch, 1997a, 1997b). It is therefore not surprising that very little exists in the literature regarding consumer satisfaction and CSA. The only published work on this topic is that by Kolodinsky and Pelch (1997b). However, the centrality of organic food in the CSA partnership, lends credence to the use of satisfaction drivers in the organic food sector to infer drivers of satisfaction in CSA. Yet, the CSA is much more than organic food. CSA has social and other dimensions that are not directly implied by organic production. Therefore CSA has other attributes, alongside those of organic food, which could be explored as drivers of satisfaction or as characteristics upon which consumers evaluate the performance of the partnership.

ORGANIC MARKET:

The organic food market is small compared to the overall food market (Philips and Peterson, 2001), but it is growing quickly around the world. The same growth is seen in the harvested area used for organic agriculture as well as the number of producers and consumers of organic food. Weymes (1990), in a 1988 national survey of the Canadian market, reported a growth rate of 11-20% for raw and lightly processed organic products and 21-50% for processed organic products. Retailers and processors expected the organic market share to expand to 10% by the end of the century, while farmers expected a 20% share by the same date. However, these optimistic forecasts were not realized and the Canadian organic sector still only represents about 1% of Canadian agriculture. By 2000 there were approximately 2500 organic farmers in Canada and farm cash receipts for the industry were estimated at $600 million (Saskatchewan Agrivision Corporation, 2002).

Browning (2000) reported an annual growth rate in the organic food market of 40%, in the UK, though 70% of this demand is to be met by imports from the United States of America. Philips and Peterson (2001) as well as Reynolds (2000) report annual increases of 20% in the USA. Lohr, Luanne (1998) as cited in Philips and Peterson (2001) indicates approximate retail values of $508 million in France, $500 million in Japan and $445 million in the UK by the late 1990's. In New Zealand, around the same period, export sales of organic products generate $23.5 million annually (Lockie et al., 2000).

Price and quality have always influenced consumer choice for food (Senauer, 2001; Feenstra et al, 2000). According to Sterns et al (2001), despite its increasing importance in the agrifood industry, the concept of quality is not well defined or understood. However, analysis of quality in economic theory, they suggest, is best achieved by using the product attribute theory of Lancaster (1966). Therefore the quality of a product will be determined by the extent to which it provides certain

attributes as desired by the consumer. Yet it is not uncommon to find articles in the literature where a distinction is made between food quality, food safety and environmental attributes. As consumer perspectives broaden, environmental quality, resource use and social equity issues have become part of shopping decisions thus providing the attributes that help to distinguish food quality in organic food from that in conventional food. (Senauer, 2001; Feenstra et al, 2000). The growth in the organic food market (Roddy et al, 1994) in the UK is consumer driven and based on consumer concerns about health risks and chemical residues in conventionally produced food, an increased awareness of the environmentally damaging aspects of conventional agriculture. These same factors have been reported as crucial in driving demand for organic produce in other areas of the world (e.g. Phillips and Peterson, 2001; Senauer, 2001; Sterns et al, 2001; Huang, 1996).

Instead of the traditional focus on reducing prices to attract more customers, there is the alternative of improving competitiveness, especially for organic producers, by increasing the perceived benefits to customers (Peterson, 1999 as cited in Philips and Peterson, 2001). Jekanowski et al (2000) refer to the traditional approach as price advertising and concludes that the effects of this strategy are short-lived, compared to the product differentiation approach, which tends to induce consumer loyalty. Loyal consumers, they claim, make purchase decisions based on attributes other than price, and easily recognize quality dimensions. Important quality dimensions in the organic industry include environment, safety, health and social issues.

As a basic marketing principle it is important that business decisions be based on customer needs (Philips and Peterson, 2001). According to Costabile (2000), purchase choice is based on equity, that is, the perception that the firm has the ability to offer the benefits being sought in a better way than competitors and with more equity between the benefits and the costs. Therefore, these new perspectives of the consumer as to the attributes that influence their choice of food must be regarded as an important part of the consumer's value judgment if organic farmers intend to

market their produce to a wider public (Feenstra et al, 2000). The organic farmer must be able to deliver in the area of the attributes that are unique to organic food to be able to remain in business. Many consumer satisfaction studies (e.g. Oliver and DeSarbo, 1988; Churchill and Suprenant, 1982; Oliver, 1980), show that the perception of satisfaction has its origin in the congruence between expected and perceived value. Benefits emanate from attributes of the product, which is what the consumer actually purchases. It can be expected, therefore, that consumers will form expectations, on which to judge product performance, using the attributes they buy.

CSA AND SATISFACTION:

Very little has been done on the drivers of satisfaction in CSA. However, it is well known that CSAs use organic methods even if they are not certified as doing so. Therefore research on consumer behavior and attitudes toward organic food and direct marketing can give insight into consumer attitudes toward CSA membership (Kolodinsky and Pelch, 1997b). Attributes unique to the CSA can be added to those of the organic products and conventional food attributes to develop the focus (object of satisfaction formation according to Giese and Cote (2000)) of the CSA satisfaction formation framework. These attributes would include:

i) Support for local farmers (Guptill and Wilkins, 2001)

ii) Localness of food source, (Reynolds, 2000; Welsh, 1997; Latacz-Lohman, 1997)

iii) Community consolidation or building social capital (Hunter, 1999; Fieldhouse, 1996)

iv) Freshness (Hunter, 1999; Cooley and Lass, 1998).

v) Learning more about agriculture and nature (Groh and MacFadden, 1997).

These CSA specific attributes represent the ideal CSA according to the CSA philosophy. According to Sharp et al (2002), in an ideal CSA, consumers develop a connection to the farmer and the farm, while producers acquire a greater social awareness of the local community and its concerns. Welsh (1997) and Groh and

McFadden(1990) see it as a way of reconnecting farmers and non-farmers of a community through local food production, in order to improve understanding among food system stakeholders. For Fieldhouse (1996) it is much more than a producer-consumer relationship, but rather a collective means of producing food while building community. These attributes have been reported as important motivations for joining CSAs in a few studies as shown in Table 2.3.

Table 2.3: Consumer Motivations for joining a CSA farm

Motivating attribute	Percentage of respondents to whom this was important*
Fresh tasty vegetables	94 (N/A)
Chemical free vegetables	88 (59)
Environmental concerns	82 (72)
Supporting local farmer	80 (97)
Supporting local economy	80 (N/A)
Community involvement	38 (59)
Connecting to the farm	29 (N/A)
Cutting expenses on food	17 (N/A)

* These are results of two independent studies. The figures in parenthesis represent the results of a 1995 survey of partners of CSAs in Massachusetts by Cooley and lass (1998). The other figures are for a survey of partners in Winnipeg by Fieldhouse (1996). N/A = Not available

One would expect that these same attributes would form the basis for evaluating CSA partnership in order to make a satisfaction judgement. However, as revealed in the literature, though partners may report that these attributes are important in their decision to become CSA partners, other factors have dominated their evaluation of the partnership. These factors include: freedom to choose basket contents, convenience with pick up time and location, variety, price, seasonality of supply, and quality. Next, some studies are used next to illustrate this point.

Pelch (1996) as cited in Kolodinsky and Pelch (1997b) conducted a bivariate analysis to examine factors associated with consumer satisfaction and plans to rejoin a CSA farm. General dissatisfaction, lack of variety of produce, and dissatisfaction with pickup of produce was found to be associated with plans not to rejoin a CSA farm.

Complaints about the inability to have a say in what goes into their baskets has also been reported by Cooley and Lass (1998).

Kolodinsky and Pelch (1997b) investigated member satisfaction with time spent on activities associated with CSA membership and observed that, while pickup of produce provided some satisfaction to members, the time spent putting away produce at home created dissatisfaction. Pickup satisfaction may arise from the satisfaction a member derives from interacting with other members and the farmer at the pickup point; one of the social attributes of CSA. On the other hand the fact that vegetables from the CSA require more pre-storage processing than similar products from other outlets might have been the source of dissatisfaction with this aspect (opportunity cost of time). They also observed that product quality had a positive relationship with satisfaction.

Perceived value of partners' food shares decline due to problems associated with expectations concerning variety (Cone and Myhre, 2000). Sharp et al (2002) have also reported negative evaluations from some CSA partners about the quality and types of food received.

Salm (1997) examined farmers' opinion as to why partners leave. According to the farmers she interviewed, members leave the partnership for four main reasons; inconvenience with the system, starting up their own garden, relocating, and having too much produce to deal with. Other secondary factors include; not having enough control over choice, the burden of paying lump sum subscription fee, inaccurate expectations, high share prices and a short supply season. Fieldhouse (1996) and Hunter (1999) have also cited high subscription fees and lumpsum payment as an important barrier for low-income families to participate in CSA.

Research, (Reynolds, 2000), shows that many urban consumers perceive CSA offerings as too seasonal and too erratic. Common complaints from members include;

too much of this, not enough of that. Consumers often get food they cannot use, while certain staples, such as lettuce and fruits, have to be purchased elsewhere, and many conclude that if they have to go to the natural food store anyway, the extra trip to the CSA pickup point is not a good use of their time.

According to Kane and Lohr (1996) as cited in Barss (2001), the dominance of these new factors as satisfaction drivers in CSA at the expense of the philosophical factors of the ideal CSA, is the source of attrition in CSAs. They interviewed CSA partners and found that their expectations were often far from reality and concluded that as long as their expectations remained unrealistic, they will be unhappy with their CSA. When the expectations of farmers and those of farmers do not correlate problems are bound to arise.

In her study of Canadian CSAs, Salm (1997) observed a difference in goals between farmers and partners. According to farmers she interviewed the topmost goals for them in a CSA were financial stability followed by sustainability. Social goals of involving members in the different activities of the CSA (social events, work and decision making) were relatively less important. According to the farmers interviewed the two main reasons for partners to join a CSA were getting organic food and getting it fresh from the source. Learning about the farm and participating in farm activities were less important.

Though some attrition in CSAs is inevitable (Henderson and Van En, 1999), several factors have been identified as critical to the long-term success of CSA. These include: joint planning (Fieldhouse, 1996), effective communication (Sharp et al, 2002; Barss, 2001; Henderson and Van En, 1999; Salm, 1997) and education (Cooley and Lass, 1998; Salm, 1997).

Inaccurate expectations are a result of ineffective communication between both parties and this alone can be disastrous for a relationship based on trust, which is what CSA is supposed to be. Expectations should be formed based on the initial

understanding of the ideals of CSA. This is the area where education, effective communication and joint planning seem inevitably useful (Sharp et al, 2002; Hunter, 1999; Fieldhouse, 1996). According to Matanda et al (2000), effective communication enables a business to learn about individual customer characteristics and preferences, and research has shown that there is a positive relationship between communication and business performance or customer satisfaction.

According to Henderson and Van En, (1999), partner participation, or the role of partners in the CSA, is the most misunderstood concept in CSA. They are of the opinion that partners' role in the CSA should be clearly established at the time of membership initiation, in order to enhance participation. Reports have shown that higher rates of participation are positively related to renewal rates (Cone and Myhre, 2000; Salm, 1997). Cone and Myhre (2000) observed that the farm with the highest participation rate also had the highest renewal rate, 98% compared to 65% for the farm with the lowest participation rate. Developing a long-term relationship with partners pays off in terms of consumer satisfaction as shown by a positive simultaneous relationship between years of membership and satisfaction (Kolodinsky and Pelch, 1997b). Matanda et al (2000) are of the opinion that long-term relationships are based on trust and this trust can only be achieved if both partners in the CSA partnership clearly understand their respective rights and obligations within the partnership. It is therefore supposed that with a better understanding of their rights and obligations within the CSA, partner participation and trust in the system can be enhanced, and this in turn could lead to long term partnerships.

Customer value is an important concept in consumer satisfaction. Providing customer value and thus ensuring customer satisfaction requires some sort of satisfaction discovery process, similar to demand discovery. The demand discovery process is often complicated by the fact that consumers are not all alike in terms of their wants and needs, necessitating some segmentation studies in order to discover if there are some segments of the market which require special attention in terms of their demand

for specific attributes of the product, advertising programs and services (Philips and Peterson, 2001). This suggests the importance of looking at some socio-demographic factors that might influence customer satisfaction with CSA.

SOCIO-DEMOGRAPHICS:

The success of any advertising program is tied to its ability to target those consumers who have the highest likelihood of purchase and to its ability to effectively communicate the message (Jekanowski et al, 2000). The market for fresh organic produce is becoming highly competitive as firms rush in to enjoy the high premiums compared to the conventional produce. For example Henning et al (1990) reported that premiums received by organic farmers in Quebec ranged from 30% to as high as 250%, and that 72% of the farmers interviewed were convinced that organic farming was more profitable than conventional farming. Similar premiums can still be observed at the retail level.

Reynolds and Simintiras (2000) are of the opinion that, for small-scale organic farmers not to be subsumed by large-scale producers, they need to carve out a niche market of their own in which they deliver a product that can not be easily delivered by the large producers. This is what the CSA represents. Louriero and Hine (2001), reported that niche marketing was becoming the focus of many studies that deal with consumer acceptance of value added or differentiated products. Such studies seek a better understanding of consumers, in terms of their wants for product characteristics, price, distribution method, services, as well as socio-demographic factors that may influence their choices. The niche marketing approach could be useful to CSA farmers in order to survive the pressure from large producers in the organic market.

Many studies have shown that preferences are associated with household attributes or socio-demographic variables (e.g. Huang et al, 1999; Wessels et al, 1999; Huang, 1996). These studies have demonstrated that there are indirect links, through preferences, between factors such as income, age, education and family size on

satisfaction and by extension, loyalty. The relevance of organic food in the CSA food system is once more used to justify the use of literature on organic food to infer the influences of socio-demographics on member satisfaction with CSA.

Spector and Murchie (1996) observed that younger people and those between the age of 40-49 were more likely to purchase organic food in the United States of America. They speculated that this might be the case because people in this age group are more educated, tend not to have families, and therefore have more disposable income to pay for the luxury of organic food. According to the May 2002 issue of the USDA FOOD REVIEW, more educated members of the population are more likely to acquire and use health and nutrition information on food products.

In their study to identify the best niche market for organic Colorado potatoes, Loureiro and Hine (2001) found a significant negative relationship between age and willingness to pay a premium for organic potatoes. They suggested that the negative relationship could be the result of the belief that as people become older, they become generally less concerned about pesticides on food. They also observed that the presence of children in a household had a negative effect on willingness to pay and suggested that this might be due to two reasons. First, consumers are more concerned about pesticides in vegetables and fruits, which are mostly eaten raw compared to potatoes, which are not eaten raw. Secondly, in general families with children are more concerned about the nutritional value of their food, and potatoes are perceived as a poor source of vitamins and minerals to satisfy their children's daily dietary needs. Combining income and education into a single variable (upper class), they observed a positive relationship between this variable and willingness to pay. This is in accordance with findings by Huang (1996) and Spector and Muchie (1996).

Huang et al (1999) observed that while income had a negative and insignificant effect on willingness to pay for hydroponically grown vegetables, once a consumer is willing to pay a premium the amount of premium he or she is prepared to pay is

positively related to his or her income. This was the case, they suggested, because willingness to pay and how much to pay are two different but related decisions. While the willingness to pay decision was more influenced by socio-demographics and attitudinal inclinations, the how much to pay decision was more influenced by socioeconomic factors. Yet it is only logical to think that the wealthier household will be able and willing to pay a higher premium for this product if they have a demand for it. Also, Underhill and Figueroa (1996) found no significant effect between education, income and the likelihood to purchase or pay more for organic produce, though the relationship between age and likelihood of purchase was negative like in other studies.

While Loureiro and Hine (2001) observed a negative relationship between the number of children in a household and willingness to pay for organic potato, Huang et al (1999) found it to be positive for hydroponically (Pesticide free) grown vegetables in Taiwan. It is possible that the difference observed in both studies may be related to the difference in cultural backgrounds of the research populations. Also, the products are different, and as suggested by Loureiro and Hines (2001) the positive results of the Taiwan study may have been related to the fact that vegetables was the object of research as opposed to potatoes in the US study. Their result for the variable education was however consistent with those of Loureiro and Hines (2001).

Baker (1999) observed that women's preferences for food were more influenced by safety attributes than by price, degree of damage and type of certification. He also observed that the dominating influence of safety attributes in food preferences increased with the number of children in the household. Though the gender effect was not significant in the studies reviewed here (e.g. Loureiro and Hines, 2001; Huang, 1996; Baker,1999), it had a positive coefficient as an explanatory variable to willingness to pay in Baker's model. The implications of this to the organic industry is that women with children will be more willing to buy organic food given the general perception that organic food is safe.

More specifically in the CSA food system, Kolodinsky and Pelch (1997a), found that an increase in education was associated with a higher probability of becoming a CSA member even though this did not imply building a lasting relationship with the farm as is required for the system to be sustainable. They also observed that the presence of children in the household had negative effects on the likelihood of CSA membership. This is possibly due to the fact that children compete for time spent in CSA related activities.

However, in another study, Kolodinsky and Pelch (1997b) found no effect of number of children or teenagers on satisfaction with CSA, even though having children under 12 years of age was associated with increased years of membership, while years of membership increased satisfaction. So the presence of children may mitigate against CSA partnership, even though members with children are more likely to be satisfied with CSA.

Salm (1997), Hunter (1999) and Fieldhouse (1996) have cited the cost of membership as an important obstacle to CSA participation. This may be related to the question of income. However, they suggested that it was more a question of paying lump sum subscription fee than that of income, and that different outcomes are likely if a more flexible payment system were adopted. Personal interviews with CSA partners at the beginning of this study corroborated their findings, with suggestions that more flexible payment procedures such as paying in installments and in kind payments (farm work) can mediate the payment issue. Salm (1997) reported that these types of payment methods are being increasingly adopted by some CSAs in Canada. Although this makes it easier to attract partners, it involves an economic tradeoff for the farmer.

2.8 DATA GENERATION

Primary data about the subject under investigation can be obtained either by asking questions or by observation. The former method uses trained interviewers or questionnaires while the later uses professional observers or high tech devices (Hair et al, 2000). The questioning technique has the advantage over the observation technique in that it allows the researcher to gather a wider array of data and for different time frames. It can be done by face-to-face interviews, by mail and other high tech methods e.g. Internet surveys (Hair et al, 2000).

A consumer survey is one of the few tools available to extract information about consumer preferences for locally grown produce (Jekanowski et al, 2000). This can take different forms; personal interviews, telephone interviews, Internet interviews and by mail. The choice of which technique to use depends on several factors, the most important of which are the amount of information required, the time and money available and characteristics of the respondents. Each method has its strong and weak points, making the choice of any one method a question of tradeoffs.

2.8.1 Mail Surveys:

Though difficult to quantify with absolute numbers, there is little doubt that the number of surveys conducted by self-administration, and by mail in particular, exceeds the number of interview surveys (Dillman, 2000, 1991; Fox et al, 1988). Dillman (1991) suggested that the more frequent use of mail surveys could be attributed to cost and ease of implementation. Mail surveys are cheaper due to the absence of interviewer related costs such as compensation, training and traveling (Hair, 2000). Their low cost and ease of implementation (Dillman, 1991, Linsky, 1975) make mail surveys the most widely used technique today (Dilman, 2000 and 1991; Fox et al, 1988). Other reasons for the increasing popularity of mail surveys include; the ease of contacting people in remote areas, the ease of eliciting responses from people who may be too busy to provide a personal interview, the possibility of

avoiding interviewer or respondent bias for sensitive topics which are potentially embarrassing in a personal interview (Franzen and Lazersfeld, 1958).

However the mail survey system has its own drawbacks, some of which are:

i) High risk of non-response bias (Hair et al, 2000; Fox et al, 1988; Linsky, 1975).

ii) High possibility of skipped questions due to the absence of interaction required to solve cases of question vagueness or misinterpretation (Hair et al, 2000; Linsky, 1975).

iii) Significant time lapse between mailing and receipt of completed surveys (Hair et al, 2000; Fox et al, 1988; Linsky, 1975).

However several strategies have been suggested to reduce these shortcomings (e.g. Fox et al, 1988; Linsky, 1975). The problem of skipped questions can result even in personal interviews when a respondent does not feel comfortable answering a particular question and is ethically not obliged to do so. Elaborate reviewing and pretesting of the survey instrument have been reported to reduce the cases of misinterpretation (Hair et al, 2000).

2.8.2 Sources of Error in Mail Surveys:

For the results of a sample survey to be generalisable to the target population from which the sample was drawn, one must contend with at least four sources of error, any of which may make the survey results unacceptable (Dillman, 1991).

SAMPLING ERROR:

This describes the extent to which the reliability of sample survey statistics are limited by the sampling frame used, which determines who actually is part of the sample (Dillman, 2000). From a theoretical perspective (Hair et al, 2000), sampling error is any type of bias that is attributable to mistakes made in either the selection process of prospective respondants or determining the sample size. According to the central limit theorem, increasing the sample size can reduce the effects of sampling error. Larger sample sizes achieve ever-larger degrees of precision (Dillman, 2000).

NON-COVERAGE ERROR:

Referred to by others as sampling frame error (e.g. Hair et al, 2000), non-coverage error results from drawing a sample from an incomplete sampling frame (Dillman, 1991). This occurs when not every member of the population has a known, non zero chance of being included in the sample (Dillman, 2000). Non coverage error is one of the reasons why mail surveys have not been as useful as desired in surveying the general public (Dillman, 1991). Since individuals without a mailing address, or who move frequently may not form part of the survey, developing and constantly updating lists of target populations is useful in reducing non-coverage error (Dillman, 1991) though ethical and legal concerns might impose limitations (Dillman, 2000).

NON-RESPONSE ERROR:

This stems from the fact that some of the members of the sampling frame do not respond to the survey questions. Hair et al (2000) define this as an error that occurs when the response of a defined sub-population not represented or under represented in the response pool, is systematically and significantly different from those that did respond. A vast majority of the research on ways to improve mail surveys has focused on response rate, the generally accepted measure of non-response error (Dillman, 1991). This focus has been in reaction to the generally low response rates with mail surveys over the years (Fox et al, 1988; Linsky, 1975). High response rates have the obvious benefits of increasing the sample size, reducing costs associated with follow-up contacts, and reducing concerns over non-response bias (Fox et al, 1988).

Empirical studies aimed at reducing non-response abound (e.g. Kanuk and Berenson, 1975; Linsky, 1975). However most of such studies examine the impact of only one or two response rate antecedents (Dillman, 1991; Fox et al, 1988). This makes the use of such articles limited as a source of information on how to improve on response rate. This is so because of differences in population surveyed, topic studied, length of questionnaire and especially procedures, other than the test procedure, used to achieve a higher response rate (Dillman, 1991). The attention has now turned to Meta

analysis of these restricted studies. Summarizing studies done between 1935 and 1975, Linsky (1975) observed that pre-contacts, by letter, post card, and telephone or in person appear to increase response rates. Fox et al (1988) in their Meta analysis of selected techniques for inducing response reported that the effect of pre-notification (Table 2.4) ranged from a 9% decrease in response rate in some cases to about 47% increase in others. This suggests that not only can pre-notification increase rate of response but that it could actually induce non-response.

Other techniques suggested to enhance response rate (Fox et al, 1988; Dillman, 1978; Linsky, 1975) are follow-up letters or postcards, outgoing postage, monetary incentive and others as shown in Table 2.4

MEASUREMENT ERROR:

Measurement or design error is a family of errors, which occur when the information being sought is not what is obtained through the measurement process used. This arises as result of inappropriate design in constructs, scale of measurement or survey measurements used to ask questions and or record responses (Hair et al, 2000). In practical terms, measurement error results from respondent characteristics, e.g. their inability to provide accurate information or a motivation, for whatever reasons, and from characteristics of the question e.g. ambiguity in question wording, or design of the questionnaire e.g. order of questions presentation (Dillman, 1991).

Concerns over measurement error in mail surveys have traditionally focused on item response, failure to obtain adequate answers to open ended questions and the ability of the researcher to control the sequence in which questions are answered (Dillman, 1978). This has changed with time and the focus now is on comparing answers obtained from mail surveys to those obtained from telephone and face-to-face interviews (Dillman, 1991).

Table 2.4: Methods of improving response rate in Mail surveys

Method	Linsky, 1975	Fox et al, 1988
Pre-contact (letter, postcard etc)	Appears to enhance response rate for all 12 studies examined	Effect ranged from a –9% to +47.4% increase
Follow-up contact (letter, postcard etc)	Appeared to increase response rate for all studies	Effect ranged from –11% to +35% increase
Outgoing postage.	Alternative postage arrangements on outgoing and return envelopes result in higher response rate (e.g. express post).	Effect ranges from –10% to +14.8% increase. Effect of stamps on return envelope ranged from –4.5% to +32% increase
Notification of cut off date	N/A	Effect of including a cut off date in the cover letter ranged from –13.5% to +7.8%
Length of questionnaire	No significant difference	N/A
Colour of Questionnnaire	No significant difference	Effect ranges from –5.6% (green) to + 9.1%
Monetary incentives	Cash rewards invariably increased returns	In all but two studies out of thirty, monetary incentives increased response rate.

Source: Author's compilation from works of Linsky (1975) and Fox et al (1988).

Ayidiya and McClendon (1990) suggested that response effects are somewhat less common in mail than in telephone surveys. They observed that for the most part, recency effects, that is, choosing the last response category, were reduced in mail surveys, but that primacy effects (Choosing the first category) persisted in mail surveys. According to Dillman (1991), it has been frequently observed that telephone and face-to-face respondents have a higher tendency to select more extreme answers than mail survey respondents when vaguely quantified scale categories are used. Mail respondents tend to distribute themselves evenly across the full scale (Dilman and Mason, 1984 as cited in Dillman, 1991). The most frequent explanation for this

difference is that the absence of an interviewer makes respondents less inclined to offer socially desirable answers (Dillman, 2000, 1991).

2.9 STATISTICAL MODELS FOR LIMITED DEPENDENT VARIABLES:

Statistical and mathematical analyses are indispensable in giving empirical content to economic theories so as to verify or refute them (Madalla, 2001). A mathematical formulation of the relevant economic theory is a prerequisite for any statistical analysis. Theory must be the guide to any model building in order to avoid omission-of-relevant-variable bias, and prior empirical work is also important (Gujarati, 1988). This is particularly important since an econometric model is a statement of the economic theory in an empirically testable form.

The primary source of data in economic studies is non-experimental, coming from the observation of real world outcomes. In the case of survey data, the variables are based on questions the surveyor prefers to ask. An important shortcoming of this type of data source is that the variables may not vary over a range that will permit an effect to be isolated, especially if the data were collected for purposes other than economic analysis (Griffiths et al, 1993).

Also, the phenomenon one seeks to model may be discrete or continuous. A discrete variable is one that can take only a finite number of values, or states, that can be counted (Greene, 1997;Griffiths et al, 1993). A continuous variable refers to a continuum of alternatives (Judge et al, 1985). Discrete variables are commonly used in economics to record qualitative, or non-numerical characteristics of an economic agent (Griffiths et al, 1993) and are also referred to as, limited, dummy or qualitative random variables.

For continuous data, standard statistical procedures allow inferences about a population from sample data. However, several problems arise when these same

procedures are applied to discrete data (Judge et al, 1985), making these procedures inappropriate for discrete data situations (Greene, 1997).

Some of the problems with using standard statistical procedures in cases where data is discrete (Jeraknowski, 2000; Judge et al, 1985) are as follows:

- Inefficient parameter estimates due to heteroskedsaticity,
- Expected value of the residual term not being equal to zero or the non-normal distribution of the residual term which invalidates classical tests of significance and
- The possibility of predicted probabilities being less than zero or greater than one).

Research has led to the development of statistical procedures suited for qualitative and limited dependent variables (Greene, 1997, Maddala, 1983). Among the suggested models, those that deal with ordered responses are particularly relevant for this study. Models in this category include the ordered logit and ordered probit models, both estimated by the method of maximum likelihood (Underhill and Figueroa, 1996). The objective with such models in general is to relate the conditional probability of a particular choice being made to various explanatory factors that include attributes of the product/service and characteristics of the economic agent (Judge et al, 1985). That is, according to Greene (1997), analyzing the models in the general framework of probability models.

The logit and probit models differ in terms of the specification of the distribution of the disturbance term (Madalla, 2001). The cumulative normal distribution is used in the probit model whereas the cumulative logistic distribution is used in the logit case (Gujarati, 1988). An important advantage of the probit model over the logit model (Judge et al, 1985) is that the probit model does not exhibit the characteristic of independence of irrelevant alternatives, that is, it permits the disturbances to be correlated and allows tastes to vary across individuals in the population.

The ordered probit and logit models have come into fairly wide use as a framework for analyzing ordered response models (e.g. Jekanowski et al, 2000; Kolodinsky and Pelch, 1997b Zavoina and McClevey, 1975). Jekawnoski et al (2000) used an ordered probit model to study willingness to purchase locally produced agricultural products in the state of Indiana (US). Kolodinsky and Pelch (1997b) used the ordered probit model to study consumer satisfaction with their CSA partnership in Massachusetts (US) and concluded that the ordinal probit technique has promise in estimating satisfaction as impacted by various independent variables since it uses the full spectrum of information available on satisfaction when measured on an ordinal scale.

3. METHODOLOGY

3.1 SURVEY DESIGN

3.1.1 The Product

The Lancaster characteristics model motivates the description of the product. According to this model, consumers derive satisfaction from a product based on attributes of the product. The CSA "product" is defined in terms of a set of attributes that are either tangible (basket of fresh fruits and vegetables) or intangible (social relations embodied in the CSA food system). Attributes of the tangible subset of the CSA "product" include things such as freshness, taste, pesticide free, quantity and quality. Attributes related to the intangible part are support for local economy, community socialization and environmental concerns. The reputed benefits of the CSA food system (chapter 2) are believed to be derived from these attributes. Satisfaction with CSA will therefore derive from the ability of the CSA to provide these attributes to the consumer.

3.1.2 Survey Population and Sampling

The target population in this study is all partners of CSA farms affiliated with the Equiterre network. The Equiterre Network covers the entire province of Quebec and represents the largest network of CSA practitioners and partners in the province. At the beginning of the 2001 growing season 63[1] farms were registered with Equiterre, supplying close to 7500 consumers, comprised of partners (exact number not known) and their dependents (Equiterre, 2001). However, at the time this study was conducted, only 861 partners had voluntarily provided their contact information to Equiterre. The process of developing a database of all CSA partners in the network is in its first year and is strictly voluntary. Given that it is a new project and that it is voluntary, it will take some time for partners to build confidence in Equiterre's role of keeping this information confidential before a massive response can be achieved. The sampling frame for the study therefore consisted of the 861 partners in the

[1] As of March 16, 2003 Equiterre puts the number of participating farms at 70 serving about 10,000 consumers (Equiterre, 2003).

Equiterre database constituting a potential for sample selection bias, but there was no other practical means to select respondants. A random sample of 500 partners was drawn from this restricted sampling frame for the study. The sample size was determined as follows (Hairs, 2000):

$N= (Z^2) ((P*Q)/\alpha^2)$

Where N= sample size

Z= the standardized Z-value associated with the level of confidence

P= estimated proportion of population having the desired characteristic based on prior information (In our case, the proportion of partners leaving at the end of each season)

Q= (1-P)

α = acceptable tolerance level of error.

The most recent study of the turnover rate problem in Quebec reports a 55% turnover (Equiterre, 2001). Choosing P=55%, a 95% level of confidence and a 5% tolerance level of error equation 3.1 gives a sample size (N) of 380. However to cushion the effects of nonresponse, an adhoc sample size of 500 was decided upon.

3.2 SURVEY INSTRUMENT DEVELOPMENT

The mail survey was chosen for this study with measures taken to mitigate the various shortcomings inherent in this technique. The choice of the mail survey was based on the belief that it is less expensive, makes access to people in remote areas possible, makes it possible for people too busy for personal interviews to respond at their most convenient moments and minimizes interviewer and respondent bias.

The survey instrument was developed through four distinct stages. The first stage involved a review of the literature on factors that influence the consumer decision to buy organic and locally produced food. The role of socio-demographic factors on consumer preferences for foods differentiated on the basis of location of production and method of production (organic) was part of this review. Based on the results of

stage one, semi-structured interviews, with CSA partners and farmers were carried out at two preparatory meetings (meetings between the CSA partners and the farmer, held at the beginning of the 2002 supply season) in the Montreal region. There were 23 partners and 2 growers interviewed and responses from these interviews validated some of the attributes reported in the literature. These interviews and the output from stage one provided information with which a preliminary survey was developed.

In the third stage, the survey instrument was sent to two staff members and all graduate students of the Department of Agricultural Economics, McGill University for a review. The comments and criticisms ensuing therefrom were used to improve on the survey instrument. A French version was also produced at this stage.

The final stage of survey instrument development consisted of pretesting the French version. Ten CSA partners were chosen at random for the pretesting exercise. They were each sent a copy of the survey with a letter asking them to fill out the survey and make written comments and criticisms on any ambiguities they encountered in any of the questions. Follow-up phone calls were made to brief them on what was expected of them. Out of the 10 surveys sent out 7 were returned, and comments, were used for a final update of the survey instrument.

Two versions of the survey were produced. The difference between the two versions was only a change in the heuristic used in the question on price fairness. It was supposed that respondents might respond differently to the question if asked in two different ways. For this reason, in version one the respondent was asked to indicate to what extent he agrees to the statement that the CSA product was MORE EXPENSIVE than its conventional equivalent. In version two, LESS EXPENSIVE was used. All the other questions remained unchanged in both versions. Each version was randomly assigned to the respondents.

3.3 SURVEY INSTRUMENT

3.3.1 Survey Implementation

Two mailings were sent out, between September and October 2002, after advance publicity by Equiterre in its newsletters to partners. The first mailing comprised of 500 copies; 250 copies each of the two versions of the survey. A second mailing to non-respondents followed this, 4 weeks later. Multiple mailings, the basis of the Tailored Design Method of Dillman (2000), increase overall response rate. Fox et al (1988) and Linsky (1975) support this view. They also recommend the inclusion of stamped return envelopes and the personalization of cover letters as a way of increasing response rate. According to Dillman (2000), the stamp has the effect of giving something of monetary value to the respondent and may also enhance the respondent's evaluation of the importance of the survey. A stamped return envelope was included in each of the mailings. However, because of concerns raised by owners of the database of respondents, we could not personalize the cover letters. For the same reason, we could not obtain individual phone numbers to contact those who returned uncompleted surveys for confirmation that such omissions were not by error.

An electronic Internet version (in French and English) of the survey was also provided and mentioned in the cover letters. Equiterre's endorsement of the study was part of the cover letters, and they provided official Equiterre envelopes that were used for outgoing postage of surveys.

3.3.2 Survey Questions

The survey had four sections, comprising 23 questions (appendix 1). The first section gathered information on how the partner learned about his/her CSA farm, years of membership, price and type of basket subscribed for, length of supply season and level of participation in CSA related activities. In section two, information on partner's motivation, based on very broad categories, is gathered. The third section gathers information about partners' subjective evaluation of their CSA experience based on specific attributes that are supposed to be important to the CSA food

system. It also gathers information on their overall appraisal of the system and the likelihood of renewing their membership in the subsequent supply season. Section four collects socio-demographic information that might influence consumer preferences for the attributes that are supposed to be important to the CSA food system.

At the end of the survey, respondents were asked to suggest three things that could be done to improve the CSA partnership, and to provide any additional comments.

3.4 MODEL SPECIFICATION

3.4.1 The Conceptual Model

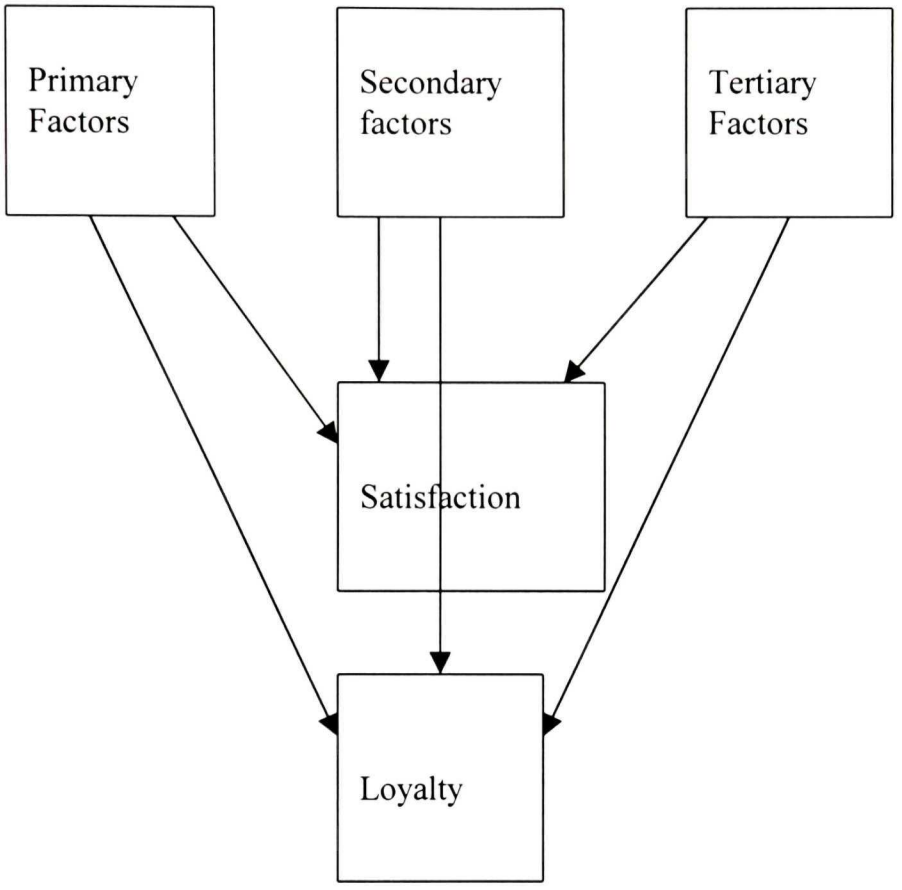
The model is based on Lancaster's characteristic choice theory (Lancaster, 1966), and borrows from Lien-Ti and Yu-Ching (2001) and Kolodinsky and Pelch (1997b). Three assumptions are made:

i) CSA partners form satisfaction decisions based on attributes of the CSA package (tangible and intangible components), and their preferences are influenced by or associated with sociodemographic factors.

ii) These product attributes and sociodemographic variables of respondents can be classified based on their centrality to CSA into primary, secondary and tertiary factors.

iii) These factors can influence consumer loyalty either directly or indirectly through satisfaction (fig 3.1)

Figure 3.1 Conceptual model of Satisfaction/Loyalty



Primary factors are those directly related to CSA membership such as the cost of membership, time spent on CSA related activities, motivations for becoming member, perceptions about product attributes and CSA related services, and years of membership.

Secondary factors are those that may affect satisfaction but are not directly tied to specific CSA activities. These include; sufficiency of storage space, source of organic vegetables during off-season periods, and producing part of their own vegetable needs.

Tertiary factors are factors, which may influence respondent preferences for food. These include age, income, education, family size and structure, eating habits, and municipality of residence.

This classification is based on the assumption that those factors directly linked to CSA membership will have a greater impact on satisfaction judgement, followed by the secondary factors, and lastly the tertiary factors.

3.4.2 Dependent Variables:

Global satisfaction

Respondents were requested to indicate on a 10 point ordinal scale their degree of global satisfaction (GLOBSAT) with their CSA experience, where 0 meant COMPLETELY DISSATISFIED and 10 meant COMPLETELY SATISFIED.

Membership renewal

This variable measured the likelihood that a respondent will renew (RENEW) his/her CSA membership during the next supply season. Respondents were asked to register this likelihood as a percentage (0-100). A scale this big, compared to the scale used for other variables in the model, could lead to very high absolute standard deviations for this variable relative to other variables. Long and Freese (2001) suggest that such a difference can create estimation problems in maximum likelihood estimation. Therefore, this was later converted to a continuous 0 to 10 point scale by dividing the responses by 10, where 0 meant NOT AT ALL LIKELY and 10 meant COMPLETELY SURE.

3.4.3 Explanatory Variables

PRIMARY FACTORS:

BIOV: This variable recorded the importance of eating organic produce as a motivation to become a member.

CHEAPV: This variable measured the importance of CSA as a source of cheap vegetables in motivating the decision to become partner.

CHOICEB: The focus was on the basket contents, specifically how much influence the partner has in deciding what goes into their basket. Respondents were asked to indicate their level of agreement with a statement that they could influence the content of their basket prior delivery by an advance order.

COMCOC: This variable measured the extent to which socializing with members of their community motivated the decision to become a partner.

ENV: The importance of the desire to enhance the environment as a motivational factor for becoming a CSA partner was measured by this variable.

EXBASK: This variable explored the provision of the opportunity for partners to swap produce from their baskets with those they preferred more at the pickup point. Respondents were asked to state their level of agreement or disagreement with a statement that this exchange facility was adequately provided for at the pickup point. A scale of 1 to 5 was used where 1 meant COMPLETELY DISAGREE and 5 meant COMPLETELY AGREE. Cooley and Lass (1998) mention limited variety as one of the disadvantages of CSA membership, and according to Fieldhouse (1996), the restricted range of foodstuffs limits the potential for CSA growth. We therefore hypothesize that the provision of exchange facilities would enhance satisfaction with CSA.

FHELPT: This variable measured time spent in CSA farm work on a continuous scale in hours per month.

FRESHV: This variable measured the importance of getting a supply of fresh vegetables as a motivating factor to become a partner.

LOCECON: This variable measured the importance of supporting the local economy as a motivating factor to become a partner.

NEWPROD: This variable provided information about the frequency with which respondents received produce that was entirely new to them. Respondents were requested to respond to this question on a scale of 1 to 5 where 1 meant NEVER and 5 meant ALWAYS. According to Kane et al (1996) CSA partners felt that they were

receiving too many things they did not know what to do with. We therefore hypothesize that while the provision of new products may generate mixed results, an adequate supply of recipes to accompany new products may enhance satisfaction.

PFAIR: This variable was used to provide information about consumer perception (Valuation) of the price differential between the CSA product and a similar basket of conventional produce. This question was posed in two ways. The first version of the survey asked respondents for the extent to which they agreed or disagreed with the statement that the CSA product was MORE EXPENSIVE than it's conventional equivalent. Version two used the same statement but with LESS EXPENSIVE. Responses were recorded on a scale of 1 to 5 where 1 meant COMPLETELY DISAGREE and 5 meant COMPLETELY AGREE. It was hypothesized that a perception that the CSA product was less expensive would yield positive results on satisfaction while the opposite would occur if partners perceived that the CSA product was more expensive.

PICKT: For this variable, respondents were requested to indicate, on average, the time spent on picking up produce at the distribution points as a continuous variable recorded in minutes. A mixed effect was expected for this variable.

PRESTORE: This variable, recorded on a continuous scale in minutes, measured the time respondents spend in the pre-storage treatment of their produce at home. This variable was also expected to yield mixed results on satisfaction.

PRODMETH: This variable measured the importance of knowing how their food was produced as a motivating factor in the decision to become a partner.

RECIPE: This variable measured the adequacy with which partner's were provided recipes for produce that was entirely new to them. Respondents were requested to respond to this question on a scale of 1 to 5 where 1 meant NEVER and 5 meant ALWAYS. It was hypothesized that adequate provision of recipes will enhance satisfaction.

SATISFACTION WITH CSA ATTRIBUTES: Seven variables representing seven different aspects of CSA were examined here. In each case the respondent was requested to indicate his/her degree of satisfaction/dissatisfaction with that aspect on

a 5 point ordinal scale where 1 meant COMPLETELY DISSATISFIED and 5 meant COMPLETELY SATISFIED. Aspects tested here were: pick up location (**SATPL**), payment method (**SATPAYMETH**), price (**SATPR**), pick up time (**SATPT**), quality (**SATQUAL**), quantity (**SATQUANT**) and variety (**SATVAR**). It was hypothesized that satisfaction with any of these will enhance overall satisfaction with CSA.

SHAREP: It is particularly difficult to standardize the CSA share price across the diverse spectrum of alternative arrangements characteristic of CSAs. Though in general, baskets are classified as "single person", "two person" and "family" baskets, the size, content and price of each type of basket differs from one farm to another. This lack of homogeneity in size, content and price necessitates some way of coming to some standard share price. According to most of the farmers we spoke to, a two-person basket contains approximately twice as much produce as a single person basket, while a family basket contains as much as three single baskets. Based on this, we approximated the price of a single share by dividing the price reported by each respondent by 1, 2 or 3 if it were a one person, two persons or family basket, respectively. The law of demand says that for a normal good with substitutes, the higher the price the less of it will be demanded. We hypothesize that the higher the share price the less satisfied partners will be with their CSA.

SUPSEAS: This variable records the duration of the CSA supply season in weeks. Cooley and Lass (1998) suggest that seasonality of production is an important disadvantage of CSA. Partners we interviewed at the preliminary stages of this study also raised concerns about the seasonality of supply. We therefore hypothesize that the longer the supply season, the more satisfaction partners will derive from the system.

XCESPROD: This variable measured the frequency with which partners were oversupplied with certain products, so much so that some had to be discarded. Respondents were requested to respond to this question on a scale of 1 to 5 where 1 meant NEVER and 5 meant ALWAYS. Interviews carried out at the beginning of our study revealed that it was a question of too much of some particular item(s) and not a question of the overall contents of the basket. It is therefore linked to the question of

choice of basket contents. We therefore hypothesize that while the provision of new products will generate mixed results, receiving too much of a particular product will lead to a decrease in satisfaction (negative marginal returns).

YRSMEM: This variable measured the number of years the respondent had been subscribed to their present CSA farm. It has been suggested that the longer the years of membership the more the partner understands the CSA philosophy and this understanding is important in building a lasting relationship with a CSA farm (Kolodinsky and Pelch, 1997a; 1997b). We therefore hypothesize that the longer the years of membership the greater the amount of satisfaction with the system.

SECONDARY FACTORS:

EATOUT: In order to know the extent to which members prepared their own meals, respondents were asked to indicate on average the number of times in a week that they ate meals prepared out of their home (restaurants, fast food chains). Cone and Myhre (2000) and Henderson and Van En (1999) report that partners who often bought prepared meals complained of inadequate time to prepare home meals. Such partners may therefore find CSA an inadequate and less satisfying experience.

GARDEN: Respondents were asked if they produce part of their own vegetable needs e.g. gardening. This variable was recorded as a dummy where 1 meant a positive response while 0 meant a negative response. Salm (1997) in her study of Canadian CSAs reports that farmers' believe that one of the reasons that members leave the partnership is because they started their own gardens. We hypothesize that members who have their own gardens will derive less satisfaction from CSA partnership, especially if both sources provided more or less the same products and during the same time frame.

INFOCSA: This variable requested information on how the partner first learned about the existence of their CSA farm. Four dummy variables represent the four choice options. We do not have any pre-knowledge of how this variable might affect our response variable, and prefer not to hypothesize on this relationship.

OFFSEAS: This variable asked respondents to indicate whether or not they shopped for organic produce in outlets other than CSA during the off season (winter) period. This was recorded as a dummy variable where 1 meant a positive response while 0 meant a negative response. Kolodinsky and Pelch (1997b) found that shopping in other outlets during the off-season period had a negative effect on satisfaction. Changing routines every six months may not be worth the effort for some partners and this can negatively impact on satisfaction with CSA. We hypothesize that shopping from other outlets during the off-season will negatively affect satisfaction with CSA and more so in cases where the CSA offers only a limited variety of produce.

TERTIARY FACTORS:

AGE: Respondents were asked to select from five age groups. On the one hand one would think that as people grow older they become less active and thus will be less able to effectively participate in CSA activities. Yet on the other hand when people retire they appear to have more time at their disposal and care more about what they eat, hence they may find the CSA a better use of their time. Higher participation in CSA activities leads to better understanding of CSA and greater commitment to its ideals (Cone and Myhre, 2000). However, without reliable knowledge as to how age influences CSA participation, it is hypothesized that age does not influence satisfaction with CSA.

EDUC: This variable, measured respondents' highest level of educational achievement. The respondent was asked to select from six levels of educational attainment. Loureiro and Hine (2001) and Huang (1996) observed that as people have a higher income and are more educated, their willingness to pay a premium for organic food increased. Similar findings were reported by Kolodinsky and Pelch (1997a). However, in another study Kolodinsky and Pelch (1997b) found that education had no effect on satisfaction. Thus in the case of the Equiterre partners, no specific hypothesis was made concerning the link between education and satisfaction.

FAMILY SIZE: Two variables were important here; the number of children below 12 years of age (**KIDS12**) and the number of children between 12 and 18 years of age (**KIDS18**) in the household. These variables were measured on a continuous scale of positive integers. As suggested by Kolodinsky and Pelch (1997a,b), children tend to compete for time spent on CSA activities. However they observed a positive but non-significant effect of the number of children below age 12 on satisfaction with CSA. Given the evidence that participation in CSA activities beyond simply picking up of baskets is generally low in North America (Cone and Myhre, 2000), it may be reasonable to think that participating in CSA on average is not more time consuming than getting produce from conventional outlets. Therefore for families that are more conscious about the nutrition of their children, the CSA experience may be worth the extra time to pickup and prepare nutritious and pesticide free food for their children. Also it may be more economical for a large family to prepare home meals than to eat out. It is hypothesized that the more children below 12 years there are in a household the greater the satisfaction with the CSA experience.

FEMALE: This variable recorded respondents' gender as a dummy variable, where female was recorded as 1 and male as 0. The literature on the organic food market shows mixed results of the interaction between gender and willingness to pay. We hypothesize a mixed relationship between gender and satisfaction with CSA

INCOME: This variable required respondents to indicate their gross family income from all sources for the year 2001. Six income groups were used to obtain this information. It is hypothesized that income has no effect on satisfaction with CSA

LIVENOW: This variable measured the level of urbanization of the respondent's place of residence. Respondents were asked to classify their place of residence into one of three classes: URBAN, RURAL AND SUBURBAN. Three dummy variables were created from these; LIVENOW1 (URBAN), LIVENOW2 (RURAL) and LIVENOW3 (SUBURBAN). They were also requested to provide the name of their area of residence in order to avoid ambiguities in classification. Though Huang (1996) observed that city dwellers were more accepting of sensory defects in organic produce, there is no independent study on type of dwelling and satisfaction with CSA.

It was hypothesized that municipality of residence has no effect on satisfaction with CSA.

SUGGESTIONS: Open-ended questions most often reveal much more information than their limited response counterparts. This part of the survey therefore asked respondents to suggest three ways by which they think CSA can be improved, and to provide other comments. This section allowed respondents to identify areas of CSA where they found weaknesses in the system, and to suggest remedies.

3.4.3 Regression Models

The regression models are motivated by the Lancaster characteristics choice model. Utility models of this type are particularly useful in qualitative choice models where some latent regressor is assumed (Amemiya, 1981). The latent model assumes that the outcome of a discrete choice is a reflection of an underlying process, which cannot be directly observed. Satisfaction as the dependent variable in our model results from the analysis of the costs and benefits of CSA partnership, which a partner makes. This judgement is based on some observable explanatory variables and some random unobservable factors. The continuous latent variable can thus be regarded as the propensity to report satisfaction with CSA. When this propensity crosses a threshold, which is determined within the model, the reported category changes.

Two models are used to estimate the factors that are related to satisfaction and those that relate to the likelihood of renewal. The first model is aimed at capturing the determinants of satisfaction with CSA, while the second model aims at determining if there is a direct relationship between the variables in model one and the likelihood of renewing membership. Kolodinsky and Pelch (1997b) observed that satisfied members tend to stay longer in their CSA partnership.

Model one

The two versions of the survey were combined to make one version so that a larger sample could be used to run the models. By simply switching the scale of version one for the variable PFAIR, responses provided could be used just as if these respondents

were responding to the same question as asked in version two of the survey. Thus a respondent who initially responded with a 1 for the question that the CSA basket was more expensive than its conventional equivalent, was considered as recording a 5 for the question that the CSA basket was less expensive than its conventional equivalent. With this approximation all respondents were regarded as belonging to a single sample. Global satisfaction with CSA was modeled as a function of several independent variables as shown below.

Globsat = f (YRSMEM, INFOCSA, SHAREP, SUPSEAS,PICKT, FHELPT,
PRESTORE, STORES, EXBASK, CHOICEB, NEWPROD,
RECIPE, XCESPROD, FRESHV, BIOV, LOCECON, PRODMETH,
COMSOC, CHEAPV, SATQUAL, SATQUANT, SATVAR, SATPT
SATPL, SATPR, SATPMETH, OFFSEAS, GARDEN, EATOUT,
FEMALE, KIDS12, KIDS18, EDUC, INCOME, AGE, LIVENOW).

Model Two

The likelihood of renewal was modeled as a function of the same explanatory variables used in model 1:

RENEW = f (ALL THE VARIABLES IN MODEL 1).

3.5 ANALYSIS OF DATA

3.5.1 The Ordered Probit Model

The ordered probit model and its logit counterpart are popular frameworks for analyzing outcomes that are ordinal in nature (Zavoina and McElvey, 1975). Both models avoid the assumption of an equal distance between categories of ordinal outcomes (Long and Freese, 2001), and are estimated by the method of maximum likelihood. Maximum likelihood estimation (MLE) estimates the unknown parameters in such a way that the probability of observing the response outcomes is maximized (Madalla, 2000).

The ordered probit model differs from the ordered logit model in the assumption of a cumulative normal distribution for the error term, as opposed to the cumulative logistic distribution in the logit case. However, the choice between both specifications has been shown to have a very little effect on results (Jekanowski et al, 2000; Greene, 1997). Assuming that the probability that the dependent variable increases slowly at low and high levels and more quickly at intermediate levels, then the cumulative normal probability function seems to be an appropriate representation of the underlying propensity to be satisfied dependent variable, hence the probit model.

The ordered probit model can be developed in different ways, with the latent variable model being the most common (Long and Freese, 2001; Jekanowski et al, 2000; Huang et al, 1999).

LATENT VARIABLE MODEL

We build our model of satisfaction with CSA around a latent regression represented by

$$Y^* = \beta' X + U_i \qquad i = 1,2,....,n \tag{3.1}$$

Where Y^* = (latent) response variable

β' = Vector of coefficients to be determined in the model

X = Vector of explanatory variables

U_i = Random error

Y^* is a latent response variable in the sense that it is unobserved. In the context of this study, it would represent the level of satisfaction of respondents. While a respondent can report a level of satisfaction, it cannot be directly observed.

Y^* can take any value from $-\infty$ to $+\infty$ without loss of generality. However, here the response is limited to j choice categories, j=10 in our case. What we do observe (Y) is the respondent's choice within the restricted range we impose. The value taken by Y corresponds to intervals within which the unobservable and continuous random

function Y^* falls (Amemiya, 1981). In order to relate each level of the unobserved response variable or propensity to be satisfied Y^* to what we do observe Y, thresholds or division points are used to segment the distribution of likelihoods into a set of j discrete categories.

Long and Freese (2001) define a measurement model to provide this link:

Y_i=m if $\mu_{m-1} \leq Y_i^* < \mu_m$ for m = 1…j (3.2)

Where

μ = Unknown division points for the continuous random latent variable Y^* which satisfy the condition $\mu_1 < \mu_2 < \mu_{j-1}$ Where j = the response categories the respondent is faced with.

This is equivalent to partitioning the area under the cumulative normal curve into j categories using j-1 division points. The area under the curve between two division points, given X, represents the probability that a respondent achieves that level of satisfaction.

Assuming that $\mu_0 = -\infty$ and $\mu_m = +\infty$ without loss of generality, we can write:

$Y_i = 1$ if $\mu_0 = -\infty \leq Y_i^* < \mu_1$

$Y_i = 2$ if $\mu_1 \leq Y_i^* < \mu_2$

Y_i = m if $\mu_{m-1} \leq Y_i^* < \mu_m = +\infty$

Replacing Y^* by $\beta' X + U_i$ from equation 3.2, we can write a standard formula for the predicted probabilities of our model as follows (Long and Freese, 2001):

$\Pr(Y=m|X) = F(\mu_m - \beta' X) - F(\mu_{m-1} - \beta' X)$ (3.3)

Where F is the cumulative distribution for U ~ NID (0,1)

For Y=1 the equation reduces to Pr (Y=1| X) $= F(\mu_m - \beta' X)$ since $F(-\infty - \beta' X) = 0$

For Y = j the equation reduces to Pr (Y=j| X) = 1- $F(\mu_{m-1} - \beta' X)$ since $F(\infty - \beta' X) = 1$

From 3.3 we can write the likelihood function as

$$L(\beta,\mu) = \prod_{i=1}^{n}\prod_{m=1}^{j}[F(\mu m - \beta X) - F(\mu m - 1 - \beta X)] \qquad (3.4)$$

This results in the corresponding loglikelihood function:

$$LnL = \sum_{i=1}^{n}\sum_{m=1}^{j} Ln[F(\mu m - \beta X) - F(\mu m - 1 - \beta X)] \qquad (3.5)$$

Where i is the index for individual observations in a sample of size n and m is the index for the j categories of observed responses. Estimates of parameters μ and ß are obtained by maximizing the likelihood function (3.4) or its logarithmic form (3.5). No direct ways exist for solving the highly non linear equations for the first order conditions of any of these equations (Cragg, 1971). However, iterative procedures such as the Newton-Raphson method and the scoring method have made estimation possible and faster (Amemiya, 1981). Yet the number of iterations required to reach the global maximum increases as the number of parameters to be estimated increases (Zavoina and MvElvey, 1975).

3.5.2 Post Estimation Analysis.

Post estimation analysis involves testing of hypotheses about the coefficients and evaluating the overall fit of the model. The output of maximum likelihood estimation contains a vector of variable coefficients, the value of the loglikelihood function at the global maximum, and a variance- covariance matrix. These results can be used to calculate a Wald statistic (W) or a Likelihood ratio (LR) that can be used to test joint-hypotheses about the model coefficients. Together with the Lagrange multiplier statistic (LM) these test statistics can be used to test the null hypothesis that all the slope coefficients are jointly equal to zero (Greene, 1997)

The software used in this study, STATA, gives the Wald statistic as part of its output, so it is important for purposes of highlighting the computational differences of this statistic and the Likelihood ratio statistic, to explain how both are derived.

LIKELIHOOD RATIO TEST (LR):

The LR test is based on the difference between the unrestricted and the restricted likelihood function and is presented as, following Greene (1997).

If θ is a vector of parameters to be estimated and Ho: represents a set of restrictions, some sort of restriction on these parameters, we can write:

θ_u = ML estimate of θ without restrictions

θ_r = ML estimate of θ with restrictions

L_u = Likelihood function for the unrestricted model

L_r = Likelihood function for the restricted model

Then the likelihood ratio can be written as:

$$\text{LR}=\lambda=\frac{L_r}{L_u} \tag{3.6}$$

The likelihood ratio test statistic is given by

$$\text{LRstatistic}=-2\text{Ln}\,\lambda=-2(LnL_u-LnL_r)\sim\chi^2(m) \tag{3.7}$$

Where m = the number of restrictions

WALD TEST STATISTIC (W):

The LR test requires the calculation of the restricted likelihood function, which may pose a practical problem for complex models. The Wald test requires only the unrestricted estimator and therefore circumvents the problem (Greene, 1997). The Wald statistic for linear restrictions is given by equation 3.8

$$W=[R\theta-q]^1[R\text{Var}(\theta)R^1]^{-1}[R\theta-q]\sim\chi_m^2 \tag{3.8}$$

Where R is a m x k matrix, m is the number of restrictions and k is the number of estimated parameters. θ is a k x 1 matrix of estimated coefficients, q is a m x 1 matrix of constants and Var (θ) is the variance-covariance matrix of θ.

The Wald statistic is calculated based on the hypothesis that the coefficients of all the independent variables are equal to zero. If these restrictions hold, then W is distributed as a χ^2, with m degrees of freedom.

4 RESULTS AND DISCUSSIONS

Analytical results of the study are reported and discussed in this chapter. These include: respondent profiles, their experiences with CSA, their motivations to join the partnership, their levels of satisfaction with CSA as a whole and with specific aspects of the system, and the likelihood that they will renew their partnership. Also, the significant intervening factors in global satisfaction with the system and renewal likelihood as revealed by the probit models are discussed.

4.1 RESPONSE RATE:

Compared to other studies (Tkac, 2002; Mitchel and Carson, 1989), the response rate for this study was quite high. A total of 380 surveys, representing 78% of the adjusted sample size, were returned (Table 4.1). Of the returned questionnaires less than 1% (0.7%) were not usable because they lacked responses on the dependent variables or were blank. Only one blank questionnaire was returned with the respondent citing time constraints as a reason for not completing the survey.

The high response rate can be attributed to several factors. First, the relevance of the research topic to the respondents and endorsement by Equiterre are very likely to have played an important role in eliciting responses. CSA is a partnership based on trust and partners are motivated by their special interest in a food system they regard as enhancing health and the environment. Also, by joining a CSA farm, partners share in the risk and bounty of local food production thus assuming a greater role as a stakeholder in their own food system. The topic of research, satisfaction with CSA, given its direct appeal to a course of action respondents have chosen due to deep convictions about its benefits, seems to have motivated the high response rate. The comments provided by respondents (appendix 2), and the willingness of some respondents to be contacted for further discussions on the topic (contact information included in their surveys) lends credit to the hypothesis that the relevance of the research topic played a great role in the response rate obtained.

Other factors might have played a role in the high response rate. These include, multiple mailings (Dillman, 2000), including a stamped return envelope, the use of a cover letter explaining the importance of the study (Fox et al, 1988; Linsky, 1975), and the shortness of the questionnaire. However, 50% of the surveys had been returned prior to the second mailing.

Table 4.1 Response rate

	Version One	Version Two	Total
Initial Sample Size	250	250	500
Wrong Addresses	10 (4%)	4 (1.6%)	14(2.8%)
Adjusted Sample Size	240	246	486(100%)
Returned Surveys	191(79.6%)	189(76.8%)	380(78.2%)
Not Usable	1	1	2(0.5%)
Usable	190	188	378(99.5%)

4.2 QUALITATIVE SURVEY STATISTICS

The survey gathered information about respondent socio-demographic characteristics, their attitudes towards CSA, information about respondents' perception of the performance of their CSA partnership, and the likelihood of renewing their membership.

4.2.1 Respondent Profiles:

As shown in Table 4.2, the final sample consisted of 19.6% male respondents and 80.4% female respondents. Slightly over 83% of the respondents were younger than 51 years with 68.5% of the respondents within 31-50 years. In terms of education, 75% of the respondents had completed university studies and about 95% had at least a post secondary school (CEGEP) diploma. Almost 90% of partners live in urban or suburban areas.

Table 4.2 Respondent Profiles

Characteristic	Choice categories	Percentage	Frequency	Cumulative Frequency
Gender	Male	19.63	74	19.63
	Female	80.37	303	100.00
Age	Less than 30 yrs	14.93	56	14.93
	30-50 yrs	68.53	257	83.47
	Greater than 50 yrs	16.53	62	100.00
Education*	Level 1	7.18	27	7.18
	Level 2	17.55	66	24.73
	Level 3	75.27	283	100.00
Income	<$20000	6.52	23	6.52
	$20000-40000	18.13	64	24.65
	$40001-60000	30.31	107	54.96
	>$60000	45.04	159	100.00
Livenow	Urban	56.12	211	56.12
	Rural	11.17	42	67.29
	Sub-urban	32.71	123	100.00
Eatout	Zero times	0.53	2	0.53
	Once	22.07	83	22.60
	Twice	66.76	251	89.36
	At least 3 times	10.64	10	100.00
Children under 12 years	0	57.67	218	57.67
	1	19.31	73	76.98
	2	17.99	68	94.97
	3 and more	5.03	19	100.00

* Level 1= attempted and or completed secondary education; Level 2= attempted or completed CEGEP; Level 3= attempted and or completed university studies

About 57% of those who responded to the survey had no children below the age of 12. Only 5% had 3 or more while 37% responded having 1 or two. Of the 378 respondents, 266 (75%) reported a gross family income of $40000 at least. 37% of the respondents produce part of their vegetable needs in backyard gardens, and about 67% shopped for organic produce in outlets other than CSA during the CSA off season. 99.5% of the respondents reported eating meals outside the home at least once a week. Of this number, 67% reported doing so one to three times a week while slightly less than 11% did so more than four times a week.

The profiles of individuals most likely to become CSA partners have been studied by Kolodinsky and Pelch (1997a and b) and Cone and Myhre (2000). In their study, Cone and Myhre (2000) observed that there was no distinguishable difference between male and female partners as far as participation in CSA farm activities was concerned. However, they observed that women took up most of the responsibilities of CSA membership such as pick up of produce and prestorage processing. A very high ratio of female to male participants was observed in this survey. This can be attributed to the traditional dominant role of women in household food issues.

By taking up some of the time required for CSA activities, having more children has been suggested as a factor that would reduce the probability of becoming a CSA partner (Kolodinsky and Pelch, 1997a). The results obtained from this study appear to confirm the findings of Kolodinsky and Pelch (1997a), given that more than half of the respondents had no children under the age of 12 living with them in the household. Kolodinsky and Pelch (1997a) also observed a negative influence of educational achievement and owning a garden on the likelihood of becoming a CSA partner. Our results do not however support their findings. Instead we observed that about 88% of our respondents had at least a post secondary school diploma while 32% had backyard gardens in which they produced part of their vegetable needs. Although the objective of our study was not specifically to examine the profiles of potential CSA partners, as was the aim of the other studies, the results on respondent profiles obtained here can be used to compare to the findings of the other studies.

By and large, our results suggest that CSA partners are mostly female, medium to highly educated, medium age adults, small family size, urban/suburban residents, with gross family incomes of at least $40000.

4.2.2 Respondents' Experience with CSA:

Close to 50% of the respondents reported that they learned about their CSA farm by word of mouth from friends and relatives. Mass media and Equiterre came next as sources of information on CSA farms with about 20% each. Concerning years of membership with their current CSA farm, about 42% of the respondents indicated that they were in their first year of partnership with their respective farms. However, some expressly indicated that they had had other experiences with other farms before. Less than 4% of the respondents had spent 5 or more years with their CSA farm.

The cost of a share has been cited as an important factor that affects member satisfaction with CSA (Kolodinsky and Pelch, 1997b; Salm, 1997). However it is particularly difficult to establish a standard CSA share price across a largely diverse spectrum of alternative arrangements characteristic of CSAs. Though in general the baskets are classified as "single person", "two person" and "family" baskets, the size, the content and price of each type of basket differs from one farm to another. This lack of homogeneity in size content and price necessitates some approximate ways of coming to a standard share price as described in section 3.3.2. Given the method used, the average price for a single share was $9.40 per week with a standard deviation of $2.05.

Seasonality of produce within the CSA or a short supply season is also a source of dissatisfaction with the system (Cooley and Lass, 1998; Salm, 1997). Very few CSA farms offer produce beyond the summer supply season. The 30 partners, who reported receiving baskets during summer, indicated that summer supply was fortnightly. Our results indicate an average supply season of 20 weeks, though some respondents reported supply seasons as long as 30-40 weeks. These longer supply seasons are for partners who received winter baskets.

Inconvenience with pick up time and the location of the pickup point have also been reported as a source of discontent with CSA (Cooley and Lass, 1998; Kolodinsky and

Pelch, 1997b; Salm, 1997). From the 376 responses indicating the time spent on picking up produce, an average pick up time of 25 minutes was reported. The median pickup time was about 20 minutes. However, a standard deviation of 18.6 minutes and the fact that some respondents reported pickup times of up to 120 minutes, suggests the large diversity of this variable (PickT).

Though 87% of the respondents indicated that knowing how their food was produced was an important motivation for their becoming a CSA partner (Table 4.4), a large majority had never participated in any production activity on their respective farms (FhelpT). On average, less than one hour per month was spent helping on the farm. Yet, ideally CSA partners are expected to help out on the farm so as to better understand and appreciate what it takes to produce food organically. It has been supposed that such an experience would make partners form more realistic expectations from their CSA partnership (Kane and Lohr, 1996 as cited in Barss, 2001).

Several factors have been proposed as important in determining partner satisfaction with their CSA (Henderson and Van En, 1997; Kolodinsky and Pelch, 1997b; Salm, 1997). These factors include:

- adequate storage space for weekly supplies of produce,
- provision of the facilities to trade produce at the pick up point,
- ability of members to play a role in what goes into their basket,
- perception of produce price.
- adequate provision of recipes on how to use produce entirely new to members, and
- not being overloaded with one particular type of produce.

About 90% of the respondents reported having adequate storage space (Table 4.3). 66% agreed that their CSA made adequate arrangements for trading of produce they did not want. As concerns their ability to influence basket contents prior to delivery, only 28% of the respondents confirmed the provision of such by their CSA. About price perception, about 25% of the respondents believed that the CSA basket was less

expensive than its conventional equivalent. On the other hand, almost 54% disagreed that the CSA produce was less expensive than its conventional equivalent, while about 22% were indifferent. The results suggest a perception amongst at least half the respondents that the CSA basket is more expensive that its conventional counterpart. The problem with new produce arises from the fact that most partners would not know how to prepare them. This makes the question of providing recipes for new produce very important. About 85% of the respondents indicated that they receive entirely new products at least sometimes. However, about 86% reported that they received recipes for new products at least sometimes. Another source of dissatisfaction with CSA is having too much produce such that some has to be dumped (Groh and McFadden, 1997). However, about 75 % of the respondents in this study reported that cases of too much produce were rare or non-existent. Barely 5% acknowledged frequent dumping.

Table 4.3 CSA EXPERIENCE

Variables	Response categories		
	Disagree (%)	*Neutral (%)*	*Agree (%)*
Sufficient storage space	6.1	4.77	89.12
Adequate exchange facilities	19.40	14.75	65.85
Ability to Influence basket content before delivery	51.08	20.54	28.38
CSA basket less expensive than its conventional equivalent	53.95	22.07	24.79
	Rare(%)	*Sometimes (%)*	*Most of the times(%)*
Supply of new products	14.67	54.13	31.20
Recipes for new produce	14.36	27.93	57.71
Dumping of excess produce	74.93	20	5.07

4.2.3 Motivations for CSA Partnership:

Respondents were asked to rate the importance of seven factors in their motivation to join a CSA farm. The two highest levels (IMPORTANT and VERY IMPORTANT)

have been collapsed into a single level (IMPORTANT) to report the results (Table 4.4)

Obtaining a supply of fresh vegetables was important to 94% of the respondents. Eating organic produce was important to 97% while 92% thought supporting their local economy was an important motivational factor. Knowing how their food was produced was important to 87%, as was environmental enhancement to 95% of the respondents. The least important motivating factors were community socialization (21%) and joining the CSA in order to obtain inexpensive vegetables (20%).

Table 4.4 MOTIVATIONS FOR JOINING CSA

Factor	Importance[a] (%)	First[b] (%)	Second[c] (%)
Source of Organic food	97	65.78	18.72
Environmental enhancement	95	8.82	30.21
Source of Fresh vegetables	94	13.64	17.11
Support for local Economy	92	6.95	23.53
Knowing production process of food	87	4.55	8.02
Community socialization	21	0	0.80
Source of inexpensive vegetables	20	0.27	1.60

a= Importance of factor as a motivation
b= First most important motivation
c= Second most important motivation

Respondents were also asked to rate the two most important motivating factors. As shown in Table 4.4, the most important motivating factor as cited by about 66% of the respondents was the desire to eat organic food. Next in order of importance was the desire to enhance the environment, the second most important motivation for about 30% of the respondents.

These results are very much in line with previous findings on motivations for CSA partnership. According to CSA farmers in Canada, having a direct supply of organic and fresh food is the most important motivating factor for CSA partners to join a farm (Salm, 1997). Community socialization and knowing the farmer (Cooley and Lass, 1998; Fieldhouse, 1996) seem to play a much smaller role in the decision to join a CSA than the other factors. However they suggested that these factors might become more important with time as the relationship matures. Almost 70% of the respondents in this study had less than 3 years experience with their CSA with almost 42% being in their very first year. It is therefore possible that these same factors may become more important with time.

4.2.4 Satisfaction with CSA Attributes

Respondents were asked to indicate their level of satisfaction with seven CSA attributes, using a 5-point scale. Again, for convenience of reporting, we collapse the response categories from 5 to 3 where the original choice option 1 and 2 become DISSATISFIED, 3 remains NEUTRAL and 4 and 5 become SATISFIED. The results are presented in Table 4.5.

Table 4.5 Satisfaction with CSA attributes

Attribute	Dissatisfied (%)	Neutral (%)	Satisfied (%)
Quantity	9.34	6.13	84.54
Quality	3.71	4.77	91.51
Variety (Diversity)	8.24	13.56	78.19
Pick up time	5.57	9.02	85.41
Pick up location	6.38	10.11	83.51
Price	6.38	13.30	80.32
Payment method	3.46	6.67	89.87

Generally, the respondents reported a high degree of satisfaction for all attributes. As shown in Table 4.5, almost 85% of the respondents were satisfied with the quantity of produce they received. 91% reported satisfaction with produce quality. Almost 90% reported satisfaction with the method of payment while 85% were satisfied with the pick up time. The highest rate of dissatisfaction was recorded for produce quantity (9%), followed by variety (8%) and then pickup location and price each with a dissatisfaction rate of 6%. Variety equally had the lowest satisfaction rating (78%). These results suggest that quantity, price and variety are attributes with which partners were most dissatisfied. The quantity-price relationship can be expressed in terms of price fairness. Consumer perception of price fairness (Lien-Ti and Yu-Ching, 2001) affects satisfaction directly with an indirect effect on loyalty through satisfaction. Satisfaction with produce quality, variety, pickup time, pickup location, cost of share and method of payment, have been cited as factors that influence member decisions not to rejoin a CSA farm (e.g. Cooley and Lass, 1998; Kolodinsky and Pelch, 1997b; Salm, 1997; Fieldhouse, 1996). Though the percentage of respondents reporting dissatisfaction with certain attributes are slightly lower than in some previous studies, the fact that some respondents favored a neutral stance makes room for shifts with time. It is also possible that neutrality was a result of inadequate comprehension of the questions.

4.3 RESPONSE VARIABLES

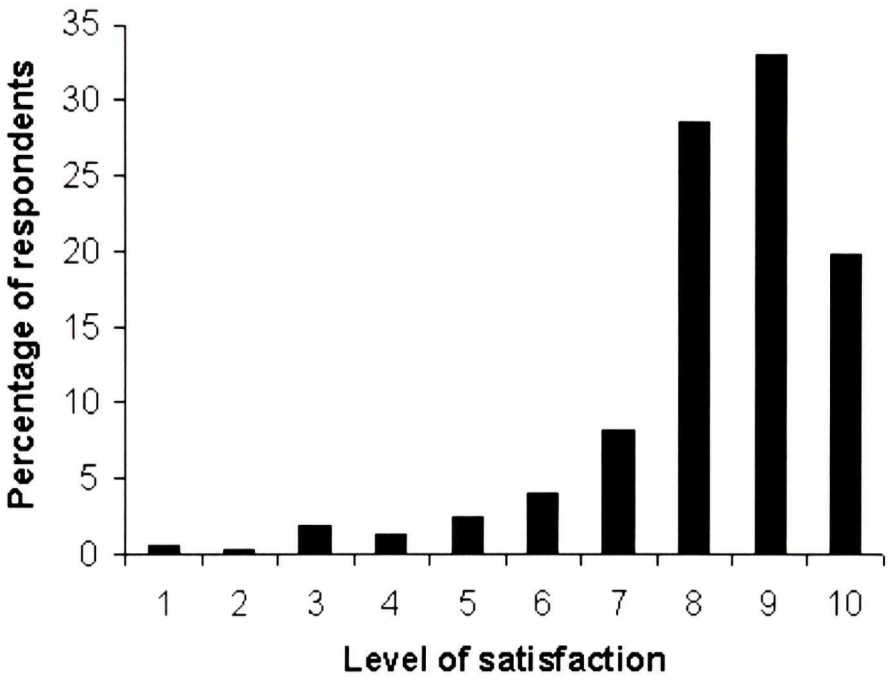
4.3.1 Global Satisfaction

Global satisfaction with the system was measured on a scale of 1 to 10. As shown in Figure 4.1, about 20% of the respondents were completely satisfied with their CSA experience. More than 90% indicated that they were at least 70% satisfied. About 6% were indifferent or neutral while the remaining 4% were less than 50 percent satisfied.

General dissatisfaction with CSA is a major reason for plans not to renew membership (Salm, 1997; Pelch, 1996). However, other reasons such as starting a garden (Salm, 1997) are important as well. Therefore one cannot conclude based on

these results that the unsatisfied 4% will not renew their membership. This is more so given that, some respondents, despite their indication of dissatisfaction, still indicated in their comments the desire to give the CSA another trial, citing the generally poor cropping season of 2002 as the major source of the difference between their expectations and reality

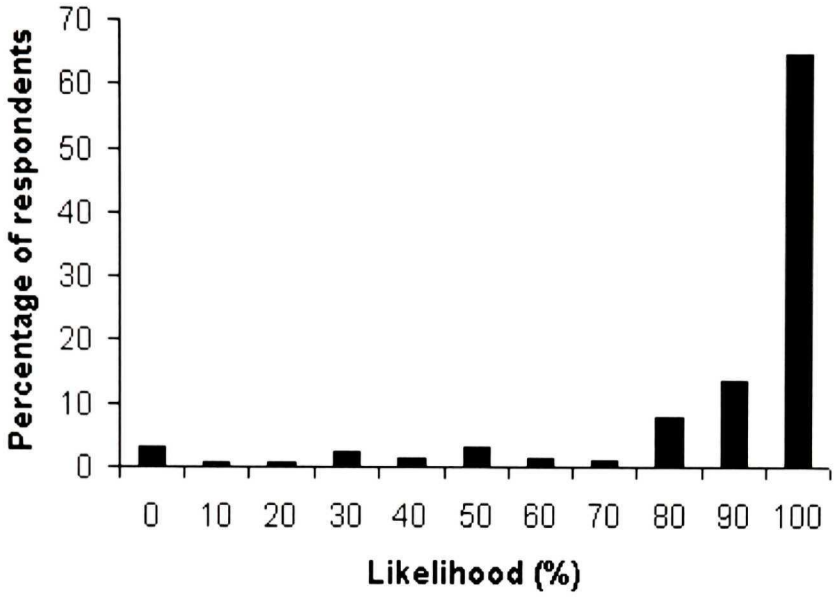
Figure 4.1: Global Satisfaction with CSA



4.3.2 Plans to Renew Partnership

Respondents were asked to indicate the likelihood that they will renew their membership the following season. This was recorded on a continuous scale of 0-100%. However to facilitate reporting, this was reduced to a 10 point scale with some rounding up to generate the response categories in Figure 4.2. Approximately 3.2% of the respondents reported a zero likelihood to renew their membership, while about 65% were completely certain about renewing. In all about 8.5% demonstrated a less than 50% probability of renewal.

Figure 4.2 Likelihood of renewing partnership



Though the proportion of respondents with zero renewal probability is close to that of globally dissatisfied respondents, this alone is not enough to confirm a positive relationship between satisfaction and loyalty. However, a high and positive correlation coefficient between global satisfaction and likelihood of renewal (r=0.67) indicates that satisfaction with CSA positively impacts on the desire to remain loyal with the system.

4.4 REGRESSION RESULTS

4.4.1 Regression Analysis for Satisfaction (MODEL1)

An ordered probit model as specified in chapter 3 was run to determine factors that are related to satisfaction with CSA. The reults were generated using STATA 6.0, the OPROBIT procedure along with the robust option. The robust option also takes care of model misspecifications and heteroskedasticity. Global satisfaction, the dependent variable, was recorded on a 10 point ordinal scale. After some preliminary runs, some

variables in the initial specification were dropped after a careful examination of the correlation matrix (Appendix 3). Variables that had very large P-values and were correlated to other explanatory variables were dropped from the model.. Results are shown in Table 4.6

Table 4.6: Ordered Probit estimates for Global Satisfaction.

Number of obs = 319
Wald chi2(17) = 143.70
Prob > chi2 = 0.0000
Log likelihood = -382.38 Pseudo R2 = 0.26

	Coeff.	Std Error	Z	P>|Z|
Pfair	0.085	.071	1.198	0.231
Sharep	-0.030	.034	-0.883	0.377
Exbask	.106	.050	2.103	0.035
ChoiceB	.149	.053	2.834	0.005
Recipe	.106	.061	1.745	0.081
Xcesprod	-.263	.078	-3.393	0.001
Satquant	.493	.096	5.148	0.000
Satqual	.288	.132	2.190	0.029
Satvar	.354	.120	2.939	0.003
Satpr	.257	.083	3.112	0.002
Satpl	.084	.120	0.702	0.482
Satpm	.019	.113	0.170	0.865
Kids 12	.040	.061	0.664	0.507
Kids18	.008	.097	0.084	0.933
Educ	-.026	.063	-0.407	0.684
Income	-.140	.039	-3.627	0.000
Age	.029	.067	0.427	0.669

The overall performance of the model was indicated by the Wald statistic (W= 143.70~χ^2_{17}). The probability of finding a Wald statistic this high was given by P> χ^2= 0.000. Therefore we easily reject the null hypothesis that all the slope coefficients are simultaneously equal to zero. The overall fit of the model was given by Pseudo R^2 = 0.26, suggesting that the model explains about 26% of the variation in satisfaction.

Although years of membership (YRSMEM) would be expected to be associated with satisfaction, it is not a causal determinant of satisfaction. Therefore, despite its

relatively good correlation ($r \cong 0.3$) with both dependent variables (appendix 3), it is not included in any of the models. However, this variable was included in Kolodinsky and Pelch (1997b)'s model of satisfaction with CSA and shown to be significant. Though they do not provide explanations for the significance of this variable in their model, Barss (2001) suggests that longer-term partners find the determination to adjust and adapt their lives to the demands of membership. Long term collaboration, Salm (1997), facilitates the development of attitudes that accommodate CSA characteristics such as, eating with the seasons, storing, processing and cooking a wide variety of unexpected and unknown vegetables. Such adaptations and changes in attitudes are thought to assist partners in forming more realistic expectations of the system, and also in their disconfirmation of expectation process of satisfaction judgement

Nine variables had significant effect ($\alpha \leq 10\%$) on global satisfaction. The variable EXBASK had a positive slope coefficient as hypothesized and was significant at the 5% level. This variable represented the extent to which respondents agreed that they were adequately provided with possibilities to exchange produce at the delivery points. Thus, the adequate provision of facilities for partners to exchange products positively influences overall satisfaction with the system. This is related to the question of choice.

The variable CHOICEB, represented respondents' level of agreement with the statement that they could influence basket contents by placing specific orders prior to delivery. It was significant, at the 1% level, with a positive slope coefficient as hypothesized.

Another related variable in the area of choice is the variable XCESPROD, which measured the extent to which partners agreed with the statement that they were supplied with too much produce and had to discard some. This variable was significant at 1% and had a negative slope coefficient as hypothesized. Discarding of

produce paid for because they did not know what to do with diminishes partners' perceived value of their CSA share (Cone and Myhre, 2000). The importance of perceived value in satisfaction formation has been documented by Lien-Ti and Yu-Ching (2001). These results suggest that overloading partners with products led to a decrease in their overall satisfaction with CSA. Thus, the provision of exchange facilities, and the possibility of influencing basket content prior to delivery have a positive effect on satisfaction.

The variable RECIPE, which measured the adequacy with which partners were provided with recipes for unknown and unexpected vegetables, was significant at the 10% level with a positive slope coefficient as hypothesized. Thus, the provision of recipes positively affects overall satisfaction with the system.

Respondents were asked to indicate the extent, to which they were satisfied with seven CSA attributes, while six of these were used in the model. The variable that represented satisfaction with produce pickup time was excluded because of its low correlation coefficient ($r = 0.24$) with the dependent variable, and its high correlation coefficient ($r = 0.52$) with the variable representing satisfaction with the location of the pickup point. Satisfaction with four CSA attributes had significant effects on global satisfaction with the system.

The variable SATQUANT measured partners' level of satisfaction with the quantity of produce and was significant at the 1% level with a positive slope coefficient as hypothesized. This variable also had the highest slope coefficient (0.5) in the model. The perception that the quantity of produce in the basket is satisfactory enhances satisfaction with CSA (Kolodinsky and Pelch, 1997b). Basic microeconomics lends credence to this outcome given the assumptions of non-satiation and the case of a normal good.

The variable SATQUAL measured respondent's appreciation of the quality of the CSA produce. This variable was significant at 5%, suggesting that perceptions that the CSA produce was of good quality enhanced satisfaction with the system. However, there was no specific definition of quality and this could mean different things to different respondents.

Satisfaction with the diversity of produce in the basket was measured with the variable SATVAR. This variable was shown to significantly (1%) influence global satisfaction with the system. The positive slope coefficient suggests that partners' perception that their basket contents were sufficiently diversified enhanced their propensity to be globally satisfied with the system. This variable can be linked to that of choice in the sense that both are related to the basket contents. If the partner cannot influence what is in their baskets, they may at least be satisfied if the content is diversified to some extent. The variable SATPR, that is, satisfaction with produce price was significant at the 1% level with a positive slope coefficient as hypothesized.

Four socio-demographic explanatory variables were included in the model. Two variables, KID12 and KIDS18, measured the number of children below 12 years and number of children between 12 and 18 years, respectively in a household. None of these variables were significant, suggesting that they had no influence on satisfaction. However, according to Kolodinsky and Pelch (1997a) because children compete for time that might be spent in CSA activities, their presence in a household decreased the likelihood of their parents joining a CSA partnership. One might have thought that this competition for time would also be true for existing partners to the extent that it would make the system less satisfying. However, our results do not support this.

Education (EDUC) measured respondents' highest level of educational attainment. There was a non-significant negative relationship between this variable and global satisfaction, perhaps related to the correlation (r=0.20) between it and income. INCOME, which measured the respondents' gross family income for the year 2001

was significant at the 1% level and with a negative coefficient, suggesting that those with higher incomes were less likely to form positive satisfaction judgements about their CSA. The variable AGE measured the age group of the respondent, and was non significant with a positive slope.

Though the variable PFAIR, which measured the respondents perception of the price differential between the CSA basket and its conventional equivalent was not significant, it had positive slope coefficient. This suggests that price was not clearly an issue when partners formed their judgement of satisfaction with their CSA. Another non significant variable was the price of a share (SHAREP), but it did have a negative slope, suggesting that the propensity to be satisfied could be reduced as the price per share increased. Satisfaction with produce price (SATPR) was however shown to significantly enhance satisfaction. Yet, it is difficult to draw any conclusions here given the challenge of estimating a standard single share price.

4.4.2 Regression Analysis for Renewal (MODEL 2):

The specification of this model is identical to that of model one except that the dependent variable in this case is the likelihood to renew partnership. The robust option of STATA 6.0 was also used to estimate parameters for this model and the results are presented in Table 4.7.

The overall performance of the model was good as indicated by the Wald statistic ($W= 117.36 \sim \chi^2_{17}$) and $P> \chi^2 = 0.000$. Therefore we reject the null hypothesis that all the slope coefficients are simultaneously equal to zero. The overall fit of the model was given by Pseudo $R^2 = 0.13$, suggesting that the model explains only 13% of the variation in the likelihood to renew partnership.

Table 4.7: Ordered Probit estimates for Renewal

Number of obs = 319
Wald chi2(17) = 117.36
Prob > chi2 = 0.0000
Log likelihood = -479.12 Pseudo R2 = 0.126

	Coeff.	Std Error	Z	P>|Z|
Pfair	0.095	0.064	1.485	0.138
Sharep	-0.018	0.035	-0.522	0.602
Exbask	0.093	0.051	1.814	0.070
ChoiceB	0.078	0.059	1.314	0.189
Recipe	0.243	0.064	3.806	0.000
Xcesprod	-0.199	0.084	-2.379	0.017
Satquant	0.153	0.094	1.627	0.104
Satqual	0.220	0.103	2.127	0.033
Satvar	0.128	0.102	1.257	0.209
Satpl	0.141	0.083	1.697	0.090
Satpr	0.289	0.116	2.483	0.013
Satpm	-0.115	0.107	-1.070	0.284
Kids 12	0.156	0.078	1.992	0.046
Kids18	0.029	0.107	0.269	0.788
Educ	0.014	0.061	0.231	0.817
Income	-0.033	0.046	-0.709	0.478
Age	0.177	0.068	2.573	0.010

Nine variables were significantly related to the likelihood of renewing partnership at a 10% level or better. The variable EXBASK was significant at 10% with a positive slope coefficient, suggesting that respondents who believe that they were amply provided with possibilities for exchange were more likely to renew their partnership.

Unlike in the model for satisfaction, choice of basket contents, CHOICEB, was not significant. However, the perception by those interviewed that they were overloaded with vegetables they did not know what to do with (XCESPROD), decreased the likelihood of membership renewal. This variable was significant at 5% with a negative slope coefficient. On the other hand, adequate provision of recipes for these unknown produce (RECIPE) enhanced the desire to remain in the system. The variable RECIPE was significant at 1% with a positive slope coefficient of 0.2.

Respondents were asked to indicate their level of satisfaction with seven CSA attributes, six of which were included in the model. Only four of these were significant. The variable SATQUANT was significant at the 10% level with a positive slope coefficient, suggesting that the more respondents were satisfied with the quantity of produce they received through their CSA, the more likely they were to renew their partnership. The variable SATQUAL, which measured satisfaction with quality, was significant at the 5% level with a positive slope coefficient. This suggests that respondents who were satisfied with the quality of the CSA produce were more likely to renew. Satisfaction with the location of the delivery point (SATPL) was also significant (10%) with a positive slope coefficient, suggesting that the more satisfied partners were with the location of their delivery point, the more likely that they will stay in the partnership. This is the same for partners who believe that they were getting a fair deal from their partnership in terms of the price they paid for their produce (SATPR). This variable was significant at 5% with a positive slope coefficient. However, like in the model for satisfaction, perceptions about the price differential between the CSA basket of produce and its conventional equivalent (PFAIR), and the cost of a single share (SHAREP) were not significant. Yet, the variable SHAREP had a negative slope coefficient suggesting that price could in effect lead to reduced likelihood of renewal.

Among the five socio-demographic variables included in the model, only two were significant. KIDS 12, the number of children below 12 years in a household was significant at 5% with a positive slope coefficient, suggesting that partners who had more children in this age group in their households were more likely to renew their partnership the following season. AGE was significant at 1% with a positive slope coefficient. This suggests that older partners were more likely to renew their partnership compared to the younger ones. Income was non significant but had a negative slope coefficient as in the satisfaction model, suggesting that as partners' incomes increased they were less likely to renew.

5.0. CONCLUSIONS AND RECOMMENDATIONS

This study was motivated by the desire to better understand the reasons for the high turnover rates in CSA partners, and propose solutions. The main objectives were to identify characteristics associated with CSA, as a product, that influence satisfaction with the system as well as consumer characteristics that are associated with their preferences for products offered by this system. It is assumed that a higher level of satisfaction leads to a higher likelihood that a CSA partner will renew their partnership the following year. Also, it is assumed that renewal is equivalent to repurchase of a good or service, and that this is a vital step towards true loyalty according the loyalty development models of Oliver (1997) and Costabile (2000).

After a series of personal interviews with some CSA partners and farmers of the Equitere network of CSAs, and the review of work done on the subject of interest, a preliminary questionnaire was drawn up. This was discussed and reviewed with the staff of Equiterre, two members of staff and some students of the Department of Agricultural Economics of McGill University. The outcome of these discussions was an improved questionnaire, which was then pretested on some partners of the network. The final questionnaire was sent to a sample of 500 partners based on a list of about 860 partners provided by Equiterre. 378 usable surveys were returned. An ordered probit model of satisfaction and likelihood to renew partnership was estimated using the STATA econometric software.

The most frequent means of spreading the word on CSA is interpersonal communication (friends, neighbours and relatives). Almost 50% of the respondents indicated that they first learned about their CSA by word of mouth from friends, neighbours or relatives. Members who are satisfied with their CSA experience will talk positively about the system to friends and neighbours who may decide to experiment with the system. As these new members confirm their expectations they will in turn spread the news to others, and in this way membership can be expected to grow. Therefore satisfaction with CSA is important as a motivating force for

spreading word about the system and recruiting more partners. However, all means of communicating about CSA must be regarded as important, each having its own part to play in the dissemination of information about this food system.

Though the length of the supply (SUPSEAS) season was not included in any of the models, when asked to suggest ways by which the CSA food system could be improved (see appendix 2) about 3% of the respondents proposed year round supply. This same point was raised during pre-survey interviews with some members who were not part of the final survey. These consumers believe that it would be more convenient for them to rely on the same source for their year round supply of fresh vegetables. Some CSAs in the network have winter baskets already, but it may be useful if more CSAs worked out the modalities of doing the same.

Another area of interest in this study was produce delivery. Though no quantitative results are presented for variables related to this area, suggestions on ways to improve on the system had much to say about partner perceptions about the delivery process. Of particular interest was the location of pick up points and the duration and timing of the weekly pick up period. Suggestions (appendix 2) included opening up of new pickup points and extending the pick up time. Most of the comments on this issue relate to distance and the competition for time by other activities. Members do not appreciate the fact that they have to forfeit their shares if they could not pick them up during the regular pickup times. However, there are economic considerations involved in the creation and management of pick up points. Educating partners on the financial implications for creating new delivery points may influence their appreciation of the current locations while studies are made to identify optimal locations. Despite the short shelf life of most of the products offered, and the additional costs the farmer may have to incur to preserve unclaimed produce, discussing this with the partners could provide for a more satisfactory solution for both parties.

Our results (Table 4.2) show that, approximately 80% of the partners are female, about 70% are aged between 30 and 50 years, approximately 75% have some university education, approximately 75% have gross annual incomes of at least $40,000 and, approximately 90% live in urban or suburban areas. The under representation of people with certain socio-demographic profiles, for example, age groups below 30 years and above 50 years, needs to be understood and corrected. Targeting of these age groups with promotions and incentive packages, such as home delivery for the elderly, could play a positive role.

The results indicate that the most important motivations for becoming a CSA partner were eating food that is produced organically and the desire to promote environmentally friendly food systems. 97% of the partners stated that obtaining organic produce was an important motivation, while almost 65 % thought it was their most important motivation. 95% of the partners considered the desire to promote environmentally friendly production practices as an important motivation for becoming a partner, and about 30% rated this as the second most important motivation. This supports previous research findings by Reynolds (2000), Trobe et al (2000) and Fieldhouse (1996). However, community building, as suggested by Fieldhouse (1996) did not appear to be an important motivation for becoming a CSA partner. Only 21% of the partners thought it was an important motivation, none thought it was the most important, while less than 1% thought it was the second most important. CSA has been promoted as a means to decommodify food by exposing attributes, other than price and quantity, which influence food demand. This can only be achieved if partners engage in such social activities centered on their CSA partnership. Unfortunately, our results suggest that socializing with community members was a much less important motivation for becoming a partner, and that very few partners participate in direct farm activities. Most did not extend their partnership beyond the basket of food. On average, partners spent less than an hour per month on CSA related activities other than produce pick up. This might represent a limitation of the ability of the system to reveal natural-social relationships that are involved in

food production and exchange. The expectancy-disconfirmation model suggests that expectations are important in satisfaction judgment. It is therefore important that member expectations are in line with the CSA philosophy as inaccurate expectations can easily lead to disconfirmation. The role of education and active participation of partners is crucial in forming expectations. Through greater collaboration with farmers partners can better understand what it takes to produce the vegetables they receive at the delivery points. Direct links between farmers and final consumers should facilitate the feedback that producers require from consumers in order to respond adequately to consumer requirements. This should be exploited as an advantage of CSA over conventional markets where the tendency is to respond primarily to the next player in the supply chain. For CSA to survive, it must be demand driven which requires that partner preferences be given serious consideration. Also, the dominance of non-price over price considerations as drivers of economic activity within CSA must be taken seriously and resources geared towards ensuring greater provision of such. Such understanding will facilitate the formation of realistic expectations which may eventually lead to confirmation of the system and hence satisfaction. The education of existing and potential members should place more emphasis on these important dimensions of the CSA food system that are seem to be less important among partners.

Satisfaction was found to be positively correlated ($r=0.67$) to the likelihood of membership renewal. The regression results show that most of the factors that affect satisfaction with membership had an influence on the likelihood of renewal. However, satisfaction is a necessary but not a sufficient condition for membership renewal. There were cases where respondents indicated complete satisfaction with the system but showed zero likelihood of renewal for reasons such as relocation or expecting a baby in the household. Equally, some respondents who expressed dissatisfaction with the system indicated the desire to renew for a second trial with the understanding that the cropping season (2002) was particularly bad across the country. However, satisfaction of partners should be considered as an important

measure of performance for the CSA and as a major player in determining renewal given that factors such as relocating and starting own gardens cannot be controlled and do not necessarily indicate failure on the part of the CSA.

Though not all variables were significant in both models, those that were significant for global satisfaction alone could be seen as having an indirect effect on likelihood to renew given the high correlation between both dependent variables. The restricted range of foodstuffs available through CSAs has been suggested as an important impediment to the potential of this food system becoming a major element in our food system (Fieldhouse, 1996; Salm, 1997; Cooley and Lass, 1998).Outr results appear to confirm these findings. In both models, partners' ability to influence basket contents by exchanging at the delivery point, was significant. Our results suggest that partners were more satisfied when they were able to trade produce from their baskets for others, have a say in the contents of their baskets prior to delivery, and are adequately supplied with recipes for produce they knew little about. Satisfaction with the diversity of produce in the basket (SATVAR) was also seen to positively and significantly influence satisfaction with CSA. Hence farmers should focus their efforts on working out ways by which CSA partners can have a greater say as to what goes into their baskets. Equally the suggestion (Appendix 2) that other produce such as eggs, chicken, beef and bread be traded at the pick up point was indicative of the desire for diversity. Diversity can be achieved through cooperative ventures among farmers. Efforts should therefore be put on responding to partners' expectations for predictable quantities of diverse and desired produce. This suggests the need for a study on a cooperative model of CSA, suggested by some members as a means to improving CSA (appendix 2). Perhaps it could be a simple arrangement where other organic farm products are available for sale at the delivery point so that partners can satisfy their needs for food at the delivery point instead of making additional trips to grocery shops.

Other areas where farmers and organizations involved in CSA should be focusing are quantity, quality and price. Satisfaction with quantity of produce (SATQUANT) positively and significantly influenced satisfaction with CSA. A slope coefficient of 0.5 suggests that this was by far the most powerful explanatory variable in our model. Satisfaction with quality (SATQUAL) was significant for both models with a positive slope coefficient. Though cost of shares (SHAREP) was not significant in either model, its negative slope coefficient, and results for other variables that measured the price effect, suggest that price might have the tendency to decrease satisfaction or the likelihood to renew partnership. Satisfaction with price (SATPR) had a significant positive relationship with likelihood to renew partnership with a positive but non-significant effect on satisfaction. Though the price per share data were not ideal and probably contributed to the lack of significance of this coefficient, similar findings on the relationship between price and satisfaction have been reported by Kolodinsky and Pelch (1997b). However, the significance of satisfaction with quantity (SATQUANT) provides an assessment of share price indirectly under the notion of customer value. According to Allen and Pierson (1993) as cited in Philips and Peterson (2001) consumers use a broader concept of the ratio of perceived product benefits to price in order to make value judgments. It can equally be said that when partners value the basket contents, they do so in relation to the price they pay Price and quantity were also presented as suggestions for improvement (appendix 2). Therefore, it is of interest to farmers to be sensitive to the quantity- price ratio for baskets offered.

Though method of payment was not significant in this study, previous studies (e.g Groh and MacFadden, 1997) have cited this as a major obstacle to CSA membership. Though only two respondents mentioned method of payment as an area that needs improvement (appendix 2), interviews with partners at the beginning of this study indicated that having to pay lump sum subscriptions was a problem for some partners. More flexible methods of payments can be proposed to those with low incomes. Also, farm work in exchange for shares may prove to be useful for some.

For the socio-demographic variables included in the models, the results were mixed. The variable INCOME was significantly and negatively related to satisfaction. Its effect on likelihood to renew was equally negative but non significant. KIDS 12, the presence of children below 12 years in the household, had a significant positive effect on likelihood to renew partnership, as did the variable AGE.

This case study of the Equiterre network has produced results that are consistent with those obtained by other studies. However, many of the results are based on stated preferences and must be interpreted with caution because there is no assurance that such preferences would translate into actual market behavior.

In summary, our results suggest that it will be of interest to farmers to allocate resources in areas such as meeting partner demands with respect to quantity of produce, diversity of produce, choice of produce, information, produce delivery, price and length of the supply season. Also, satisfaction has been shown to positively and strongly associated with the likelihood to renew partnership. Therefore by providing conditions that would enhance satisfaction, farmers can effectively enhance the likelihood of renewal. Membership renewal is an important first step towards building lasting relationships between CSA farmers and partners, required for this food system to be sustainable.

RECOMMENDATIONS FOR FUTURE RESEARCH:

i) The results of this study suggest that satisfaction is positively related to likelihood to renew. However, there is no reason to believe that dissatisfaction is the sole reason for leaving the partnership. As reported by Salm (1997) and observed with some respondent's in our study, partners leave for reasons other than dissatisfaction alone. Therefore we suggest that, the need to understand reasons for high turnover in CSAs may be better satisfied by targeting members who have deserted their partnerships. This group of one-time partners would provide more

accurate information as to why they decided to discontinue their CSA partnership.

ii) The question of choice and variety has stood out as the most important problem area. The most suggested solution to this problem is the introduction of cooperation between farms in order to increase the diversity of produce offered within a CSA. There is therefore the need for an economic study to evaluate the potential of such a cooperative model, where a few farms pool their resources together to improve on the diversity of produce they offer as a CSA farm.

iii) Likelihood to renew does not imply actual renewal. Therefore as a confirmation of this study, a follow up study could target those who indicated a more than 50% likelihood of renewal to ascertain the extent to which the reported likelihoods translated into concrete action.

iv) Though only two respondents mentioned method of payment as an area that needs improvement (appendix 2), interviews with partners at the beginning of this study, and previous studies (e.g Groh and MacFadden, 1997) indicated that having to pay lump sum subscriptions was a problem for some partners. Therefore, farmers should explore more flexible methods of payments especially for partners with low incomes.

v) Partner expectations with respect to CSA attributes such as quality, quantity, variety, pick up location and pick up time have been shown to be important in satisfaction formation, and in the decision to renew partnership. Therefore the formation of inaccurate expectations can negatively influence satisfaction judgement. Participation in social activities has been suggested as important in the formation of accurate expectations. Unfortunately most partners, as shown by this study, do not take part in social activities within their CSA. Efforts and resources should therefore be directed towards improving partner participation in social activities within their CSA, so as to enhance the formation of realistic expectations.

vi) True loyalty involves renewing partnership plus behavior such as selling the idea of CSA to others. Unfortunately, the survey instrument used for this study did not cover the later aspect, thus missing important information necessary to understand loyalty. We therefore recommend that future studies in this area should collect information on behavior related to selling the CSA idea to others.

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APPENDIX 1: QUESTIONNAIRE

Dear CSA partner,

I am a graduate student in the Department of Agricultural Economics, McGill University, and Professor John Henning is supervising my work.

I am conducting research in collaboration with Equiterre to better understand which aspects of Community Supported Agriculture (CSA) are the most important in determining your satisfaction with the program. We believe that the results of this survey will help to make CSA's more successful for shareholders and farmers.

You are one among 500 shareholders randomly selected among all shareholders in the Equiterre network. The information obtained from this survey will be treated as confidential and will serve only the research purpose for which it was collected.

Your participation is very important to is. However, the survey is completely voluntary, and you do not have to participate if you do not want to. If you do not wish to participate, simply do not fill out the survey. You can leave blank any questions you do not wish to answer. The survey will take approximately 15 minutes to complete.

Please complete the survey as soon as possible and mail it back to us in the postage-paid envelope provided. Feel free to make written comments on the survey. If you prefer, you can complete the survey electronically. You can find the survey at the following web address. When you complete the survey, simply email it to gachuo@po-box.mcgill.ca.

http://www.agrenv.mcgill.ca/agrecon/survey

We appreciate your help, and please contact me if you have any questions.

Sincerely,

Achuo George Fung.

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SECTION 1. YOUR RELATIONSHIP WITH YOUR CSA:

1. How many growing seasons (years) have you been a member of your CSA farm?

_____ (Years)

2. How did you learn about Community Supported Agriculture (CSA)? Please tick one.

☐ A FRIEND OR NEIGHBOUR ☐ TV/RADIO/INTERNET/NEWSPAPER

☐ EQUITERRE ☐ OTHERS (PLEASE, SPECIFY).....

3. Indicate the price per share ($) beside the types of shares you currently have, and the number of shares if more than one.

_____ $ Single person share

_____ $ Double person share

_____ $ Family share

_____ $ Other (specify) .....

4. How long is the supply season per year?

_____ (Weeks)

5. On average, each week, how much time do you spend to pickup your share?

_____ (Minutes)

6. On average, for a typical month, during the growing season, how much time (hours) do you spend helping out at your CSA farm?

_____ (Hours/month)

7. On average, when you bring your basket home, how long does it take to prepare (wash, trim, etc) and store your fruits and vegetables (minutes)

_____ (Minutes)

8. For the following questions, please indicate how strongly you agree or disagree with the statement by selecting a number from 1 to 5. ***Circle the number that corresponds to your choice.***

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Please circle one answer for each row.					
I always have sufficient storage space for my weekly supply of produce.	1	2	3	4	5
During pickup, if I realize that there is too much or too little of some produce in my basket, my CSA makes it possible to make an exchange (e.g. from an exchange basket) at the pick up point.	1	2	3	4	5
I can influence the content of my basket by arranging in advance with the farmer which produce I would like to be included.	1	2	3	4	5
Considering the price I pay for my share, the CSA basket is **more** expensive than an identical basket of conventional (non-organic) produce.	1	2	3	4	5

9. For the following questions, please indicate how often each situation happens. ***In each case, please circle one number.***

1	2	3	4	5
Never	Seldom	Some times	Most of the time	All the time

Please circle one answer for each row.					
I receive produce that is entirely new to me in my basket.	1	2	3	4	5
My CSA provides recipes for the produce in my basket.	1	2	3	4	5
I have to discard some produce because there is too much.	1	2	3	4	5

SECTION 2. YOUR MOTIVATIONS TO JOIN A CSA:

1.For the following, please indicate the importance of each factor in your decision to join a CSA. How important is each factor?

1	2	3	4	5
Not at all	Slightly	Neutral	Important	Very Important

Please circle one answer for each row.					
a) Getting fresh produce	1	2	3	4	5
b) Eating pesticide free and organic vegetables	1	2	3	4	5
c) Support for the local economy	1	2	3	4	5
d) Having first hand knowledge on how my food is grown	1	2	3	4	5
e) Socializing with community members	1	2	3	4	5
f) Environmental concerns	1	2	3	4	5
g) Getting cheaper vegetables.	1	2	3	4	5

2.What are your top two factors? Indicate with the letters corresponding to your choice.

1st ..... 2nd .....

SECTION 3. SATISFACTION WITH YOUR CSA

1. For the following, please indicate your level of satisfaction or of dissatisfaction with each of the following aspects of your CSA on a scale of **1-5**

1	2	3	4	5
Very Dissatisfied	Somewhat Dissatisfied	Neutral	Generally Satisfied	Very Satisfied

Please circle one answer for each row.					
a)Share quantity (Is there enough in your basket?)	1	2	3	4	5
b) Quality of the produce (appearance, taste)	1	2	3	4	5
c) Variety of produce (Is it sufficiently diverse?)	1	2	3	4	5
d) Pickup time	1	2	3	4	5
e) Pickup location	1	2	3	4	5
f) Share price (Do you get value for the money you spend?)	1	2	3	4	5
g) Method of payment	1	2	3	4	5

2. Overall how satisfied are you with your CSA?

(Circle a number from 1 to 10 to indicate your degree of overall satisfaction or dissatisfaction)

Completely Dissatisfied									Completely Satisfied
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

3. Given your past experience with your CSA, do you expect to renew your membership next year?

Please indicate the probability of renewal with a percentage from 0 to 100 where: 0% = Certainly Not and 100% = Certainly Yes

.....%

SECTION 4. YOUR HOUSEHOLD SITUATION

For each of the following questions, please tick one answer

1 During the off-season (winter) do you purchase organic produce from outlets other than the CSA? (e.g a supermarket) YES ☐ NO ☐

2 Do you grow part of the food consumed in your home? e.g. gardening (*Please tick one*) YES ☐ NO ☐

3 How often per week, on average, do you purchase a meal away from home? (*Please tick one*)

☐ ZERO TIMES ☐ FOUR TO SIX TIMES

☐ ONE TO THREE TIMES ☐ SEVEN AND MORE TIMES

4 What gender do you belong to? MALE ? FEMALE ?

5. How many of you are there in your household? (Adults and children) _____

# of Adults _____ # Of children below 12years? _____ # Of children between 12 and 18years?_____

6 Which of the following best describes your educational level ?

☐ SOME HIGH SCHOOL ☐ COMPLETED HIGH SCHOOL

☐ SOME CEGEP ☐ COMPLETED CEGEP

☐ SOME UNIVERSITY ☐ COMPLETED UNIVERSITY

7 Which of the following best describes your GROSS family income from all sources in 2001?

☐ LESS THAN $20000 ☐ $40001-50000

☐ $20000-30000 ☐ $50001- 60000

☐ $30001-40000 ☐ More than $60000

8 Which of the following best describes your age group?

☐ LESS THAN 30YEARS ☐ 51-60 YEARS

☐ 31 -40YEARS ☐ MORE THAN 60 YEARS

☐ 41-50 YEARS

9. How would you classify the community you live in?)

☐ URBAN ☐ RURAL ☐ SUBURBS

10 What is the name of the community (municipality) you live in?

_____ (For example, Laval, Anjou, NDG)

Suggestions:

What are three things you would recommend to improve on your CSA partnership?

1.

2.

3

OTHER COMMENTS:

Once more, **THANK YOU** for responding to the survey. Rest assured your responses will remain confidential and will serve only for the purpose of our research.

Please place your completed survey in the return envelope and mail it as soon as possible.

APPENDIX 2: SUGGESTIONS FOR IMPROVING CSA[2]

(Author's translation)

1) PRODUCE DELIVERY:

- An extended and more flexible pick up time to accommodate partners whose work schedules do not fit well with existing delivery schedules.
- Locating delivery points close to the subway (METRO) stations and closer to partners.
- Experiment with home delivery.
- Maintain the same pick up points during the delivery season.
- Winter baskets to ensure year round supply.
- More information about pick up points and times on the Equiterre web site.

2) BASKET CONTENT:

- Partners should have more say as to what goes into their baskets.
- More diverse basket types to accommodate different need levels.
- More fruits in the basket
- More of regular (common) than new varieties in the basket.
- Increased diversity of produce to include eggs, beef and bread so long as they so long as they are certified organic.
- Collaborating with other farmers to improve on produce diversity.
- Adequate provision of exchange baskets at the delivery point.
- Possibility to buy more at the delivery point.
- Ability to influence basket contents prior to delivery.
- Improved quality.
- Improve storability of produce by harvesting at a stage when the produce is not over ripe and difficult to preserve.
- More information about products offered on the Equiterre web site.

[2] These represent comments written on surveys by partners suggesting ways of improving the Community supported agriculture food system. These coments have been regrouped into themes by author and do not have any statistical implications.

3) INFORMATION:

- A clear indication at the beginning of the season of what type of produce will be available during that season.
- Use information from the exchange process at the pick up points to better understand produce demand so as to concentrate resources on products for which partners show greater interest.
- Increased sensitization of the public of the CSA food system, with emphasis on the health and environmental enhancing aspects of the system.
- Government support in promoting CSA.
- Increased education of partners on production practices and constraints, so that they may better understand why sometimes their demands in terms of variety, quality and quantity cannot be met.
- More meetings between partners and encouraging partners to actively participate in farm and other CSA activities.
- More farm help days in order to accommodate partners with different work schedules.
- Improved transparency in their dealings with partners.
- Encourage partners to share pick up costs by taking shared rides to delivery points.
- More information exchange among farmers, and experienced farmers mentoring beginners.

4) PRICE:

- Reduced certification costs so as to reduce basket price.
- Improve on quantity- price ratio.
- Paying for supplies in installments would attract more partners.
- More low-income households should be targeted with special packages.

APPENDIX 3: CORRELATION MATRIX

	pfair	yrsmem	sharep	supseas	pickt	fhelpt	prestore
pfair	1.0000						
yrsmem	0.0235	1.0000					
sharep	0.0899	0.0868	1.0000				
supseas	0.1369	0.1273	-0.0173	1.0000			
pickt	0.0277	0.0042	-0.0205	0.0043	1.0000		
fhelpt	0.1188	0.0461	0.0074	-0.0963	0.1576	1.0000	
prestore	-0.0611	-0.0115	-0.0143	-0.0641	0.0919	-0.0643	1.0000
stores	0.1445	0.0679	0.0353	0.0433	-0.1856	0.0811	-0.1692
exbask	0.1105	-0.1650	-0.0778	0.1769	0.1288	0.0327	-0.1035
choiceb	0.0411	0.1214	0.0227	-0.0629	-0.0326	-0.1865	-0.0826
newprod	0.1624	-0.1549	-0.0695	0.0601	0.0375	0.0458	-0.0611
recipe	0.1394	0.1417	-0.0017	0.1381	0.0088	-0.0541	-0.0728
xcesprod	-0.0071	-0.0666	0.0302	-0.0349	0.0628	0.0167	0.1319
freshv	0.1910	0.0993	-0.0083	0.0466	-0.0047	0.0379	-0.0734
biov	0.0296	0.1114	-0.1138	0.0110	0.0376	-0.0033	-0.0435
locecon	0.1320	0.1043	-0.0030	0.0930	0.0038	0.0370	-0.1284
prodmeth	0.0702	0.0731	-0.0357	0.1370	-0.0492	-0.0462	-0.0646
comsoc	0.0924	0.0571	0.0067	0.0156	0.0143	0.1044	-0.0176
env	0.0499	0.0924	-0.0131	0.0335	-0.0268	0.0058	-0.0542
cheapv	0.3131	-0.0494	0.0930	0.0168	0.0459	0.0437	0.0054
satquant	0.3274	0.0922	0.0340	0.1019	-0.0261	-0.0418	-0.1019
satqual	0.1839	0.1172	-0.0553	0.1144	-0.0503	-0.0502	-0.1688
satvar	0.2812	0.2107	-0.0255	0.1183	0.0422	0.0274	-0.1189
satpt	0.0875	0.0714	0.0082	0.0712	-0.1686	-0.0660	-0.0165
satpl	-0.0102	-0.0203	-0.0110	-0.0679	-0.3614	0.0280	-0.0830
satpr	0.3948	0.1519	0.0433	0.1193	-0.0271	-0.0137	-0.1886
satpm	0.1643	0.0587	-0.0056	0.0947	0.0147	-0.0627	-0.2290
globsat	0.2997	0.2539	-0.0436	0.0944	-0.0246	0.0231	-0.1344
renew	0.2649	0.2684	0.0135	0.1156	0.0088	0.0771	-0.0885
offseas	0.0594	0.1338	-0.0732	-0.0150	-0.0446	0.0606	0.0617
garden	-0.1014	0.0592	-0.0484	-0.0514	0.0133	-0.0001	-0.0612
eatout	0.1345	-0.1638	0.0273	-0.0218	-0.1245	-0.0598	0.0102
female	-0.0235	0.0084	0.0826	0.0807	0.0405	-0.0787	0.0550
kids12	-0.0494	0.1368	-0.0477	-0.0217	-0.1002	-0.0118	-0.0463
kids18	-0.0454	0.0102	-0.0503	-0.0224	-0.0561	-0.0486	0.0153
educ	-0.0456	-0.1058	-0.0464	0.0254	0.0577	0.1109	-0.0784
income	-0.1672	-0.0127	-0.0426	-0.0371	-0.2065	-0.0696	-0.0921
age	-0.0417	0.0883	0.0904	-0.0373	0.1045	-0.0041	0.0472
livenow	-0.0569	0.1088	-0.0419	0.0484	-0.0267	-0.1436	0.0042

	stores	exbask	choiceb	newprod	recipe	xcesprod	freshv
stores	1.0000						
exbask	0.1802	1.0000					
choiceb	-0.0358	-0.1182	1.0000				
newprod	0.0593	0.2399	-0.0337	1.0000			
recipe	0.0585	0.0697	-0.0768	0.3061	1.0000		
xcesprod	-0.2401	-0.0191	-0.1654	-0.1143	-0.1437	1.0000	
freshv	0.1305	0.1243	0.1071	0.0926	0.0380	-0.1289	1.0000
biov	0.1309	0.0570	0.0533	-0.0255	0.1004	0.0013	0.3439
locecon	0.1332	0.1328	0.0517	0.0693	0.1212	-0.1283	0.3366
prodmeth	0.1117	0.0993	-0.0057	0.1319	0.0310	-0.1120	0.2970
comsoc	0.0187	0.1068	0.0442	0.1305	-0.0017	-0.1570	0.1697
env	0.0856	0.0541	0.0448	0.0909	0.0921	-0.0962	0.1753
cheapv	-0.0148	0.0593	0.1244	0.0470	-0.0808	0.0447	0.1538
satquant	0.1341	0.0793	0.0732	0.2341	0.2661	0.0140	0.0629
satqual	0.3300	0.2359	0.0969	0.2038	0.2082	-0.1834	0.1414
satvar	0.2860	0.1843	0.1761	0.3281	0.3019	-0.1874	0.1268
satpt	0.2035	-0.0378	0.0614	-0.0287	0.1245	-0.0656	0.0222
satpl	0.1949	0.0312	-0.0342	0.0260	0.0457	-0.0068	-0.0185
satpr	0.2063	0.1374	0.1643	0.2402	0.2261	-0.1048	0.1671
satpm	0.2089	0.1370	0.0988	0.1191	0.1907	-0.1152	0.1685
globsat	0.2573	0.2237	0.1905	0.2482	0.2626	-0.2112	0.1094
renew	0.1981	0.1817	0.0783	0.1971	0.3212	-0.2252	0.1313
offseas	0.0724	0.0355	0.1258	0.0339	0.1109	-0.0880	0.0893
garden	0.0564	0.0143	0.0672	-0.0668	-0.0106	-0.1155	0.1136
eatout	0.0183	0.0470	-0.1473	0.0409	-0.0218	0.0596	-0.0323
female	-0.0752	0.0994	-0.0683	-0.0512	0.0046	0.0987	0.1513
kids12	0.0295	-0.0946	0.0531	-0.0172	0.0963	0.0001	0.0102
kids18	-0.0498	-0.0872	0.1662	0.0612	0.0519	-0.0378	-0.0540
educ	0.0190	0.0451	-0.0813	0.0800	0.0214	0.1029	-0.0603
income	0.0387	-0.0632	0.0656	-0.0286	-0.0452	0.0993	0.0240
age	-0.0606	-0.1115	0.1150	-0.1053	-0.1055	0.0166	0.0457
livenow	-0.0668	-0.2069	0.0525	-0.0742	0.0025	0.0315	0.0464

	biov	locecon	prodmeth	comsoc	env	cheapv	satquant
biov	1.0000						
locecon	0.3971	1.0000					
prodmeth	0.3743	0.3840	1.0000				
comsoc	0.0799	0.3157	0.2927	1.0000			
env	0.4833	0.4352	0.4004	0.1043	1.0000		
cheapv	0.0667	0.0875	0.0990	0.3308	0.1129	1.0000	
satquant	0.0651	0.1275	0.0680	-0.0344	0.1176	0.0682	1.0000
satqual	0.2207	0.2328	0.2025	-0.0030	0.1999	-0.0068	0.5429
satvar	0.1317	0.1462	0.1263	0.0256	0.0963	0.0344	0.5566
satpt	-0.0005	0.0746	0.0887	0.0167	-0.0315	-0.0562	0.3311
satpl	-0.0735	0.0732	0.0426	0.0635	-0.0149	-0.0905	0.1328
satpr	0.1078	0.2221	0.1747	0.0394	0.1433	0.0621	0.7044
satpm	0.0986	0.2390	0.1297	0.0446	0.1155	-0.0070	0.4659
globsat	0.1376	0.2549	0.1133	0.0778	0.1765	0.0719	0.6085
renew	0.2114	0.2589	0.1257	0.1244	0.2686	0.0181	0.4463
offseas	0.2562	0.0316	0.1788	0.1371	0.0831	0.0733	0.1124
garden	0.0855	0.1078	-0.0040	0.0468	0.0209	-0.0493	-0.0181
eatout	-0.0854	-0.0532	-0.0505	-0.0832	-0.0377	-0.0592	0.0409
female	0.0531	0.1916	0.0688	0.1232	0.0912	0.0677	0.0811
kids12	0.0701	0.0132	0.0095	0.0314	-0.0375	0.0100	0.0389
kids18	0.0836	0.0433	-0.0028	0.0069	0.0282	0.0274	-0.0339
educ	-0.1376	-0.0743	-0.1711	-0.2133	-0.1101	-0.1240	0.0008
income	0.0345	-0.0887	0.0118	-0.2025	-0.0593	-0.2021	0.0439
age	0.0619	-0.0197	0.0272	0.0212	0.0104	0.0223	-0.0212
livenow	0.0848	-0.0379	-0.0043	0.0207	-0.0040	0.0102	0.0127

	satqual	satvar	satpt	satpl	satpr	satpm	globsat
satqual	1.0000						
satvar	0.5640	1.0000					
satpt	0.2910	0.2512	1.0000				
satpl	0.1797	0.0901	0.5244	1.0000			
satpr	0.6031	0.5784	0.3818	0.2306	1.0000		
satpm	0.5046	0.4066	0.3470	0.2620	0.6072	1.0000	
globsat	0.6080	0.6127	0.2456	0.2318	0.6094	0.4220	1.0000
renew	0.4423	0.4712	0.1427	0.0995	0.4763	0.2684	0.7037
offseas	0.0998	0.1267	-0.0065	0.0105	0.1135	0.0397	0.1533
garden	0.0178	-0.0096	0.0262	-0.0582	0.0556	0.0256	0.0219
eatout	0.0349	-0.0597	-0.0424	0.0027	-0.0069	0.0110	-0.0397
female	0.0974	0.0590	0.0753	0.0216	0.0724	0.1082	0.0739
kids12	0.0147	0.0883	0.0739	0.0301	0.0623	0.0035	0.0479
kids18	-0.1130	0.0050	0.0371	-0.0024	-0.0249	-0.0799	-0.0382
educ	-0.0396	-0.0658	0.0349	0.0619	-0.0556	0.0053	-0.0659
income	0.0516	0.0332	0.0160	0.0533	-0.0147	0.0132	-0.0829
age	-0.1075	-0.0544	-0.0030	-0.0595	-0.0006	-0.0206	-0.0569
livenow	-0.0864	-0.0113	-0.0241	-0.0809	0.0308	-0.0647	-0.0205

	renew	offseas	garden	eatout	female	kids12	kids18
renew	1.0000						
offseas	0.1338	1.0000					
garden	0.1057	0.0319	1.0000				
eatout	-0.0182	0.0189	-0.1198	1.0000			
female	0.0354	-0.0651	0.0715	-0.1087	1.0000		
kids12	0.0844	0.0757	0.1972	-0.2799	-0.0150	1.0000	
kids18	-0.0242	-0.0517	0.0454	-0.0425	-0.1507	-0.0608	1.0000
educ	-0.0427	-0.0546	-0.0998	0.0550	-0.0878	0.0819	-0.0393
income	-0.0403	0.0662	0.0206	0.1553	-0.1040	0.1508	0.1101
age	0.0168	0.0869	0.0728	-0.0579	0.0024	-0.2392	0.1522
livenow	0.0152	0.0224	0.1657	-0.1793	0.0435	0.2961	0.1833

	educ	income	age	livenow
educ	1.0000			
income	0.2276	1.0000		
age	-0.2199	0.0449	1.0000	
livenow	-0.1163	0.1506	0.0888	1.0000

APPENDIX 4: CERTIFICATE OF ETHICAL ELIGIBILITY

Certificate of Ethical Acceptability for Research Involving Humans

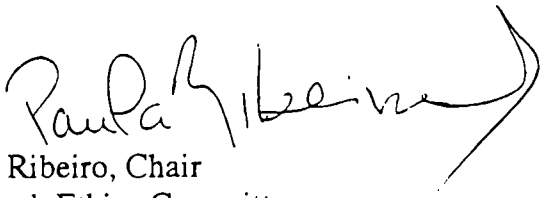
Project Title: Maximizing member retention in Quebec community supported agriculture (CSA)

Applicant's Name: Achuo George Fung
Supervisor (if applicable): John Henning

Type of Review: Expedited

Reviewers: P. Jones, L. Prichard, P. Ribeiro

Decision: APPROVAL HAS BEEN GRANTED



Paula Ribeiro, Chair
Research Ethics Committee
Faculty of Agricultural and Environmental Sciences

July 24, 2002

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