Consumer and Farmer Perceptions of the New Zealand Dairy Industry's Image

A thesis presented in partial fulfilment of the requirements
for the degree of Masters of Applied Science
in Agricultural Systems and Management

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Dedication

*This research is dedicated to all the people who,
in one way or another, are trying to improve the
quality of our environment, and to my parents who
dedicated their lives to educate me, and improve the
quality of my life.....*

ABSTRACT

A new marketing concept has emerged in response to concerns about the global environment. Many products now make claims about their "environmentally-friendly" attributes. Misleading advertising by some industries, however, have caused some consumers to become skeptical and disillusioned about "clean and green" claims. New Zealand dairy products are sold to over 115 countries and trade on the country's "clean and green" image. It is therefore important to understand and define clearly what "clean and green" means to different people in order to meet their expectations and needs. The aim of this research was to determine the perceptions, attitudes, and behaviour of different stakeholders in relation to New Zealand's "clean and green" image.

Ninety-one Massey University international students and 250 supermarket shoppers from New Zealand, Philippines and UK were surveyed to determine their perceptions and buying behaviour with respect to New Zealand dairy products. Two-hundred and eighteen New Zealand dairy farmers were also surveyed to determine their perceptions concerning their industry's "clean and green" image. Stakeholders from the Philippine dairy industry were also interviewed and their systems for milk production, processing and quality control were contrasted those used in New Zealand.

The consumers studied do perceive New Zealand as being "clean and green" and this had influenced their decision to buy its dairy products. However, caution needs to be excercised in extrapolating these conclusions to all markets. The "clean and green" image was associated to health and safety rather than environmental- or animal-welfare friendliness by Filipino shoppers and Asian university students. British consumers on the other hand, bought New Zealand dairy products primarily for their taste. Of the attributes studied, health and safety, taste and price were found to be the main determinants of consumer buying decisions. Conclusive evidence was not found that current practices on New Zealand dairy farms affect the marketability of its dairy products. Some consumers, however, expressed that they were willing to pay more for products that had environmental- and animal-welfare assurance. Where New Zealand dairy products are promoted as being "clean and green", farming practices need to be aligned to meet consumer expectations without sacrificing economic efficiency in milk production.

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Chapter One

1.1 OVERVIEW

The dairy industry is a major contributor to New Zealand's economy. It is the largest export industry, comprising 18-20% of all exports. More than 53,000 people are employed within the dairy industry and in the service industries directly connected to it (Marshall 1996).

Due to its unique geography, separated from the over-industrialized, heavily polluted parts of the world by thousands of miles of ocean, New Zealand enjoys a perception as being "clean and green" (Taylor 1996). New Zealand dairy products are sold to over 115 countries and trade on this "environmentally friendly" image (Franks 1998).

In recent years, a new variation of marketing concept has emerged in response to the increasing concerns about the state of the global environment (Peattie 1992). Research indicates that some consumers are integrating their concern for the environment into their purchasing behaviour (Mendleson & Polonsky 1995). Misleading claims by some industries, however, have resulted in some consumers becoming sceptical and disillusioned about "clean green" claims (Ottman 1995). It is therefore no longer sufficient to boast that New Zealand is clean and green; a created image needs to be backed-up by audit evidence (New Zealand Farmer 1996).

According to the 1990 Chairman of the British National Consumer Council, "the main determinant of consumer behaviour has shifted from price to quality and is now changing again to conscience" (Stafford 1993). Consumers from developed countries are now demanding cheap, nutritious and clean food, but at the same time, this food should be produced under management systems which they find acceptable. These management systems should be "kind" and "green", and be sustainable with minimum pollution (Stafford 1993).

New Zealand's approach to animal welfare, sustainability and quality management in dairy farming is now being questioned, and this potentially affects the industry's image. According to Dr. Neville Gregory, a Massey University professor in Animal Welfare, "New Zealanders must start building defences and changing some of their practices to protect their clean and green image before these negatives are translated into a backlash against their overseas products" (in Donald 1995).

Each person, however, has his/her own ideas about what "clean and green" is. For some farmers in New Zealand, docking the tails of their cows is a sanitary measure to keep the udders clean and to minimise risk of infection to milking staff (Dairy Exporter 1997). Others, such as animal welfare sensitive consumers might perceive tail docking to be cruel.

People's perceptions are based on what they know – or think they know. These perceptions form the basis of their behaviour in both the major and minor areas of their lives (Marconi 1997). Markets can be won or lost through these "perceptions" (Franks 1998). It is therefore important to look at the perspectives of different people in order to define clearly what "clean and green" means to them in order to meet their expectations and needs. It is equally important to analyse the factors that influence the public's image of the dairy industry to make sure that it is not at the receiving end of adverse publicity.

1.2 PROBLEM STATEMENT

Competition in the global market for agricultural products is steadily increasing. As New Zealand will have difficulty competing with other countries on price alone (Mogridge 1996), other strategies need to be employed to grow export markets. Trading on New Zealand's "clean and green" image could give a competitive advantage. As consumers in general become more aware, and sceptical, of inflated claims about environmental integrity, it is essential to determine what people associate with "clean and green", in order to avoid disappointment and market backlash.

1.3 PURPOSE AND SCOPE OF STUDY

This research investigated consumers' perceptions of, and behaviour towards, New Zealand and its dairy products. It determined the perception of New Zealand dairy farmers on what constitutes "clean and green" dairy farming. The research provides the dairy industry with information about consumers' preferences and their opinions about the strength of its "clean and green" in different markets. This information can be used as a basis for improving farm practice and assist the industry to meet the standard expected of high-quality eco-friendly dairy products. These products should be able to provide New Zealand with a sustainable competitive advantage in the international marketplace.

1.4 OBJECTIVES

The primary goal of this research was to assess the perceptions which different stakeholders held on the "clean and green" image of New Zealand and its dairy products. To achieve this goal, these objectives have been set:

1. To determine the perceptions held by different groups of consumers in relation to New Zealand and its dairy products.

2. To determine the buying behaviour and attitudes of different consumers toward New Zealand dairy products.

3. To determine the perceptions and beliefs of New Zealand dairy farmers concerning their industry's "clean and green" image.

4. To assess the current practices of New Zealand dairy farming by comparing them with those in the Philippines.

5. To assess the importance of a "clean and green" image in consumer buying decisions.

Chapter Two comprises a review of the literature on the New Zealand dairy industry, theories on image as a marketing tool, the new concept of "green marketing", consumer behaviour theories and environmental and animal-welfare issues associated with dairy farming practices in New Zealand.

The research methods and techniques that were employed in data collection needed to meet the objectives as outlined in Section 1.4, are described in Chapter Three. The results are presented, interpreted and discussed in Chapters Four and Five. The discussion includes a comparison with other research and the theories presented in the review of literature. Conclusions and recommendations for further research are presented in Chapter Six.

Chapter Two

In this chapter, the background literature to the research is reviewed. In Section 2.1, an overview of the New Zealand Dairy Industry is presented; the New Zealand dairy farm is described in Section 2.2. The concept of corporate image, and its importance, are presented in Section 2.3. The concept of green marketing and the characteristics of green consumers are discussed in Section 2.4. In Section 2.5, theories on consumer behaviour are reviewed. Aspects of dairy farming systems of New Zealand that are believed to affect the industry's "clean and green" image are presented in Section 2.6.

2.1 THE NEW ZEALAND DAIRY INDUSTRY

2.1.1 INTRODUCTION

The dairy industry is a major contributor to New Zealand's economy. It is the largest export industry and more than 53,000 people are employed within the dairy industry and in the service industries directly connected to it (Marshall 1996). Over the last ten years the value of dairy exports has increased by 153 percent – more than any other significant export industry. The dairy industry earned 21 percent of New Zealand's export income for the May 1998 year, up from 13.9 percent in 1987 (NZDB 1998).

In this section, a brief history of the development of the New Zealand dairy industry, its contribution to national income and its structure are reviewed.

2.1.2 BRIEF HISTORY OF DEVELOPMENT

The New Zealand dairy industry started in 1815 when the Reverend Samuel Marsden imported cattle to Russell from Sydney. The cattle were intended to supply the missionaries with milk and milk products (Holmes & Wilson 1987). The Otago Peninsular Cooperative Cheese Factory was the first dairy company, and was established in 1871. By 1885 there were 23 factories in operation and the local market had a surplus of dairy produce. The export trade was limited because of the problem of preserving produce during the long sea journey to overseas markets (Holmes & Wilson 1987).

The development of ship refrigeration in 1882 solved the problem of transporting perishable produce, and this enabled a small quantity of butter to be shipped to Britain. By 1895, 218 dairy factories were in operation and new milk products, such as condensed milk, casein and lactose were developed (Holmes & Wilson 1987; Maughan 1985).

By 1900, the New Zealand dairy industry had grown to 372,000 cows producing about 58 kg of milkfat per cow per year (102 kg milksolids (MS)/cow). In 1901, the export of dairy produce consisted of around 10,000 tonnes of butter and 5,200 tonnes of cheese, mostly to Great Britain and Australia. Export revenue was NZ$2.16m or 8.5% of New Zealand's total export earnings. In 1905, there were 15,600 factory suppliers, with an average herd size of 28.5 cows (Marshall 1996).

The milking machine was developed in 1918 and 7,600 farms were quickly equipped with these devices. This development enabled farmers to milk larger herds of cows (Holmes & Wilson 1987).

The number of dairy companies and factories increased rapidly to a maximum of 540 in 1920. Eighty-five percent of these were co-operatively owned. Subsequently, the number of dairy companies decreased, gradually at first, but very rapidly in more recent years (Holmes & Wilson 1987) until by 1998 there were just 11 companies. The decrease in number of companies came about by amalgamation to create larger and more efficient manufacturing operations. New Zealand now has some of the largest and most technically advanced milk processing plants in the world (NZDB Public Affairs 1996, cited by MacDonald 1997).

2.1.3 THE DAIRY INDUSTRY TODAY

The industry is currently based on approximately 3.2 million cows in more than 14,000 herds, with each cow producing on average 270 to 300 kg milksolids (MS) per lactation (Table 2.1) (LIC 1998). In 1997-98, 11 co-operatively owned dairy companies processed 893 million kg of MS from seasonal supply units into products predominantly destined for export. Eight town-milk supply dairy companies processed milk primarily for domestic liquid milk consumption (LIC 1998).

Table 2.1. Farm statistics for the New Zealand dairy industry 1980-98 (LIC 1998).

Season	Milk processed (million litres)	Herds	Total cows (thousands)	Ave. herd size	Milksolids per cow per year (kg)
1980-81	5,868	16,089	2,027	126	-
1981-82	5,979	15,821	2,060	130	-
1982-83	6,096	15,816	2,128	135	-
1983-84	6,733	15,932	2,209	139	-
1984-85	6,965	15,881	2,280	144	-
1985-86	7,326	15,753	2,321	147	-
1986-87	6,385	15,315	2,281	149	-
1987-88	6,921	14,818	2,236	151	-
1988-89	6,533	14,744	2,269	154	-
1989-90	6,868	14,595	2,313	159	-
1990-91	7,077	14,685	2,402	164	-
1991-92	7,454	14,452	2,438	169	-
1992-93	7,629	14,458	2,603	180	259
1993-94	8,603	14,597	2,736	188	279
1994-95	8,633	14,649	2,830	193	271
1995-96	9,325	14,736	2,935	199	283
1996-97	10,339	14,741	3,064	208	301
1997-98	10,651	14,673	3,222	220	292

- data not available

The number of herds has dropped significantly, from 71,800 suppliers in 1933 to 14,673 in 1998, but the number of cows per herd has steadily increased during this period (Marshall 1996). The average herd size in the 1997-98 year was 220 cows (LIC 1998). The decrease in herd numbers was associated with amalgamations of farms caused by lower real prices for milksolids payments and increased costs of farm key inputs such as fertiliser and feed (Parker 1998). In order to maintain profit margins, dairy farms had to get bigger to remain economic (Parker & Holmes 1997). By increasing farm size, the average total cost of production was reduced relative to the cost of land, labour and capital. Therefore, large farms are more profitable not only because of their greater output, but also because of their lower per unit costs (Parker 1998).

The New Zealand dairy industry is characterised by an integrated structure (Figure 2.1); from dairy farmers supplying milk for manufacture to customers in over 100 countries (NZDB 1994; Gutierrez 1996; LIC 1998).

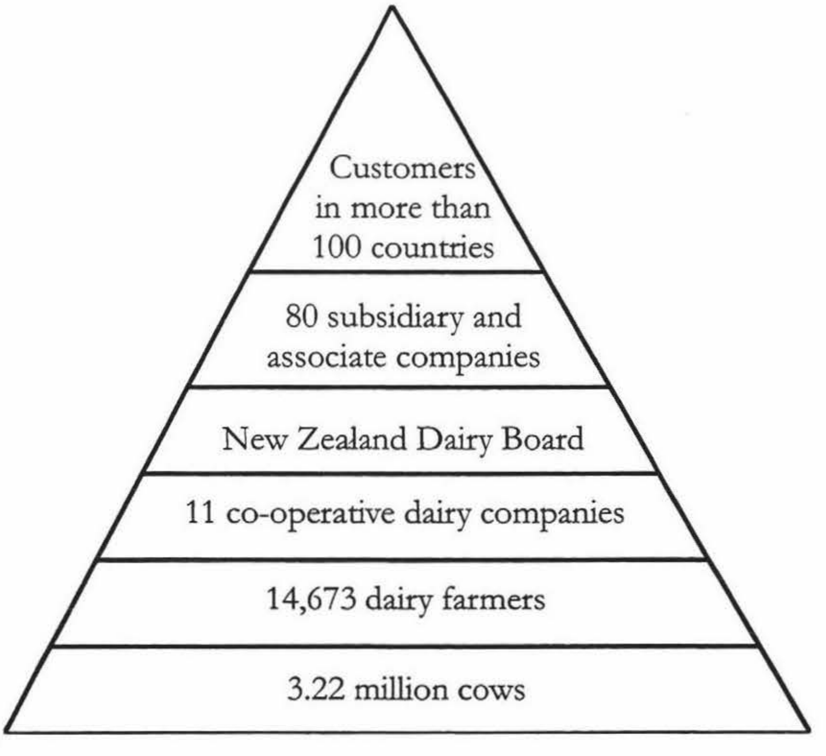

Figure 2.1 Structure of New Zealand dairy industry (NZDB 1994; modified using 1997-98 statistics).

Ninety-five percent of New Zealand's annual milk production is manufactured into export products, which represent only about 1.5 percent of the world's total milk production but a 26 percent share of accessible international trade (Hewison 1995; NZDB 1997). Because New Zealand is a relatively small player in international trade and has a domestic market of little consequence to other countries (Hewison 1995), it is vulnerable to international market trends and currency exchanges.

Since 1984, New Zealand's agricultural economy has been largely unsubsidized and deregulated (Stevenson *et al.* 1996). The absence of subsidies and other government assistance has resulted in a highly efficient and productive cooperative structure (Gutierez 1996; NZDB 1997). This efficiency is made possible by New Zealand's temperate climate which enables year-round grazing of pasture, eliminating the need for the housing of the livestock and costly feed supplements. These factors contribute to efficient on-farm milk production, at well below average world cost (NZDB 1997).

2.1.4 THE NEW ZEALAND DAIRY BOARD (NZDB)

The New Zealand Dairy Board is a multinational milk food marketer whose primary function is to undertake the sole marketing of dairy produce manufactured in New Zealand for export. It is the country's largest single exporter, with a sales turnover of $5.5 billion in 1997 (NZDB Overview 1997). The Dairy Board operates under the authority of the Dairy Board Act (1961), which defines its role as the industry's export marketing arm (NZDB 1997). The Board's mission is "to maximise the sustainable income of New Zealand dairy farmers through excellence in the global marketing of New Zealand origin dairy products" (NZDB Overview 1997).

The Board currently has more than 80 wholly- or partly-owned companies operating in more than 100 countries (Figure 2.2). Several of the Board's subsidiaries operate processing plants, laboratories and research and development centres that actively develop and market new products suited to the preferences of local consumers. In 1997, the New Zealand Dairy Board Group of Companies employed more than 6,000 people, three quarters of whom were located offshore (NZDB Overview 1997).

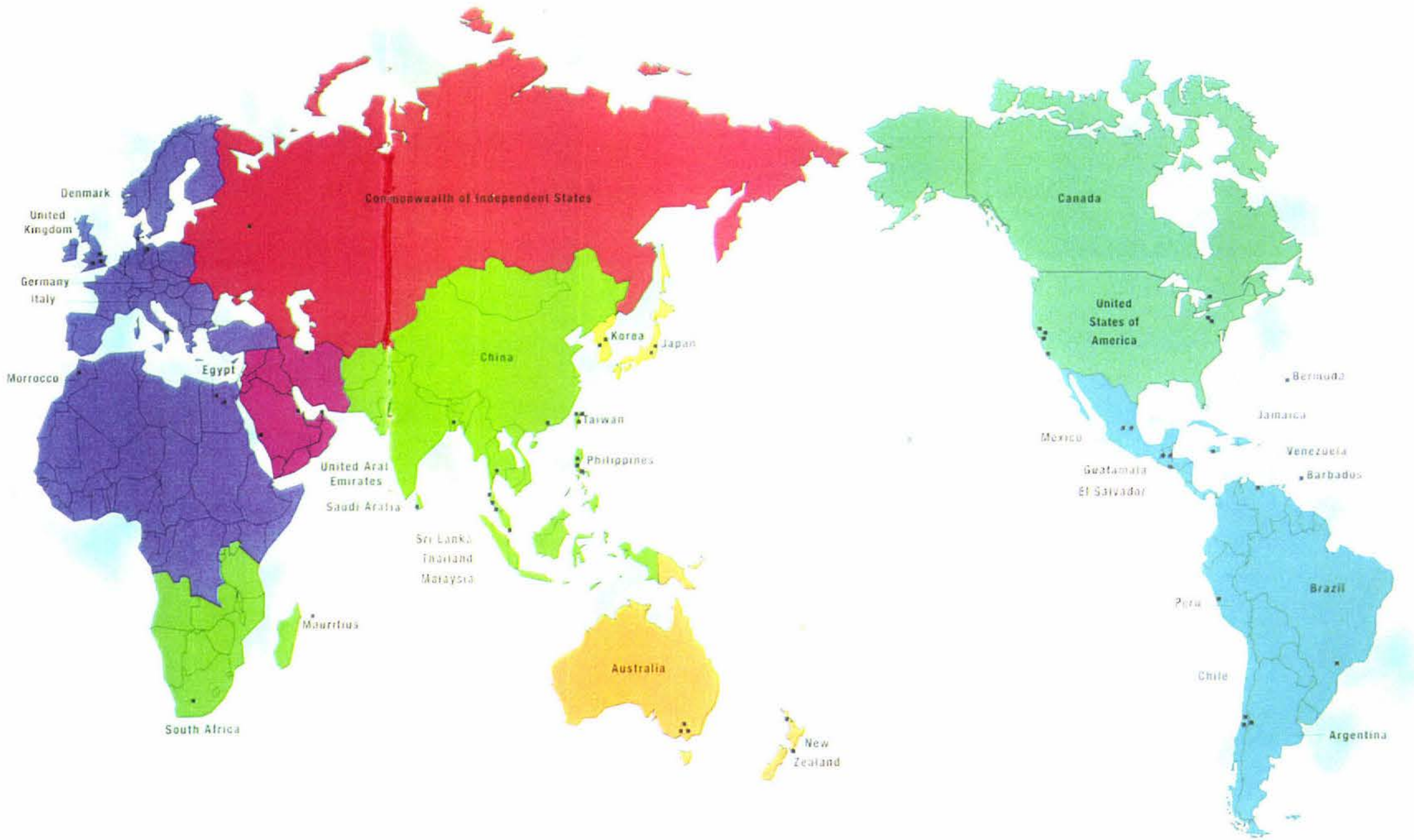

Figure 2.2. Location of the New Zealand Dairy Board International Companies (NZDB Overview 1997)

2.2 THE NEW ZEALAND DAIRY FARM

2.2.1 INTRODUCTION

New Zealand's dairy production is based on the conversion of pasture into milk by grazing cows (Holmes & Wilson 1987). Pasture-based dairy systems are made possible by New Zealand's temperate climate, which enables year-round grazing of pasture eliminating the need for housing and costly feed supplements (NZDB 1997). By world standards, the average lactation length for New Zealand dairy herds is short (Holmes *et al.* 1994) and this is a primary reason for low average yearly per cow milk production (Holmes *et al.* 1994; Holmes & Hughes 1993). Despite these lower production levels, New Zealand's dairy farmers have acquired an international reputation for producing milk at a cost lower than all other dairy industries in the developed world through the use of a pasture-based seasonal calving system (Holmes & Wilson 1987; Stevenson *et al.* 1996).

In this section, the New Zealand dairy farm system, its ownership structure and farming practices are described.

2.2.2 MILKING SYSTEM

More than 90 percent of New Zealand dairy farming systems are seasonal, with cows calving during spring (July to September) to synchronise the herd's feed requirements with pasture growth. This *seasonal or factory supply dairying* generally does not produce milk in winter and, except for small volumes used in the domestic market for liquid consumption, all milk is manufactured into dairy products, mainly for export. The farmer receives payment per kg of MS supplied (Holmes & Wilson 1987).

The remaining farms are called *town supply* or *market milk dairy farms,* with cows calving during spring and autumn or throughout the year, and a where specified quota of milk must be supplied throughout the year. The majority of "quota milk" is consumed as fresh milk and cream. The farmer receives payment for each litre of milk supplied (Holmes & Wilson, 1987). Payment may include seasonal premiums, particularly to account for the higher cost of winter milk production.

2.2.3 FARM OWNERSHIP STRUCTURE

Sixty-three percent of all farms are managed by the owners; the rest are farmed under a sharemilking or contract milking agreement (LIC 1998). Owner-operators are farmers who own and operate their own farms or who employ a manager to operate the farm for a fixed wage. The owners receive all the farm income, although they may then have to pay wages (LIC 1998).

Sharemilking has traditionally been the first step to farm ownership (MAF 1993). Sharemilking involves operating a farm on behalf of the farm owner for an agreed share of the farm income and expenses (MAF 1993; LIC 1998). It is a vital component of the New Zealand dairy industry because it allows young farmers with a limited amount of capital to purchase land and to progress farm ownership (Holmes & Wilson 1987).

In 1997-98, 1.2 percent of New Zealand dairy farms were operated under a contract milking agreement (LIC 1998). Contract milkers are contracted to milk a herd at a set price per kilogram of MS produced. The rate is set according to the amount of work done (LIC 1998).

2.2.4 FEEDING SYSTEM

The New Zealand dairy herd relies almost entirely on grazed pasture for its feed requirements (Thomson & Holmes 1995). Grains and concentrates are rarely fed, and the quantities of silage and hay fed per cow are small compared to dairy systems in other major dairying countries. The reliance on grazed pastures as the source of feed is necessary because of the relatively low prices received for milk by New Zealand dairy farmers and the relatively high costs of raising or buying grain (Holmes & Wilson 1987).

Since grazed pasture is the main component in the diet of all cows, and because the climate is mild, stock in general are not housed at any time of the year (Holmes & Wilson 1987). Grass is efficiently harvested by grazing cows in a system of herd rotation through pasture subdivisions, or paddocks, that are defined and protected by fixed or movable high tensile electric fences (Stevenson *et al.* 1996).

Grazing of pastures during the "extreme" wet season, however, can cause damage to the soil surface. If a load or force, such as the hooves of animals, is applied to a soil with a high moisture content, the surface soil will not have sufficient strength to support or bear this stress and treading damage will occur (Horne & Singleton 1997). Severe damage is termed "pugging" and takes the form of deep hoof-prints in the soil (Owen 1991). To prevent soil damage, some farmers practice mob-stocking wherein cows are grazed for about four hours before moving them to a "standing area" to protect the pastures for the next 20 hours (Bodeker 1998).

2.2.5 BREEDING PRACTICES

New Zealand's seasonal milking system is designed to make the most effective use of pasture (Stevenson *et al.*1996). Cows are bred to calve in spring (July to September), so that their maximum feed requirements in early lactation coincide with the period of most rapid pasture growth (Holmes & Wilson 1987; Stevenson *et al.* 1996). Cows are dried off in late summer or autumn depending on summer rainfall and the rate of decline in the pasture growth (Stevenson *et al.* 1996). Cows which calve later than the majority of the herd may be difficult to remate at the same time as the rest of the herd and will have a shorter lactation because most of the herd is generally dried-off at a fixed date in late autumn or early winter. To overcome this problem, some farmers inject late calving cows with a hormone preparation which causes them to calve prematurely (Holmes & Wilson 1987). This practice termed *induction* has been used to ensure that cows: are in milk early in the spring, make efficient use of available feed and have a better chance of conceiving and subsequently calving at the correct time in the following season (Verkerk *et al.* 1997).

2.2.6 DAIRY SHED HYGIENE

According to the New Zealand Dairy Farm Dairy Code of Practice (1991), every dairy farm should be built, maintained and operated in a hygienic manner. The farm's dairy milking plant must be designed and maintained to ensure that materials and substances coming into contact with milk do not contaminate the milk or cause it to deteriorate. There must be sufficient water of suitable quality to clean the premises, animals and plant and, if necessary, cool the milk. The surroundings of dairy farm must be kept clean and tidy and free from birds, rodents and insects.

One practice used by some farmers to maintain product hygiene and public health is to dock the cows' tails. The practice of tail docking first became common when herringbone "pit" sheds were introduced, as a means of reducing urine and faeces splash onto the milking staff (Matthews *et al.* 1995). The main purpose of tail docking, however, is to keep the udders clean and to minimise the risk of leptospirosis infection to the milking staff (Dairy Exporter 1995; Dairy Exporter 1997).

2.2.7 MILK QUALITY

Milk quality is the consistency of milk properties that directly or indirectly affect safety, consumer acceptance, and product demand (Shearer *et al.* 1992). High milk quality means that milk should have specific attributes, such as composition, aesthetic factors (flavour, odour, and appearance), low bacterial count, and absence of adulterants (drug or chemical residue) (Gutierrez 1996). To ensure milk quality, dairy companies generally penalise suppliers who do not meet the quality standard required. Payment for milk failing to pass the standard grade tests is reduced (MacDonald 1997).

One quality measure used by the dairy companies is bulk somatic cell counts (BSCC). Mastitis can affect individual and total milk yields, milk composition and quality of milk products. The prevalence of sub-clinical mastitis can be detected by an increase in the number of somatic cells present in milk (Auldist *et al.* 1995). Several countries, including New Zealand, currently impose penalties for milk supplied to the factory with a high (over 400,000 cells/ml) BSCC to make the quality of the raw material more reliable (Lacy-Hulbert & Woolford 1996).

2.2.8 ANIMAL HEALTH PRACTICES

According to the NZDB Farm Dairy Code of Practice (1991), "dairy stock which have a disease shall be identified and kept separate and their milk shall not be mixed with the consignment. Treated stock should be identified and records kept of stock treatment. Drugs used or given to animals which may have withholding times include antibiotics, feed medications, injections, oral powders, lice or worm materials and pesticides."

2.2.9 EFFLUENT DISPOSAL

Dairy shed effluent consists mainly of milking cow dung, urine, detergent and wash down water from cleaning the yarding area following milking. Traditionally, dairy shed effluent was often discharged into rivers and lakes, but in the 1960s the enforcement of legislation on water pollution was introduced (Waroka 1996). Nowadays, all effluent from dairy farms has to be either dispersed onto the land or treated to a specified standard before discharge into a natural waterway or public drain. A water right or general authorisation is required for all farm dairies, and these are monitored at regular intervals to ensure compliance (NZDB Farm Dairy Code of Practice 1991).

2.2.10 FERTILISER APPLICATION

The majority of pastures on dairy farms contain several different species and varieties of grasses and legumes. The legumes can provide a cheap source of soil nitrogen through the fixation of nitrogen from the atmosphere, and they generally have a higher feeding value than the grasses (Holmes & Wilson 1987).

In most grazed pasture, fertilisers are applied to produce an appropriate level of soil fertility to support pasture growth, and to allow legumes to fix atmospheric nitrogen. This also helps to maintain soil fertility by replacing nutrients lost because of the farming operation (Tillman 1993).

The use of legumes to supply nitrogen to grazed pasture is very cost-effective (Tillman 1993), but biological nitrogen fixation is unable to sustain maximum pasture production over much of the year (Tillman 1993; Clark 1997). Many farmers therefore apply low rates of nitrogen tactically to boost pasture growth at critical times of the year (Tillman 1993; Moller *et al.* 1996). Nitrogen fertiliser, is therefore, considered as a form of "supplementary feed" because it is a way of producing extra feed at times when animal feed requirements exceed pasture growth (Roberts *et al.* 1994).

2.3 CLEAN AND GREEN IMAGE

2.3.1 INTRODUCTION

In recent years, the importance of corporate image has been recognized by an increasing number of companies (van Riel 1995). According to Bernstein (1986, p. 11), "...image is powerful. It helps to determine how a person will behave towards a company. How that company is perceived - as weak or strong, open or devious, warm or cold, rigid or flexible, etc. - will influence that person's disposition, his readiness to buy the company's products, give credence to what it says, commend its actions, purchase its stock, even to seek work there."

Due to its unique geography, being separated from the over-industrialised, heavily-polluted parts of the world by thousands of miles of ocean, New Zealand enjoys a perception of being "clean and green" (Taylor 1996). New Zealand is little affected by industrial pollution, over-population, traffic congestion, noise and urban decay. It is associated with national parks, scenic beauty, wilderness areas, beautiful deserted beaches, green pastures and a friendly population (Hughes 1993), as well as enjoying a "nuclear-free" status. It is also known for its production of high quality food and beverages, and a seemingly relaxed way of life (Hewison 1995).

New Zealand dairy products are sold to over 115 countries, and trade on their "clean and green" image (Franks 1998). Most indications to date suggest that a "clean and green" image affects purchasing decisions (Hewison 1995). The trading of New Zealand agricultural products on the basis of its "clean and green" image has already proved fruitful (Hewison 1995). Quantifying the effect of this image, however, is difficult.

In this section, some theoretical models for image analysis are reviewed and discussed in the context of a company's identity, image and reputation. The main views concerning the concept of corporate image and its importance are also outlined.

2.3.2 IMAGE

According to Steidl and Emery (1997), image is a perception. It does not exist other than in people's minds (Bernstein 1986; Steidl & Emery 1997), but it is very powerful because it affects attitudes which, in turn, affect behaviour (Bernstein 1986). An image might be considered as a photographic film which is on the point of "developing" in people's minds. It provides the receiver (an individual) with a means by which to simplify reality through concepts such as "good-bad" and "pleasant-unpleasant". The image of an object develops through a set of impressions that individuals experience when they are directly or indirectly confronted with that object (van Riel 1995).

People can look at the same thing and see it quite differently (Marconi 1997; Steidl & Emery 1997). They may talk about the same organisation, use its services, buy its products, or even work for it, but still hold quite different perceptions (Steidl & Emery 1997).

People's perceptions are based on what they know – or think they know (Marconi 1997). Although the perceptions of some people are not important, there are also key individuals or groups with whom developing a positive image is important - because a positive image held by these individuals and groups will help in realising one's goals (Steidl and Emery 1997). While image is only a perception – it forms the basis of decisions in both major and minor areas of the lives of individuals (Marconi 1997; Steidl & Emery 1997).

The same principles apply to organisations: a company's image results from the perceptions held by the members of target groups of who the organisation is (Steidl & Emery 1997). A company's image is powerful because it helps determine how a person will behave towards that company. It is, therefore, important that all target groups and individuals that could significantly affect the future of the company develop a positive image of the organisation (Steidl & Emery 1997).

2.3.3 PERCEPTIONS

Apart from the basic five human senses (touch, taste, smell, sight, hearing), humans also have a sense of direction, the sense of balance, a clear knowledge of which way is up, and so forth. Each sense is constantly feeding information to the brain. The brain selects from the environment around the individual and cuts out extraneous noise to prevent information overload. Therefore, the information entering the brains of individuals does not provide a complete view of the world around them. When the individual constructs a world-view, he or she assembles the remaining information to map what is happening in the outside world. Any gaps are filled in with imagination and experience. Perceptions, therefore, are not "photographs" but a construction of one's imagination (Blythe 1997).

2.3.4 HOW PERCEPTIONS ARE FORMED

To illustrate how perceptions are formed, Steidl and Emery (1997) used the famous Asian fable, "The three blind men."

> *"Three blind men came across an elephant.*
> *One man got hold of the elephant's leg*
> *and thought he was holding onto a pillar.*
> *The second got hold of one of the elephant's ears*
> *and thought he was holding onto a rug.*
> *The third man grabbed the elephant's trunk*
> *and thought he was holding a pipe in his hands"*

Without a complete picture, one elephant may provide three completely different image perceptions - and not one of them is even close to reality. Therefore, as people may get genuine but incomplete evidence through experience, they can easily jump to the "wrong" conclusion.

The way perceptions of organisations are formed (Figure 2.3) is not unlike the experiences of the blind men. By being exposed to only to a small part of the corporation, the total picture is not seen. All one can see, hear or experience are fragments of the organisation, but the overall perception of the organisation will be formed on the basis of these fragments (Steidl & Emery 1997).

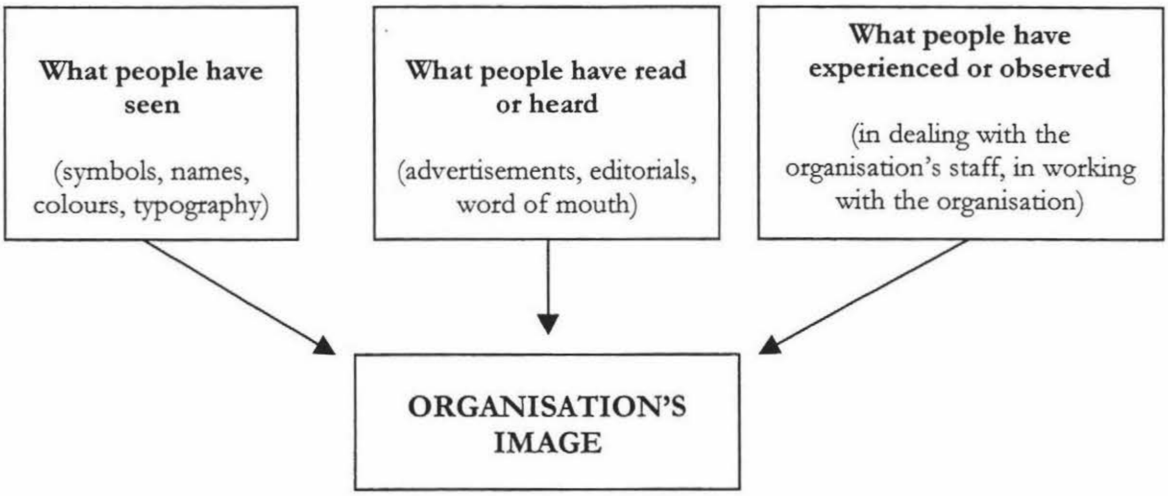

Figure 2.3. How an organisation's image is formed (Steidl & Emery 1997).

2.3.5 IDENTITY

The terms "image" and "identity" are frequently used to describe company communication strategies. It is generally accepted that image is "the picture of an organization as perceived by target groups", while identity is "the way in which a company presents itself to its target groups" (van Riel 1995).

According to Steidl and Emery (1997), corporate identity is the "real" organisation, ie, the way it actually exists or "is". It is expressed in terms of corporate communication – the way the corporation presents itself through corporate design – and its corporate personality – the way decisions are made and the values expressed through decisions and actions (van Riel 1995; Steidl & Emery 1997). What makes one company different from another is not easy to determine. Companies reveal different characteristics, whether deliberately or not, and it is these factors that make the unique character of the company visible and even tangible to the relevant target groups. Characteristics are revealed in various ways, including the company's products and buildings, the nature and scale of its communication, and in its behaviour (van Riel 1995).

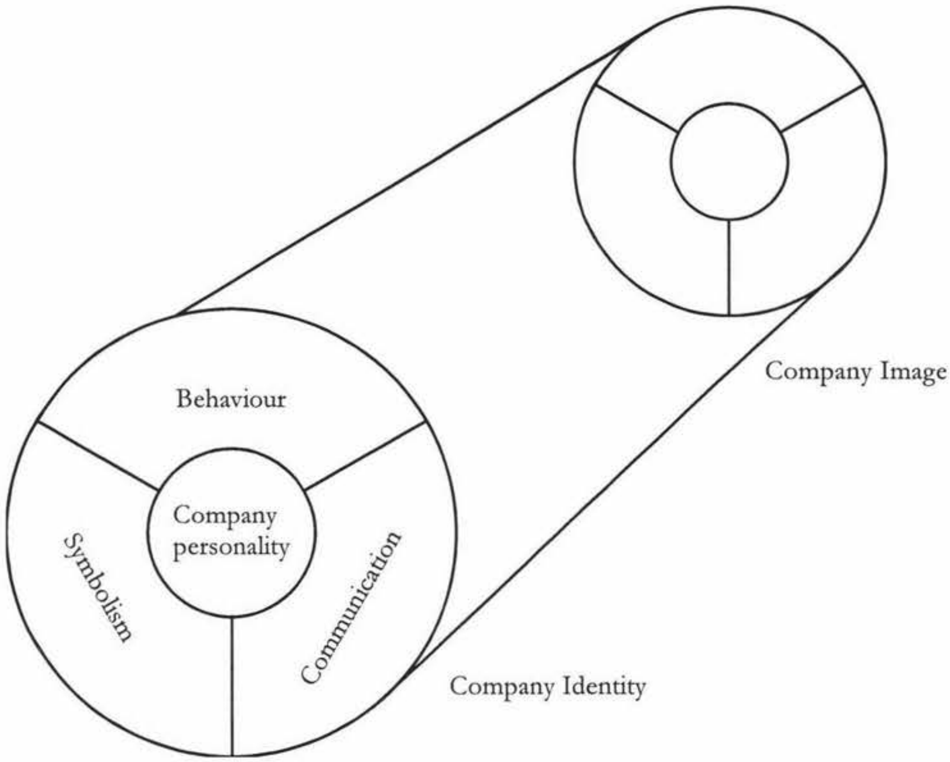

Figure 2.4. Corporate identity in relation to corporate image (*adapted from Birkigt & Stadler 1996; cited by* van Riel, 1995)

Figure 2.4 shows that the self-presentation of a company can be classified under one of three headings (Birkigt & Stadler 1986; cited by van Riel 1995):

- *Behaviour.* This is considered to be the most important and effective medium through which corporate identity is created because target groups tend to judge the company by its actions. However, it is possible to emphasize particular aspects of company behaviour by means of communication and/or symbols.

- *Communication.* This means the sending of verbal and visual messages to the target group.

These media together constitute the corporate identity mix - they are the means through which the personality of a company is manifested.

- *Personality* is described by Birkigt and Standler (1986) as 'the manifestation of the company's self-perception". It implies that the company must know itself well, i.e it must have a clear picture of its real situation in order to present itself clearly through its behaviour, communication and symbolism.

An image is not what the company believes, but what the customer believes – or feels – about the company (and its brands and services). This is based on his/her experiences and observations; from what s/he knows about product performance, price, availability, delivery and after-sales service; what the company has to say about itself; what other people say; and his/her own experience with dealing with the company (Bernstein 1986).

Image is extremely important to both the source of the image (the image object), and the receiver (the subject). The source (the organization) considers that the transmission of a positive image is an essential precondition for establishing a commercial relationship with target groups. For the subject, the image constitutes a way of summarizing the "truth" about the object in terms of a set of simplifications (good-bad, usable-unusable, and so forth).

Poiez (1988; as cited by van Riel 1995) claimed that without the help of images, consumers have difficulty in deciding which products to buy. Consumers are often not familiar with all of the alternatives on the market. They are also not aware of all the features of a particular product, thus they are not able to judge them all in the correct way. They are inclined to base their decisions on earlier, imperfect consumption experiences; on feelings, incomplete information, simple guidelines, symbolic information, and unconscious processes. The image can also serve as a simple rule for making decisions if this is the only differentiating factor, leading to consumers buying the product with the most favourable image.

2.3.6 REPUTATION

According to Bernstein (1986), reputation is another term that loosely trades places with image. A reputation is earned and hard to manage. Though less 'visual', reputation, like image, is nevertheless perceived.

Caudron (1997), however, argues that reputation always supersedes image. Image marketing is all about how a company wants to be viewed; a company, therefore, can have a good image but a bad reputation. A good reputation is created and destroyed by every single thing a company does: from the way it manages employees to the way it responds to complaints.

Based on the American Heritage Dictionary's description of "reputation", Fombrun (1996) defined corporate reputation as "a perceptual representation of a company's past actions and future prospects that describes the firm's overall appeal to all of its key constituents when compared with other leading rivals". A corporate reputation represents the "net" effective or emotional reaction – good or bad, weak or strong – of customers, investors, employees, and the general public to the company's name.

Fombrun (1996) developed a model to illustrate the relationship between a company's identity and its name, image and reputation (Figure 2.5). Corporate identity describes the set of values and principles employees and managers associate with a company. Corporate identity is derived from a company's experiences since its founding. It reflects the company's cumulative record of successes and failures.

The company, however, is regularly recognized by its name and the many presentations it makes to describe its actions, plans and intentions. People interpret these self-presentations and form mental images of the company. Although sometimes a corporate image accurately mirrors the company's identity, some self-presentations are distorted and incorrect images are formed. As evaluators rate a company against a peer group of others, an overarching reputation crystallizes from the plethora of images produced (Fombrun 1996).

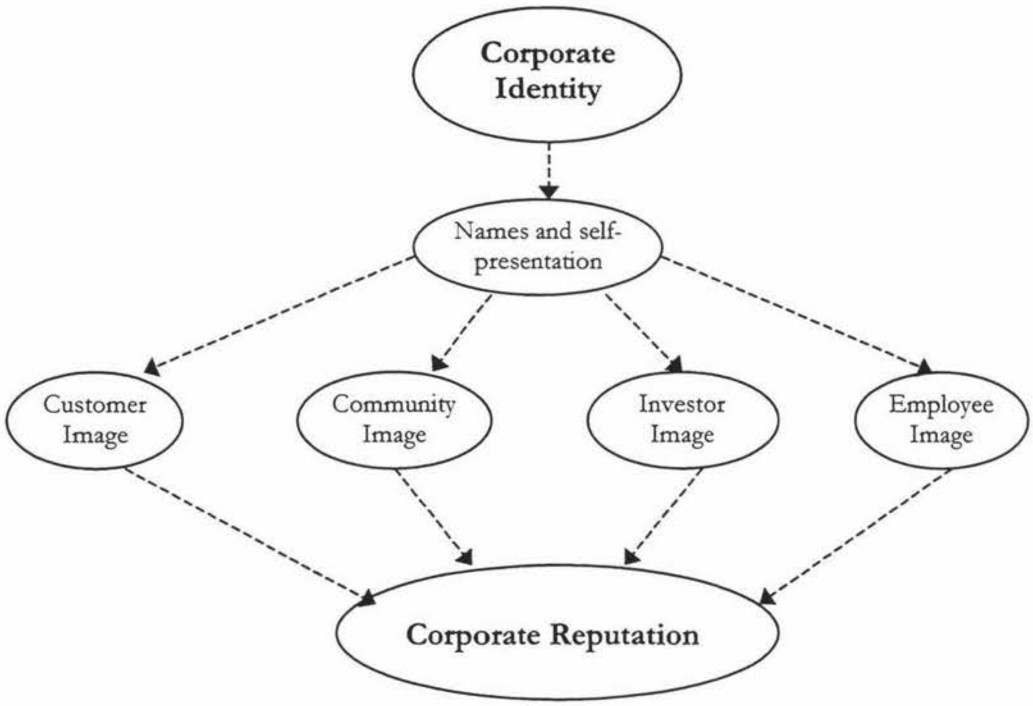

Figure 2.5. From identity to reputation (Fombrun 1996).

According to Fombrun (1996), a company's reputation relies on the expectations of its key constituents (Figure 2.6). A customer expects reliability; an investor or supplier expects credibility, employees expect trustworthiness; and communities expect responsibility.

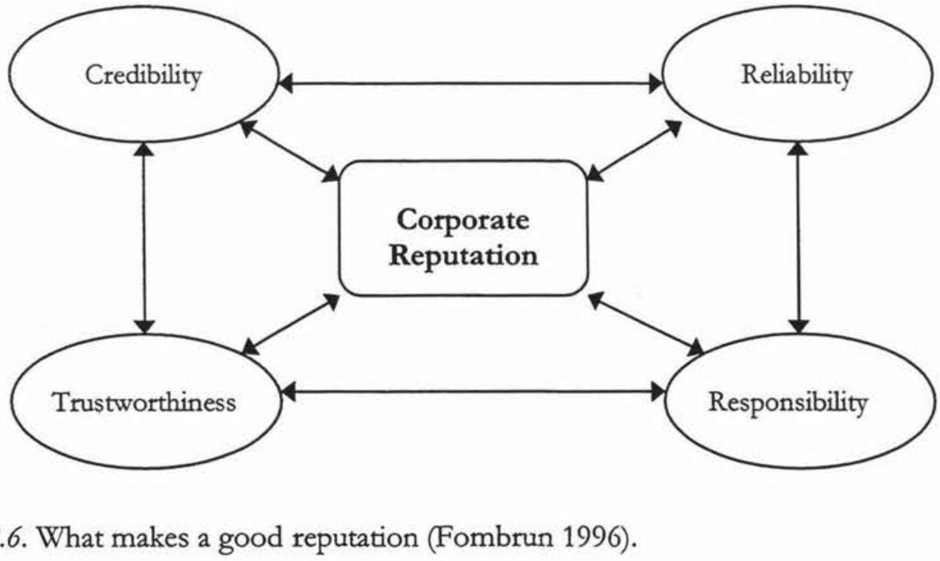

Figure 2.6. What makes a good reputation (Fombrun 1996).

These four components of developing a good reputation are explained by Fombrun (1996) to be:

Reliability. Customers want companies to be reliable. They want the claims made about their products to be true. They demand that the products of companies be of better quality and reliability than those of lesser-known competitors, even if sold at the same price.

Credibility. Investors and suppliers, on the other hand, expect companies to be credible. They ask the managers to live up to the claims and commitments they make in press releases, annual reports, and other communications. They want them to accurately convey the risks of their strategies, warn them of their impending problems, and disclose material facts that might influence the assessment of their performance.

Trustworthiness. Employees want the company they work for to be trustworthy. While they demand that explicit contracts be honoured, they also expect implicit "contracts" to be respected. They count on being treated fairly and honourably in job assignments, salary decisions and promotions.

Responsibility. Finally, communities ask that companies recognize their responsibility to participate in the social and environmental fabric of their neighbourhoods. The popular concept of sustainability proposes that companies should at least put back as much as they take from their social and physical environment. Companies that ignore the well-being of their local communities demonstrate a disregard for its residents.

2.4 GREEN MARKETING

2.4.1 INTRODUCTION

The past two decades are notable for the global emergence of environmentalism. Sustainability of the environment is no longer the problem of a few: it is now a part of everyday life in business, government and homes (Cairncross 1992).

Research indicates that consumers are integrating their concern for the environment into their purchasing behaviour in a variety of ways (Mendleson & Polonsky 1995). There is growing evidence that consumers are choosing some products or avoiding others based on their impact on the natural environment (Coddington 1993).

According to Peattie (1992), green marketing is a style of marketing which has arisen in response to the increasing concern about the state of the global environment and the life it contains. It is the management process responsible for identifying, anticipating and satisfying the requirements of customers and society, in a profitable and sustainable way.

As the incomes of consumers have increased in developed countries, personal values associated with, for example, environmental aspects of food quality and animal welfare are beginning to influence purchasing preferences (Walker & Morris 1996). Consumers from developed countries are demanding cheap, nutritious and clean food, but at the same time they want this food to be produced under management systems which they find acceptable. These management systems should be "kind" and "green" and be sustainable (Stafford 1993).

Other reports, however, question whether environmental concerns are actually translated into purchase behaviour. According to Kilbourne and Aslem (1997; cited by Hoek *et al.* 1998), although many consumers express a strong concern for the environment, they are reluctant to give up consumption behaviours which cause environmental problems. Ottman (1994) stated that, although consumers are obviously concerned for the environment, product efficacy will continue to be the primary influence on their purchase decisions. Berger (1993; cited by Hoek *et al.* 1998) also observed that consumers are willing to respond to green initiatives only when attributes, including performance, convenience and price are equal. Bryceson (1997 p.5) presented a cynical view stating "...market research and opinion poll evidence do not demonstrate that consumers wish to integrate environmental concern through their consumption. Consumers however, demonstrate their environmental concerns by pressuring politicians to come up with environmental regulations".

Although the relationship between environmental concerns and buying behaviour is still a subject of debate in the marketing arena, "green marketing" will stay for good. If concerns about the environment are actually influencing the buying behaviour of consumers, then trading on a "clean green" image could be vital for New Zealand's export trade.

The new concept of green marketing is the subject of this section. The characteristics of green consumers, and the impact of their environmental concerns on companies' marketing strategies are discussed.

2.4.2 GREEN CONSUMERS

Ottman (1993) defined green consumers as those who actively seek out products perceived as having relatively minimal impact on the environment,... they are educated, affluent, mainstream and represent the most desirable of consumer target markets. These consumers are shaping a new trend called "environmental consumerism", where individuals attempt to "protect" themselves and the planet by purchasing "green" products and leaving "non-green" products on the shelves (Newell *et al.* 1998). Green consumers best respond to emotional promotions that empower them to act upon environmental and social causes. The old types of marketing incentives, such as "cents-off coupons", "free trips" and "diamonds packed in detergent boxes", do not work with them (Ottman 1998b).

Studies which show that people are integrating their concerns about the environment into their buying decisions include:

- A survey of US consumers in June 1990, showing that 70% had switched brands over environmental concerns on at least one occasion (Charter 1992).
- The Michael Peters Group (1991; cited by Davis 1994) reported that over three-quarters of US consumers' purchase decisions are now at least partly influenced by a company's overall image or reputation on environmental issues.
- Another study in the US showed that 51% of consumers look for green labels when they shop (Walker & Morriss 1996).
- In 1992, 54% of Americans read labels to see if products were environmentally safe, 57% sought out products and packaging made from recycled materials, and 34% said they had boycotted a company that was careless towards the environment (Ottman 1993).

- In 1997, 76% of US consumers responding to a Roper/Cone poll were willing to switch brands and retailers if the price and quality were equal to those of a product not associated with a good cause. This was 10% higher than the 1993 result (Ottman, 1998b).

Several studies also suggest that consumers are willing to pay more for products that are less environmentally-harmful. For example:

- A 1990 poll by the J. Walter Thompson advertising agency reported that 82% of the US respondents said they would pay at least 5% more for a product that was environmentally-friendly, up from 49% the previous year (Levin 1990; cited by Shrum *et al.* 1995).
- Roper Green Gauge, an annual study conducted by Roper Starch Worldwide in New York, reported that consumers are now willing to pay the highest premium for green goods (Ottman 1998b).

Several studies however, also question whether environmental concerns are actually translated into purchasing behaviour. According to Hoek *et al.* (1998), "while much research was done to measure environmental concern and differentiate consumers responses to environmental concerns, they were not able to present consistent behavioural responses and neither has environmental concern been confirmed as a predictor of purchase behaviour".

Hoek *et al.* (1998) in their research on the effect of green attributes on consumers' behaviour, reviewed previous research in green marketing and came up with the following findings:

- Many researchers conclude that an environmentally-conscious group exists, but few have been able to offer a precise demographic definition for this group (Kinnear *et al.* 1974; van Liere & Dunlap, 1980; Schwepker & Cornwall 1991; Hini *et al.* 1995).
- Respondents over-report their behaviour or intensify the strength of the attitudes they report when responding to questions about socially-desirable behaviour (Tucker *et al.* 1981; Schuman & Presser 1981; McDougall 1993).

- There is no strong relationship between self-assessed knowledge of a product's impact and attitude towards that impact (Martin & Simitiras 1995).
- Despite their stated concern, many consumers pay little or no attention to brand label information, and few have any knowledge of companies' environmental activities or policies (d'Astrous *et al.* 1997).
- The work to date suggests that while ecological features may be significant, they explain only a small proportion of the variance and are typically less important than product efficacy characteristics (Kalafatis, *et al.* 1994; d'Astrous *et al.* 1997).

Based on these findings, Hoek *et al.* (1998) developed a choice-modelling framework to identify the relative importance of green attributes, and to examine the relationship between New Zealand consumers' knowledge of specific environmental issues and the choice behaviour; self-reported environmental behaviour and their choice behaviour; and choice behaviour and self-reported purchase behaviour. The choice modelling results supported the idea that a "green" consumer segment (approximately 30% of the sample) existed. These consumers were more knowledgeable about environmental issues, more involved in some environmental behaviours, and were prepared to pay a premium for products which have ecological features. The results, however, do not imply that this environmentally-conscious group will be more likely to purchase or be loyal to "green" brands. The results suggest that it may be possible to charge premium prices for environmental products but this must be balanced against current marketplace characteristics because some consumers may see brands as interchangeable.

Aside from environmental issues, consumers are also concerned about animal welfare issues, especially in the animal agriculture sector. Some consumers have expressed increasing concern about the impact of intensive livestock production on animal and bird welfare.

A 1995 Gallup poll revealed that 71% percent of UK consumers felt that retailers have a responsibility to animals. Sixty percent believed it was very important for the food industry to make sure animals are treated humanely, and 59% said it was very important that retailers supported products which did not cause undue harm to wildlife (CWS Retail 1995; cited by Hughes 1995).

Recent US research on people's willingness to pay for farm animal welfare (Bennett 1996) showed that: 81% of the respondents stated that they were concerned that animals may be mistreated or suffer in the process of producing food and other agricultural products. Around 50% of the respondents avoided purchasing particular products because of their concerns about animal welfare, whilst 21 % purchased particular animal products because they thought that the animals involved received better care.

In mid-1994, the Royal Society for the Prevention of Cruelty to Animals (RSPCA) in the UK commissioned a survey on consumer attitudes towards animal welfare issues. The results showed that, when buying food products, consumers are particularly concerned about freshness, price and health; but 29% of the respondents specifically identified animal welfare as a factor influencing their purchase decision (MORI 1994 as cited by Hughes 1995). In the UK meat industry it is a rule of thumb that pictures of live animal do not appear on the packaging of processed meat products (Hughes 1995).

In the United States, at least 200 animal rights organisations are pressing for stricter governmental control over the way animals are kept, used in laboratories, transported, and slaughtered (Wunderlich 1991). Animal welfare is by far the most emotive consumer issue surrounding meat and other animal products. Animal agriculture, therefore, needs to develop ways to provide animal welfare in a manner that reassures the consumer and brings about improvement in the areas where it is necessary (Eastwood 1995).

2.4.3 GREEN MARKETERS

Marketing managers increasingly recognize the importance of responding to consumers' environmental needs (Brown 1998). Accordingly, manufacturers and companies need to develop new marketing strategies as well as products to meet consumers' demands (Charter 1992). For example:

- A survey by Touche Ross in 1991 indicated that 60% of the UK's larger companies considered their suppliers' environmental performance, and had asked them to change their practices or guarantee environmental performance, compared to 40% across Europe (Charter 1992).

- Marketing Intelligence estimated that nearly 10% of all new products introduced onto the market in 1990 were identified as "green" or "environmentally-friendly". This was more than double the number of "green" products introduced a year earlier and a 2000% increase on five years before (Martin & Simintiras 1995; Davis 1992).

According to a study reported in the January 1997 Journal of Marketing, "...corporate environmentalism is emerging as a source of sustainable competitive advantage". In contrast to the traditional "command and control" and regulatory approach, Environmental Management System (EMS) is a free-market approach that emphasizes innovation, entrepreneurialism, and a systems-orientation to corporate environmentalism (Marketing News 1997).

According to Davis (1994), recent studies reveal the following trends in public opinion regarding corporations and the environment:

- A significant increase in public concern about environmental quality.
- An overwhelming proportion of the public believe that corporations are not sufficiently concerned about environmental problems.
- Consumers have decided to reward companies which they perceive to be "sufficiently" concerned about the environment.

2.4.4 REGULATIONS AND PRODUCT CERTIFICATION

Several institutions have emerged to legislate and provide guidelines for environmental claims in response to consumers' increasing environmental concerns, and their growing awareness of false claims. In the USA for example, attorney generals from ten states formed an *ad hoc* task force to review environmental advertising claims (Newell *et al.* 1998). By 1992, the Federal Trade Commission had issued the first Guidelines for Environmental Marketing Terms. It has since been reviewed, including asking for public comment (Ottman 1996).

2.4.4.1 Eco-Labels

An eco-label is a voluntary mark awarded to producers who can prove that their product is less harmful to the environment than similar products (Bergstrom 1993). Eco-seals were originally developed about 20 years ago to stimulate demand for green products and raise awareness of environmental issues amongst consumers, as well as to encourage "environmentally preferable technologies" by rewarding manufacturers and stimulating competition (Ottman 1998f). The first known eco-label, created in 1977, was Germany's Blue Angel logo. It appears on over 3,000 products in 57 categories to help consumers identify environmentally preferable products (Ottman 1993). In 1993, the European Community officially launched its European "eco-label" (Bergstrom 1993), while in the United States, eco-seals are offered by Green Seal, a Washington D.C. based non-profit group (Ottman 1998f). Canada has also issued the Environmental Choice label, while Japan has its own Ecomark programme (Ottman 1993).

In March 1996, New Zealand's food and beverage industry announced a programme called *Project 1998* to create and put in place a New Zealand eco-label that will certify products that have met strict environmental standards (Taylor 1996). The 1998 time-scale, however, proved to be too ambitious. The industry is now working on raising internal performance standards and it may be two or three years before a communications programme can be launched to tell the market about its capabilities.

2.4.4.2 Trade Barriers

On April 14, 1994, after seven years of formal negotiations, over 100 nations signed a trade agreement completing the Uruguay Round of the General Agreement on Tariffs and Trade (GATT). Under the agreement, agricultural trade will be progressively brought under the disciplines that have expanded trade in manufactured products (Unnevehr *et al.* 1994). Major government subsidies to agricultural production would be reduced, and trade barriers to agricultural imports would be lowered. At the same time, the GATT agreement sought to balance the benefits of reducing non-tariff barriers with assurances for consumer safety (Unnevehr *et al.* 1994).

The GATT agreement requires member nations to adhere to certain trade rules, one set of which are Sanitary and Phytosanitary (SPS) regulations. These regulations are intended to protect human, animal and plant life or health on a scientific basis, so that they are not used to arbitrarily or unjustifiably discriminate between nations. This technical barrier for trade was set, whereby no country should be prevented from taking measures to ensure the quality of its exports, or for the protection of human, animal or plant life or health of the environment, or for the prevention of deceptive practices (GATT 1994). Features of the agreement are international standards, the recognition of pest and disease-free zones for trade purposes, and equivalency between respective sanitary and phytosanitary measures. Sanitary and phytosanitary conditions will soon be the only way to legally regulate agricultural trade. There are claims many countries will attempt to use them to control imports (Dairy Exporter 1996).

National decisions about acceptable levels of environmental risk in food and other products will require accommodation between law and science, as well as social and cultural values. These are bound to differ from country to country, and from culture to culture. They are likely to present considerable challenges to future international trade. The key, therefore, is to find genuine environmental measures, while at the same time making sure that they are not used to unfairly restrict international trade (Hewison 1995).

2.4.4.3 ISO 14000

The International Organization for Standardisation (ISO) responded to the mounting demand for an internationally recognized standard for environmental management systems by developing the ISO 14000 series of standards (Environmental Integrity Programme 1996). The ISO is a worldwide federation of national standard bodies from approximately 100 countries. It was established in Geneva, Switzerland, in 1946 to develop a common set of manufacturing, trade and communications standards (Nestel *et al.* 1996).

ISO 14001 sets a framework for environmental management systems and defines how a company should establish, document, maintain and continually improve its systems. The approach can provide a company with a discipline for its activities and a mechanism for obtaining regular independent feedback and advice on their system, giving it confidence that it will continue to be effective (TRADENZ 1996). Implementing an environmental management system is, therefore, a way of providing order and consistency to a company's efforts to address environmental concerns. Basing that system on an internationally recognised standard such as ISO 14001, and having the system checked and certified by an independent accredited auditor, adds credibility and weight to claims of responsible management (TRADENZ 1996).

2.5 CONSUMER BEHAVIOUR

2.5.1 INTRODUCTION

"Without customers, there is no business" (Anon.; cited by Blythe 1997). This is one reason why marketing concepts state that organizations need to anticipate and satisfy consumers needs if they are to remain "on top" in terms of making profits. Consumers have many choices as to where to spend their hard-earned money; marketing, therefore, requires managers to observe everything from the viewpoint of the consumer; look at the firm and its products as the consumer would and plan around consumers' needs and aspirations (Blythe 1997).

As noted earlier, protecting the environment is increasingly becoming part of consumers' needs (Brown 1998). In recent years, the importance of company image has also gained greater recognition (van Riel 1995). According to Lawson *et al.* (1996), a strong and clear company image can increase both consumers' confidence in the company's products and their predisposition to purchase them. Because of consumer concerns about the quality of soil, water and air, factors such as quality, price and convenience are no longer the only factors that influence product purchasing decisions. Environmental compatibility must also be taken into account (Ottman 1998a). According to the 1990 Chairman of the British National Consumer Council, "the main determinant of consumer behaviour has shifted from price to quality and is now changing again to conscience" (Stafford 1993 p.34).

In this section, several consumer behavioural theories are reviewed. How these theories fit into the practicalities of consumer buying behaviour, and specifically with green marketing, is illustrated. Likewise, the effects of false environmental claims on attitudes and purchasing behaviour are discussed.

2.5.2 BEHAVIOUR

Consumer behaviour is commonly defined as "...the activities of individuals in the discovery, evaluation, acquisition, consumption and disposal of goods and services" (Craig-Lees *et al.* 1995; Lawson *et al.* 1996). It is the behaviour that individuals perform when purchasing and using goods and services. Consumer behaviour can be considered a subset of human behaviour, therefore factors affecting individuals in their daily lives also influence their purchase activities. Internal influences such as learning and motives, as well as external factors, such as social expectations and constraints, affect consumer behaviour (Lawson *et al.* 1996).

There are many models of consumer behaviour in the literature. All are intended to encompass the many variables or factors which influence consumer behaviour (Bareham 1995). In this research, the Consumer Decision Process Model (Figure 2.7) by Engel *et al.* (1968) is used as the basic framework for analysing consumer behaviour. This model was developed in 1968, but has since been updated and modified (Bareham 1995). It is still the basis of most American texts on consumer behaviour (Bareham 1995).

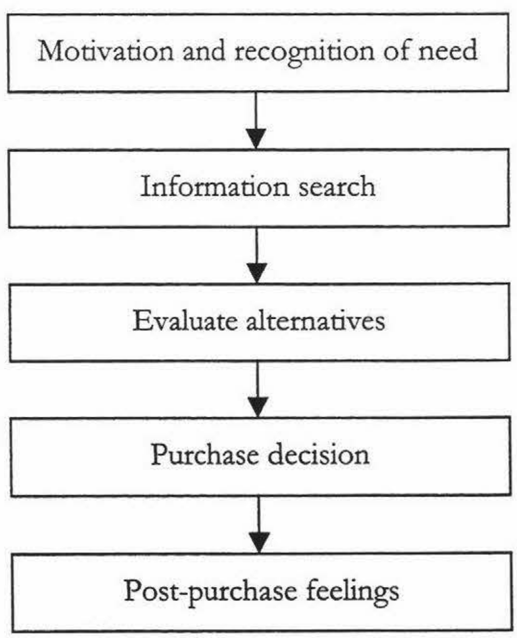

Figure 2.7 Stages in the buying decision process (Kotler, 1976; Hawkins 1988; Bareham 1995; Craig-Lees et al 1995).

The model shows that the buyer passes through five stages: need recognition, information search, evaluation behaviour, purchase decision, and post-purchase outcomes. This model emphasizes that decision making for a purchase starts long before, and has consequences long after, the actual purchase (Kotler 1976).

2.5.3 NEED RECOGNITION

Need recognition is the starting point of the buying process. According to Kotler (1976), a need can be activated through internal stimuli like hunger and thirst, or an external stimuli like the smell of freshly baked bread, a family member asking for food, or watching a television commercial for coffee.

Personal needs vary according to individual circumstances and background, as well as pressures from friends or relations (Bareham 1995). Engel *et al.* (1993; cited by Bareham 1995) identified three determinants of a need: individual differences; environmental influences; and information stored in the memory. The first two determinants comprise a variety of cultural, social and individual factors (Figure 2.8).

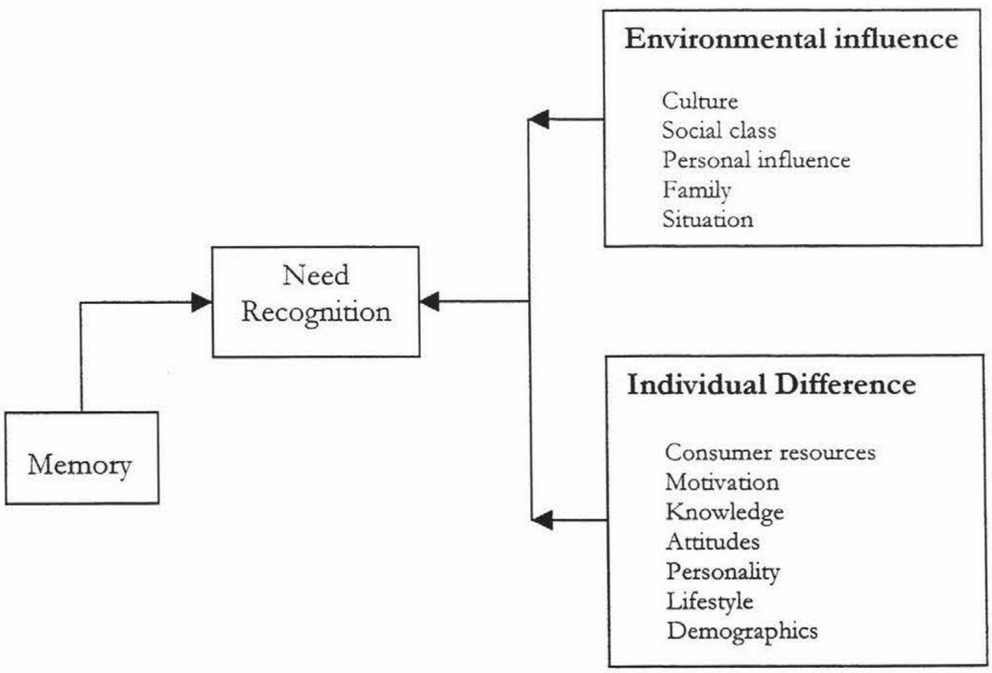

Figure 2.8 Need recognition according to the Engel *et al.* model (*Adapted from* Rice 1993 *by* Bareham 1995).

2.5.3.1 Maslow's Theory of Hierarchy of Needs

According to Maslow's theory, four types of needs must be satisfied before a person can act unselfishly: physiological needs, safety needs, social needs (love and belongingness), and esteem needs (Figure 2.8; Griffin 1994).

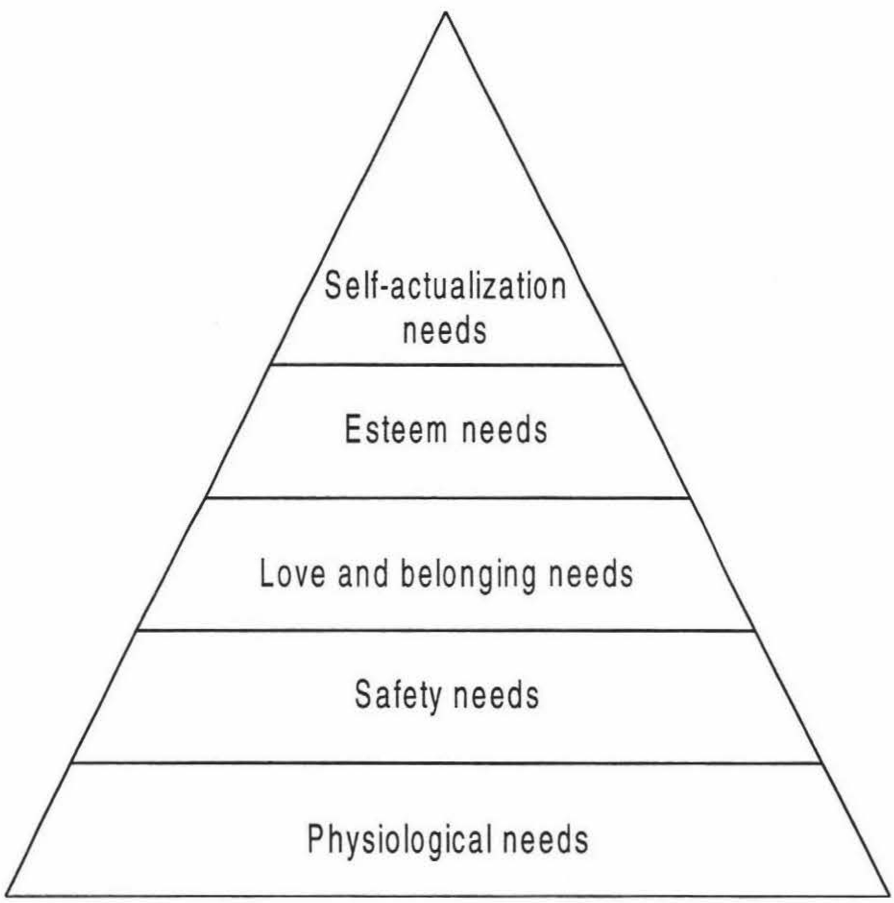

Figure 2.9. Maslow's hierarchy of needs (*Adapted from* Griffin 1994; Bareham 1995; Blythe 1997)

Maslow's hypothesis implies that needs should be met in a specific order of importance. A person's behaviour will be dominated by trying to satisfy the lowest unsatisfied need before stepping to the next level (Griffin, 1994; Bareham 1995; Blythe 1997; Schutte & Ciarlante 1998). At the base of the pyramid are *physiological needs*, i.e., the need for the basics of life such as food, drink and shelter. Once these needs are met, the individual can climb to the next level of the pyramid, which involves *safety needs*, e.g., security, protection and order. Once these, still basic, needs are satisfied, the next set of needs can be attended to. These involve *social needs,* such as the need for affection and acceptance. This is followed by *esteem* *needs,* such as desire for self-esteem, recognition and status. *Self-actualization needs* are at the top of the pyramid. They involve the desire for self-development and may be expressed "to become all that one can be", "to achieve everything of which one is capable"; "to make a real difference in the world" (Griffin 1994; Coddington 1993; Blythe 1997).

The hierarchy of needs does not necessarily imply that each need must be fully met before higher needs can be addressed; merely that the individual's main preoccupation will be with the lowest unsatisfied needs. For example, a tramp may be more interested in spending time with his friends than in finding shelter for the night, or a sales representative may be more interested in winning a sales competition than in earning enough commission to pay the mortgage. Nevertheless, the theory has been shown to be close enough to the true state of affairs to be used as a predictor of behaviour (Blythe 1997).

Maslow's theory can be used to explain motivation in consumer behaviour, such as the rise in popularity of independent holidays, in solo sports such as tennis and skiing, and the increasing interest in experiences such as bungee-jumping. It is clear that people in the lowest income brackets are not usually interested in the arts and aesthetic life, because they have more important and immediate concerns (Blythe 1997).

Maslow's principles can be applied to green consumers. An external stimulus is motivating the person to buy "green products". The stimulus is the person's realisation that his or her environment is deteriorating and that he or she recognizes a need to do something about it. This concern can be manifested in the purchase of environmentally-friendly products.

Commitment to environmental concerns within the population can be segmented by lifestyles and needs. Although a significant number of consumers are environmentally committed (Section 3.4.2), a significant portion also are doggedly non-environmentalists or "more or less" environmentalists who, for various reasons, do not fully act on their concerns (Ottman 1992).

The best-known segmentation of consumers' environmental attitudes was developed in 1990 by the Roper Organization for the consumer goods company S.C. Johnson & Son, Inc. (Coddington 1993). The five segments identified within the US population are presented in Table 2.2.

Table 2.2. The Roper/S.C. Johnson segmentation of consumers' attitudes on the environment.

Categories	% 1990 (Coddington 1993)	% 1992 (Ottman 1993)
True-Blue Greens	11%	20%
Greenback Greens	11%	5%
Sprouts	26%	31%
Grousers	24%	9%
Basic Browns	28%	35%

These five categories of consumers were defined by Coddington (1993) and Ottman (1993) as:

- *True-blue Greens* are the most actively green consumers. These people hold strong pro-environmental beliefs and live by them. Their purchasing behaviour is consistent with very strong concerns about the environment. They are three times more likely than other consumers to avoid buying products from a company with a questionable environmental reputation, and twice as likely to buy green products.
- *Greenback Greens* support environmentalism more by giving money than by giving time and action. They are characterised by the fact that "their commitment to the environment is mainly manifested by their willingness to pay substantially higher prices for green products." They feel too busy to change their lifestyles but they are happy and able to express their beliefs through their pocketbooks and wallets.
- *Sprouts* want more pro-environmental legislation but do not believe that they themselves can do much to make a positive environmental impact. They seem to have green tendencies, but have yet to exhibit a clearly established pattern of pro-environmental behaviour. They regularly engage in pro-environmental activity but are not willing to pay more for pro-environmental products. They become uncertain when forced to choose between the environment and the economy.
- *Grousers* are people who take few environmental actions but believe that: consumers are not doing their part either; business should be fixing the problem; and green products

cost too much compared to their non-green counterparts and do not work well. They consistently rationalize their lack of pro-environmental behaviour by offering all kinds of excuses and criticizing the poor performance of others.

- *Basic Browns* are the least involved group. They simply do not believe individuals can make a difference in solving environmental problems; indeed, they do not want to make an effort.

To give more insight into the psyche of the various Roper/S.C. Johnson green-consumer segments, Coddington (1993) used the Maslow's hierarchy of human needs and behaviour. He put Maslow's five-part hierarchy alongside the Roper/S.C. Johnson five-part segmentation (Table 2.3), to illustrate the characteristics and needs of the various green and non-green consumer segments.

Table 2.3 Hierarchies of needs and behavior (Coddington 1993).

Maslow, 1954	Roper, 1990
Self-actualization (Self-development and fulfillment)	***True-Blue Greens*** Opinion leaders, trend setters, executives, professionals, pro-regulation
Esteem Needs (Self-esteem, recognition, status)	***Greenback Greens*** Intellectually concerned Not activists, busy lifestyle Up-and-coming
Social Needs (Affection, belonging, acceptance)	***Sprouts*** Key swing group Not certain whether to vote environment or economy
Safety Needs (Security, protection, order)	***Grousers*** Object of higher prices Blame others for mess Lots of excuses for non-involvement Consider themselves mainstream
Physiological Needs (Food, drink, shelter)	***Basic Browns*** Least enviro-active group Most socially and economically disadvantaged group

Different people may fall into different levels of hierarchy. People from economically-disadvantaged groups for example, tend to remain in one of the lower levels of the pyramid, struggling merely to survive. In more developed societies, where people have basic security and financial freedom to attempt to gratify higher-level needs (Coddington 1993).

It has been suggested that human culture is in the process of a profound transition in values. Looking at the parallels drawn between (a) self-actualizers and True-Blue Greens and between (b) the esteem-need satisfiers and the Greenback Greens, it may also be possible that, as more and more people progress from esteem needs to self-actualization, they will simultaneously graduate from the Greenback Green to the True-Blue-Green status. In short, it is conceivable that there is an underlying correlation between consumers' levels of environmental activism and their climb up the pyramid of needs (Coddington 1993).

The parallelism of Maslow's theory and Roper's segmentation can be used to explain the behaviour and attitudes of consumers wherein some are willing to pay more for green products while others are not. As cited earlier, Walker and Morris (1996) stated that "as the income of consumers has increased in developed countries, personal values associated with, for example, environmental aspects of food quality and animal welfare, are influencing purchasing preferences". This can also explain Ottman's (1993) statement that consumers are not willing to pay a premium for enhanced environmental performance because they do not have the discretionary income that allows them to pay a premium for green (or any other type of) products. For higher-income consumers the three basic levels of needs are met and they can afford to fulfill their esteem and self-actualization needs, thus their changed personal values influence their purchasing behaviour. For those with low incomes, however, the primary aim is to meet their basic needs; other needs remain beyond their reach.

While consumers express their environmental concerns in individual ways, all green consumers appear to be motivated by universal needs (Table 2.4). These needs translate into new purchasing strategies with profound implications for the way products are developed and marketed (Ottman 1993).

Table 2.4. Green consumer psychology and buying strategies (J. Ottman Consulting, Inc., 1992 *cited in* Ottman 1993)

Needs		*Strategies*
Information	→	Read labels
Control	→	Take preventive measures
Make a difference/ Alleviate guilt	→	Switch brands
Maintain lifestyle	→	Buy interchangeable alternatives

A more detailed elaboration of the elements of Table 2.4 is as follows:

Need for Information. Consumers want information about how to identify green products and where to get them. In 1992, Roper found that 54% of consumers read labels at least occasionally. Research conducted by Procter and Gamble also showed that consumers want even more information than that which is currently available on product labels and advertising. The majority of consumers get the bulk of their information on environmental matters from the media – primarily television, followed by newspapers, magazines and radio (Coddington 1993).

Need for Control. To help control a world they increasingly see as risky, green consumers are taking preventive measures such as buying natural cleaning products or organic, pesticide-free foods. They are also responding to a myriad of new consumer buzzwords presented in packages and advertisements that signify environmental compatibility such as "recyclable" and "biodegradable".

Need to make a difference. Consumers assume responsibility for their actions, and want to feel that they can make a difference. A part of this desire stems from the corresponding need to alleviate guilt. Polls and empirical data show that consumers already buy less of the products that are perceived to be environmentally and/or personally harmful; and are switching brands or moving out of brand categories altogether.

Need to maintain lifestyle. Consumers claim to be willing to do their part, but their behaviour indicates they are adverse to making lifestyle trade-offs. Product efficacy should, and will continue, to be the primary influence on purchase decisions. Although consumers may be concerned about the environment, it should come as no surprise that many refuse to make trade-offs on product attributes such as performance, convenience, price, or in some cases – such as organic foods with their spots and bruises – appearance.

2.5.4 INFORMATION SEARCH

The next stage in the purchase decision is the search for information about the available options (Figure 2.9). The amount of information which consumers need depends upon the importance of the product they are going to buy. They may need information about the key attributes of the product type, the qualities of the various brands and the outlets at which they are available (Kotler 1976). In the case of green consumers, they are likely to check information on how environmentally-friendly the products are.

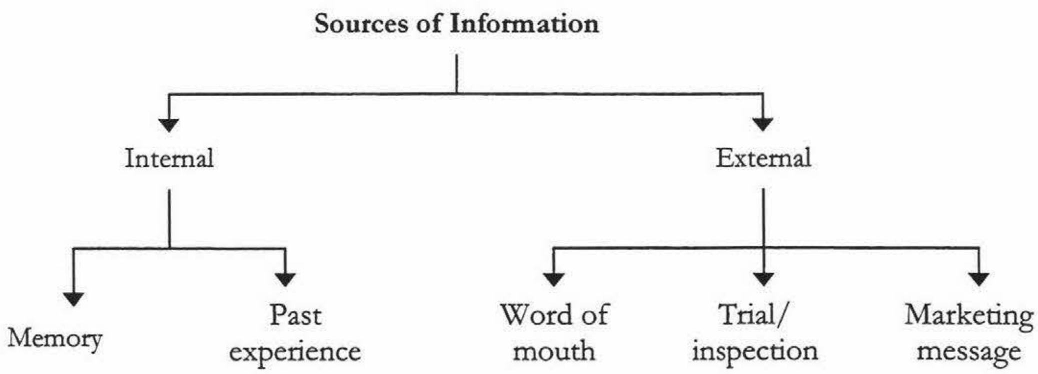

Figure 2.10. Sources of information in the EKB model (*Adapted from* Rice 1993 cited by Bareham 1995).

Sources of information include the media, friends, relations or other significant people (Bareham 1995; Hawkins *et al.* 1983). The relative influence of these information sources varies with the product category and the personal characteristics of the consumer, such as his/her financial status and information-seeking style. Generally speaking, the consumer receives the most information exposure about a product from commercial sources, but the most effective exposures tend to come from personal sources (Kotler 1976).

By relating this to the concepts of image marketing, it can be seen that the information a consumer gathers about a particular product forms an "image" and may be perceived as good or bad, or weak or strong. This image influences the person's decision to buy the product.

2.5.5 ALTERNATIVE EVALUATION

As the individual receives information about a particular product, s/he uses it to clarify the alternatives and their relative attractiveness. Not all buyers are interested in all attributes of a product type (Kotler 1976) but they generally come up with evaluative criteria. Whether there are few or many, these evaluative criteria are likely to differ in their importance to the consumer, with often one or two criteria standing out above all others (Hawkins *et al.* 1983).

2.5.6 PURCHASE DECISION

The evaluation stage leads the consumer to form a set of preferences among the alternative products. Normally, the brand that s/he likes becomes the intended purchase. However, attitudes and purchasing intentions are not completely reliable predictors of actual buying behaviour (Kotler 1976; Hoek *et al.* 1998). Social factors or subjective norms may intervene in the person's purchase decision. For example, a person may have a favorable attitude towards buying a product, but his/her partner does not approve of the product (Kotler 1976). The Fishbein and Azjen model of reasoned action can be used to illustrate this.

2.5.6.1 Fishbein's Theory of Reasoned Action

According to Craig-Lees *et al.* (1995), a consumer can hold a favourable attitude towards a product without intending to purchase the product. The marketer must not only understand the attitude that a consumer holds towards the product, but must also consider the likelihood of purchase (Figure 2.11).

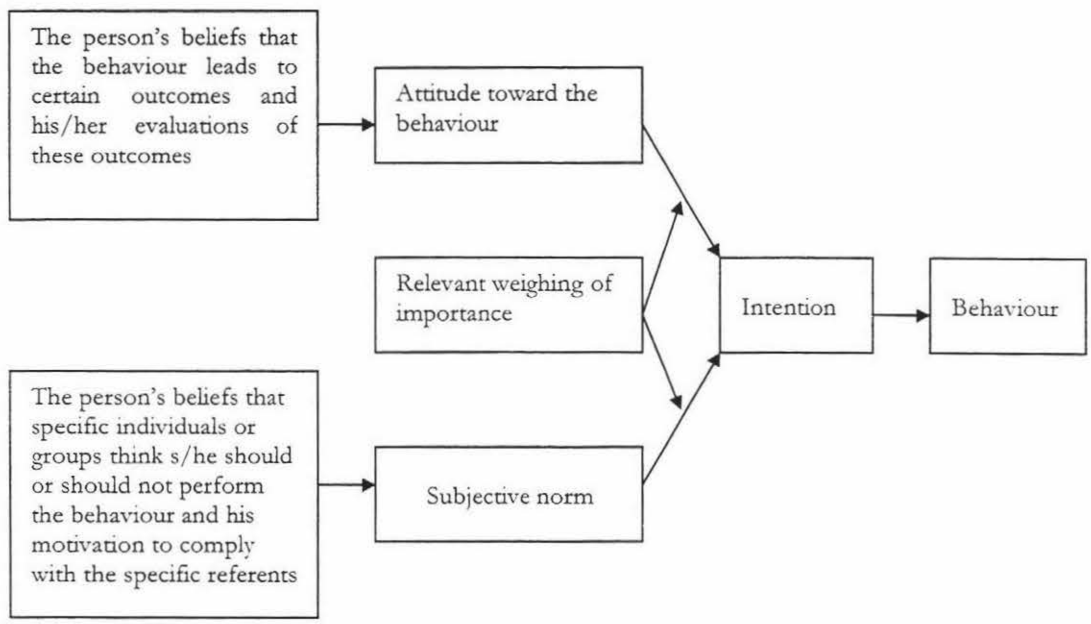

Figure 2.11 The theory of reasoned action (Ajzen & Fishbein 1980).

According to Fishbein's theory of reasoned action, a person's intention is a function of two basic determinants: personal and social influence. The personal factor is termed "attitude toward the behaviour". This is the individual's judgement that performing the behaviour is good or bad, that s/he is in favour or against performing the behaviour. The second factor is termed the "subjective norm". It is the person's perception of the social pressures put on him or her to perform or not perform the behaviour in question. Subjective norm is a person's beliefs that specific individuals or groups think s/he should or should not perform the behaviour (Ajzen & Fishbein 1980). An individual's beliefs about the likelihood of certain outcomes of the behaviour and the evaluation of these possible consequences combine to produce the attitude about the behaviour. At the same time, the individual's beliefs about what other people might think, and the degree to which s/he cares about what other people think, contribute towards developing a subjective norm towards the contemplated behaviour. The individual will then assess the relative importance of the attitude and the norm, and will form an intention of how to behave. The theory, therefore, says that individuals consciously evaluate the consequences of alternative behaviours, before choosing the one that will lead to the most likely favourable consequences (Ajzen & Fishbein 1980; Blythe 1997).

Therefore, an attitude is not a reliable predictor of actual buying behaviour. It gives direction to purchase behaviour but fails to include other factors that may intervene in the decision (Kotler 1976).

2.5.7 POST-PURCHASE OUTCOMES

Product purchase has an important feedback effect on an individual's subsequent product preference. If the purchased brand fails to deliver the satisfaction expected by the buyer, s/he will revise downward their attitude toward the product and may even eliminate it from their set of choices. A satisfying experience, on the other hand, will tend to strengthen an individual's brand preference (Bareham 1995; Kotler 1976).

2.5.7.1 Disconfirmation and Dissonance Theory

Customer satisfaction with a product presumably leads to repeat purchases, acceptance of other products in the same line, and favourable word-of-mouth publicity. Therefore, knowledge about factors affecting customer satisfaction is essential (Cardozo 1965).

Consumers are believed to form expectations of product performance characteristics prior to a purchase (Oliver & Desarbo 1988). The expectations customers have regarding a product depend upon information gathered from a variety of sources (Cardozo 1966). Subsequent purchase and usage reveal actual performance levels that are compared to expectation levels using a "better-than, worse-than" heuristic. If the product is worse than expected, this is labeled as negative disconfirmation, and positive disconfirmation if the comparison is better than expected (Oliver 1980; cited by Oliver & Desarbo 1988).

Post-purchase dissonance occurs when the purchase turns out to be not quite what was expected. It can come about through misunderstanding, mistake or deception, or sometimes through plain old second thoughts or new information arising (Blythe 1997). The mechanism by which it arises is simple. The consumer forms a view of what it will be like to own the product, and will develop a perceptual map of the anticipated benefits. However, if the actual outcomes of owning the product are different, and the expected benefits do not materialize, then the consumer feels a discord (or dissonance) since there is a clash between anticipation and reality.

The consumer will complain about the product to reduce post-purchase dissonance. If s/he does not get any redress from the supplier, s/he will complain about the product to his/her friends and family.

Consumers can take four general approaches to reducing dissonance, these are as follows:

- Ignore dissonant information and look for positive (consonant) information about the product (For example, the car may be slower than you expected, but it's built like a tank!).
- Distort the dissonant information (Sure it's slow, but compared with what? It's faster than a Ford Escort).
- Play down the importance of the issue (So it's slow. I'll get there, won't I).
- Change one's behaviour (Trade it in. Get something else. Go by bicycle.).

In all four cases, consumers used their expectations as a guideline against which to evaluate the product. Their expectations, or the array of products with which they have had previous experience, may form such guidelines. The failure of a product to measure up to these guidelines may result in no initial sale, no repeat sale, and possibly unfavourable word-of-mouth publicity (Cardozo 1966).

2.5.7.2 Scepticism

Since customer satisfaction with a product presumably leads to repeat purchases, acceptance of other products in the same line, and favourable word-of-mouth publicity (Cardozo 1966), negative disconfirmation may result in a backlash against the product or the company.

Research by Newell *et al.* (1998) about the effects of misleading environmental claims on consumer perceptions of advertisements showed that consumers perceived the deception to have a negative effect on the advertiser's credibility, their attitudes toward the advertisement and the brand, and their purchase intent.

Negative publicity generated by one firm's poor environmental marketing performance can have detrimental effects on other firms (Mendleson & Polonsky 1995). Therefore, if producers of consumer goods are to continue to use green marketing as a strategic tool (Coddington 1993; Ottman 1993), they need to find methods of making claims credible to consumers (Mendleson & Polonsky 1995).

2.6 ISSUES IN RELATION TO THE NEW ZEALAND DAIRY INDUSTRY'S IMAGE

2.6.1 INTRODUCTION

When the environment rose to prominence in the late 1980s, businesses – from smart start-up entrepreneurs all the way to the Fortune 500 – were quick to jump on the environmental "bandwagon" (Frause & Colehour 1994). Some organisations, however, appear to be simply "exploiting" consumers' increased environmental awareness, i.e. by changing their marketing claims without modifying their products or production process (Mendleson & Polonsky 1995). Many green products that were available in the late '80s, when environmental awareness burgeoned, were made from material and technology that were inferior alternatives (Ottman 1995). Another problems facing environmental marketing is false or misleading advertising (Zinkhan & Carlson 1995; Newell *et al.* 1998).

Misleading claims on the part of the industry have resulted in consumers becoming sceptical of green marketing claims (Ottman 1995). According to Davis (1992), if consumers begin to feel that their genuine interest in the environment is being exploited, they will rebel and no longer seek out or demand products that are in fact less damaging to the environment.

The trading of New Zealand agricultural products on its "clean and green" image in the international marketplace has already proved fruitful. Research shows that overseas consumers appear to have a very positive impression of New Zealand (Hewison 1995). However, there are gaps between New Zealand's perceived image and reality. For example, New Zealand has a high relative energy use per capita compared with other countries. It also uses considerable quantities of fertiliser and pesticides in agricultural production. New Zealanders generate large amounts of waste compared with many countries, and are amongst the highest users of cars per capita in the world (Hewison 1995).

Until recently, food production practices in New Zealand were also much the same as in other countries – characterised by heavy use of pesticides, with very little regard for the environment, and scant consideration for long range sustainability (Taylor 1996). According to Walker and Morrris (1996), New Zealand farming practices contribute to water and air pollution, soil erosion and loss of wildlife habitat. There are biodiversity concerns that increases in food output are being achieved at an "unacceptable cost" to the natural environment and to the future well being of the population.

As New Zealand's image in the international dairy markets is promoted as being sensitive to both environmental and animal welfare issues, the acceptability of some farm management practices and the use of some technologies are being re-evaluated (Verkerk *et al.* 1997). The New Zealand dairy industry is being challenged to show that the practices used by the majority of its farmers are in fact acceptable to consumers and to advocates for animal welfare and the betterment of the land resource (Bodeker 1998).

In this section, the major issues that are believed to have an impact on the New Zealand dairy industry's "clean and green" image are reviewed. These include aspects of animal welfare, pollution, fertiliser run-off into lakes and streams, and other environmental issues.

2.6.2 ANIMAL WELFARE ISSUES

In the agricultural sector, animal management practices on farms are aimed at ease of operation and maximising profit within the constraints of climatic conditions and the economic environment (Dairy Exporter 1997). However, animal welfare has become a market signal as consumers, both overseas and domestic, "are making purchase decisions on how animals are treated – not just at slaughter but during their production as well" (Kerr 1996).

According to Mark Masters, Dairy Section chairman for Federated Farmers, "NZ dairy farmers must work to ensure that animal welfare is not used as a trading barrier" (Dairy Exporter, March 1997 p. 67). Robin Campbell, Sheep Council chairman also stated that "the ideal is to have animal welfare treated as a quality issue because of its implications for access and market opportunities" (Stringleman 1993 p.7).

2.6.2.1 Tail Docking

Many farms in New Zealand with large herds milk in rotary and herringbone dairies where cups are applied through the back legs rather than in front of them. As discussed in Section 2.2.5, to prevent messy tails swiping the faces of the milking staff when applying the cups, the practice of docking cows' tails was developed (Dairy Exporter 1997).

Tail docking was originally introduced for product hygiene and public health reasons (Dairy Exporter 1995). At least 60% of dairy farmers dock cows' tails (Dairy Exporter 1997) - to keep udders clean and to minimise the risk of leptospirosis infection to milking staff (Dairy Exporter 1995; Dairy Exporter 1997). Consumers from animal-welfare sensitive countries, however, often perceive tail docking to be cruel. According to Dr. Lindsay Matthews of AgResearch (Ruakura), tail docking is prohibited in Europe and consumer concerns about tail docking of dairy cattle have become controversial (Norman 1995)

Animal welfare lobbyists believe that animals should not be adapted physically solely for human convenience (Dairy Exporter 1997) and that tail docking falls within this category. Eliminating tail docking in dairy systems might entail some inconvenience and risk to farmers. Milking staff would be subject to the risk of infection by leptospirosis. It would also increase the risk of milk becoming contaminated from dirty udders.

The Animal Welfare Advisory Committee of New Zealand opposes the docking of dairy cows' tails on the grounds that it causes unjustifiable mutilation and a degree of distress to many animals over their lifetime (Dairy Exporter 1995). According to the Animal Protection Act 1960, it is an offence to dock, or cause or procure to be docked, the tail of any bovine animal unless the docking is performed or supervised by a veterinarian. Prof. Des Fielden, chairman of the Animal Welfare Advisory Committee (AWAC) is now asking for farmers to support the proposed Animal Welfare Bill which will replace all existing animal welfare legislation. The new Act will be based on the promotion of animal welfare by "a duty of care" rather than the more passive and reactive prevention of cruelty approach used in the past. The Bill will have both humanitarian and trade implications to assure existing and potential customers that New Zealand shares their concerns (Dairy Exporter 1995).

2.6.2.2 Induction

New Zealand's seasonal spring calving production system demands a lot from cows, requiring them to conceive within a short period of time. As mentioned earlier in Section 2.2.5, helping late-calving cows to conceive earlier and produce more milk led to the practice of induction (Dairy Exporter 1997). Induction of premature birth by the administration of drugs has been widely used to ensure that cows are in milk early in the spring, make use of available feed and have a better chance of conceiving and subsequently calving at the correct time in the following season (Verkerk *et al.* 1997). The drug is usually injected up to five to six weeks before the expected date of normal calving and causes the cow to calve about two weeks after injection, or about three to four weeks earlier than it would otherwise have calved normally (Holmes & Wilson 1987). Induction is now regarded by many as ethically unacceptable (Verkerk *et al.* 1997). It is regarded as unsuitable from an animal welfare perspective as it causes a marked increase in the number of calf deaths (New Zealand Dairy Board Environmental Task Force 1996; as cited by Verkerk 1997).

In a 1982 study from the Waikato region, 89% of farmers surveyed had induced at least one cow and overall 10% of all cows had been induced that season (Macmillan *et al.* 1990). In the companion Taranaki study, 8% of cows from responding farms were induced, while 24% of the farmers had not induced cows-mainly for ethical reasons (Bunny 1992). A similar survey conducted in the Waikato in 1995 found that more than 50% of herd-owners were not in favour of inductions, although many were still using the practice (Matthews, pers. comm. in Verkerk *et al.* 1997).

2.6.2.3 Mob Stocking

New Zealand's dairy farming is characterised by grazed pasture as the main component of the cow's diet, and livestock, in general, are not housed at any time of the year (Holmes &

Wilson 1987). Because of these characteristics, the New Zealand Dairy Board in Britain launched a campaign to promote Anchor butter as "free range". The new Anchor television advertisement showed a Jersey calf breaking out of an egg, with the tune *Born Free* playing in the background (Mathias 1998). According to Christine Tacon, marketing manager of Anchor Food UK, "the company wanted to show British shoppers that New Zealand cows are out in the open air all year round and eat natural vegetation while theirs are inside for half the year and are mainly fed meal and silage" (*in* Mathias 1998 p. 6). However, according to Mark Masters, Dairy Section chairman of Federated Farmers, New Zealand's all-year-round grazing has a disadvantage because many people can observe the dairy farmer's management of animals. The view from a tour bus over hedges exposes dairy farmers to all manner of scrutiny ranging from those who are totally ignorant of all matters pertaining to agriculture, to farmers from other parts of the globe keen to observe how New Zealand dairy farmers succeed (Dairy Exporter 1997). The "free range" dairy farming concept entails some animal welfare issues because some people may perceive it negatively.

An article in the Dominion (1996) stated that agriculture officials were concerned that some farmers were neglecting animal welfare in the winter months when cows were being kept in muddy paddocks and provided with inadequate feed, shelter and water. According to Ross Burnell, a spokesperson for the Ministry of Agriculture and Fisheries (MAF), a number of enquiries were received from concerned members of the public and tourists who saw cows standing in deep mud and looking miserable (MAF Quality Management 1996; The Dominion 1996). Ross further stated that "although these animals are receiving adequate feed and water, to tourists the situation looks worse than it is. It may not be enough to simply provide stock with the minimum amount of feed required and assume that all is well. Half of their daily hay ration may be trampled into the mud. There is no dry ground for the stock to lie on and they are being stressed" (MAF Quality Management 1996). It should be noted that the winter and spring of 1996 were especially wet and cold in the Waikato (a major dairying region). Overcoming the effects of the very wet ground conditions, without access to housing or feed pads, is very difficult and expensive for farmers. Of course consumers do not necessarily identify with these practical challenges.

2.6.2.4 Bobby Calf Handling

A "bobby calf" is a calf which is at least 4 days old and is destined for slaughter for human consumption (Animal Welfare Advisory Committee 1997). In general, calves are reared for two main purposes: the heifers can become replacements in the milking herd and the bulls can be grown into bull beef (Holmes & Wilson 1987). However, surplus female calves from first calving heifers and late-calving cows, and male calves are normally sold as bobby calves (Dairy Exporter 1991). They are normally placed in pens and left at the farm gate to be collected for slaughter.

However, there have been some concerns that this practice has caught the attention of the public, especially the tourists. Tourists can easily observe New Zealand farming practices across the country. Bobby calves in pens or crates around the gateways of dairy farms may not be acceptable in the eyes of some passing tourists, and this poses a challenge to dairy farmers. Other countries also ban the transport of young calves (Dairy Exporter 1993), and the practice might affect the "clean and green" image of the industry.

Bennett's (1996) survey in the US showed that veal production using "crates" and transport of animals without food or water were the considered by the respondents as the most unacceptable aspects of livestock production system (Table 2.5).

Table 2.5 The acceptability of livestock production system.

System	Rating of acceptability* (% of respondents)				
	1	2	3	4	Don't Know
Veal production with calves kept in confined "crates"	64	23	4	4	4
Battery egg production where hens are kept in small wire cages	29	43	15	7	7
Pig production where sows are kept in "crates" for 4-8 weeks each year	31	38	14	9	9
Transport of farm animals with no food or water for 12 hours	34	42	15	7	3
Transport of farm animals with no food or water for 24 hours	74	15	5	4	2

* 1 =very unacceptable, 2=somewhat unacceptable, 3=relatively acceptable, 4=completely acceptable.

2.6.3 ENVIRONMENTAL ISSUES

The dairy industry has the potential to be a highly visible polluter. Discharges from farm dairies and from manufacturing sites are highly biodegradable and could, if incorrectly discharged, damage the environment (Marshall 1996). There is a concern amongst regional councils and environmental groups about the leaching of effluent from dairy ponds into natural waterways and other groundwater (Dairy Exporter 1997). According to an AgResearch scientist, "the potential pollution of wastes from NZ's dairy farms is equivalent to a population of 4 to 5 million" (Dairy Exporter 1993). For example, a survey of Taranaki dairy farms showed that over 40% of the groundwater samples from wells had nitrate-N levels exceeding the maximum acceptable concentration set for New Zealand drinking water (Clark 1997).

Public concern about environmental pollution resulted in the Resource Management Act (1991) which promotes the sustainable management of natural and physical resources. Under the Act, farm dairy effluent is subject to both Regional Council and Dairy Industry regulations (Dairying and the Environment Committee 1996).

The NZDB Dairy Farm Code of Practice states that "all effluent from a dairy farm should be dispersed onto the land or treated before being discharged into the natural waterway or public drain. A water right or general authorisation is required for all farm dairies. These will be monitored at a regular intervals to ensure compliance." Dairy farmers now face up to $200,000 in fines or two years in prison, if they do not comply with the Resource Management legislation in relation to the disposal of dairy effluent (NZ Farmer 1994; Dryden & Radich 1998).

According to Bodeker (1998), major dairy companies and farmer groups meet with all of the regional councils on the interpretation of Resource Management Act (RMA). As a consequence, a degree of consistency has been applied to the requirements of dairy farmers with respect to effluent disposal. Research is also being carried out to improve the design of effluent disposal where land application is not practical (Bodeker 1998).

The Dairying and Environment Committee, an industry group represented by staff from Dairy Research Institute, Livestock Improvement Advisory, Dairy Research Corporation, Federated Farmers, New Zealand Dairy Board and Dairy Companies had discussions with the regional councils on the interpretation of RMA. The committee was able to come up with a degree of consistent requirements for effluent disposal in dairy farms. The committee also prepared technical manuals and implemented a series of farmer seminars on all aspects of the environmental impact of dairy farming. As a result, dairy farmers and the processing industry have an internationally acceptable series of guidelines for environmental management (Bodeker 1998).

2.6.4 TOTAL QUALITY MANAGEMENT

Overseas countries, especially the European Union, as a result have imposed a stricter regimen on the quality of New Zealand milk (Bodeker 1998), thus dairy farmers are being encouraged to adopt a formal approach to quality management (MacDonald 1998). It is not enough that the final product passes the acceptable quality standard: it should pass the quality standard set for milk before it leaves the individual farm (Bodeker 1998).

As New Zealand seeks to enhance its "clean and green" image, farmers are coming under the scrutiny of quality conscious customers seeking to ensure that the highest standards of animal husbandry, land management and food production are practiced. Animal welfare and resource management are now considered to be important quality "factors" in the dairy industry (MacDonald 1998).

2.7 Conclusion

The choice to buy green products may come from ethical reasons, or it might be a status symbol. But whether the reasons are an honest attempt to help "save the earth" from environmental catastrophe or simply a reflection of the latest trend in fashion, it is a fact that the production of green products is mostly market driven. This driving force has changed the direction of profit-oriented business to improve their systems so that they are environmentally and economically sustainable. This same driving force motivates New Zealand dairy industry to develop new strategies in the production processing or marketing of milk to meet market demands.

The bulk of New Zealand's dairy products are exported and trade on a "clean and green" image. The image is based on New Zealand's relatively small population, spaciousness and rolling green grasslands. The New Zealand dairy industry's dependence on export makes it vulnerable to changes in consumers' expectations. Negative information about farming practices may affect consumers' attitudes towards purchasing New Zealand dairy products, thus its "clean green" image needs to be backed-up by audit evidence.

Methodology

Chapter Three

3.1 INTRODUCTION

The selection of the methods most suitable for answering the research question is a critical aspect of any research (Williams 1997). According to Holbert & Speece (1993), research method and design is about how to get what the researcher decided s/he needs to get. The choice of research methods depends on the type of research questions to be answered and the degree of control the researcher has over the subject to be investigated (Yin 1994).

In this chapter, the research methods used to achieve the research objectives are described. The selection and justification of the research methods are discussed in Section 3.2. In Sections 3.3 and 3.4, the data collection and analysis process for the university and supermarket surveys are described. The data collection protocol and analysis for the New Zealand dairy farmers' survey are discussed in Section 3.5, while the data collection and analysis process for the Philippine interviews are presented in Section 3.6.

3.2 SELECTION OF THE RESEARCH METHODS

The main objective of this study was to investigate the perceptions held by different stakeholders of the "clean and green" image of New Zealand and its dairy products, and whether these perceptions affected consumers' decisions to buy dairy products (Section 1.4).

Surveys were used to collect information on the perceptions and behaviour of different groups of consumers, both in New Zealand and overseas. The same method was used to gather information on the opinions of New Zealand dairy farmers about the industry's "clean and green" image and their current farming practices. Personal interviews with representatives of the different sectors in the Philippine dairy industry were conducted to enable a comparison with another dairy farming system.

Research questions are the primary determinant of the research methods (Maxwell 1996). According to Yin (1994), the basic categories of research questions are "who," "what," "where," "when," "how," and "why." These questions could be answered by different research methods (Table 3.1).

Table 3.1 Relevant situations for different research methods (Adapted from Yin 1994).

Research Methods	Research Questions	Requires control over events?
Experiment	how, why	Yes
Survey	who, what, where, how many, how much	No
Case Study	how, why	No

The research's Objectives 1 to 3 (Section 1.4) aimed to investigate opinions, attitudes, behaviour, expectations, knowledge and intentions of specific groups of people in relation to New Zealand's "clean and green" image and its dairy products. Examples of questions that needed to be answered to achieve these objectives are: *"What do consumers think of New Zealand dairy products?"* or *"What do New Zealand dairy farmers think of their current farming practices?"* or *"What are the most important attributes of dairy products that influence consumer buying decisions?"* and *"How much more are consumers prepared to pay for dairy products that are environmentally-friendly?"* Although experiments and case studies can help answer these questions, the required size and the cost of doing the research limited their usefulness for this research.

According to Yin (1994), survey strategies are an advantageous method when the research goal is to describe the incidence or prevalence of an event, or to predict the likelihood of certain outcomes. Neuman (1997) also stated that surveys are appropriate for research questions about self-reported beliefs and behaviours. Survey research can be used to study large and small populations by selecting and studying samples chosen from the populations to discover the relative incidence, distribution, and interrelations of sociological and psychological variables (Kerlinger 1986). Therefore, the survey method was chosen as the appropriate means to produce the quantitative information needed to meet Objectives 1, 2 and 3.

Research Objective 4 of the research (Section 1.4) focussed on an assessment of current dairy farming practice in New Zealand and comparing this with the dairy farming systems used in the Philippines. The principal research questions that needed to be answered for this objective were "how" and "why." These questions are explanatory in nature; case studies and experiments are therefore the preferred research strategies rather than surveys (Yin 1994). In-depth answers to questions were required, i.e. *"How do Philippine dairy farming practices differ from New Zealand?"* or *"Why do Filipino farmers use concentrates to feed their cows?"* Case studies could provide the data to answer these questions, thus they were chosen as the appropriate method for Objective 4.

3.3 CONSUMERS

The method chosen for data collection on consumers was a convenience survey. The Massey University international students and the New Zealand, Filipino and British supermarket customers were surveyed to investigate consumers' perceptions and buying behaviour in relation to New Zealand, its "clean and green" image and its dairy products.

3.2.1 UNIVERSITY SURVEY

As explained in Section 1.4, one of the aims of this research was to investigate the perceptions of international consumers of New Zealand and its dairy products. Massey University's international students were considered as an initial and convenient group to represent overseas consumers. They provided information on how they perceived New Zealand prior to their arrival, and whether their expectations had been met since their arrival in the country.

The Massey University International Students' survey covered four areas: 1) the students' perceptions of New Zealand and its dairy products (as they were before they came to New Zealand); 2) the relative importance of certain attributes of dairy products in their buying decisions; 3) their buying behaviour in relation to New Zealand dairy products; and 4) changes in their perceptions of New Zealand.

Sampling Method. Due to the Privacy Act of New Zealand, it was impossible to obtain the names and actual number of international students from the University registry. The researcher, therefore, had to use a non-probability sampling method. A "snowball" method was used for the survey. The researcher distributed the self-accomplished questionnaires among her international friends and acquaintances, using a "drop-off and pick-up" method. Some of her international friends volunteered to distribute the questionnaires to their other friends and acquaintances using the same method. The completed questionnaires were collected by the researcher from her volunteers. Out of 120 questionnaires given out, 91 were returned; a response rate of 76%.

There are no appropriate statistical techniques for measuring the random sampling error associated with non-probability sampling (Zikmund 1994). Therefore, the sample can not be considered to be an accurate representative of the total population of Massey University's international students. The sampling method may also introduce some bias. According to Zikmund (1994), snowball sampling is likely to introduce bias because a person who is known to someone (already part of the sample) has a higher probability of being similar to the first person.

Survey Design and Implementation. According to Zikmund (1994), "a survey is only as good as the questions it asks". The questionnaire should be relevant and accurate in order to achieve the researcher's purposes. In order to achieve these, the researcher should know the following: 1) what should be asked; 2) how should each question be phrased; 3) in what sequence should the questions be arranged, and; 4) what questionnaire lay-out should be used (Zikmund 1994).

In the university survey, a 3-page survey instrument, consisting of 18 questions with coding boxes on the right hand side, was used (*Appendix 1*). For the respondent's convenience, the questionnaire was brief and took five to ten minutes to complete. Closed- and open-ended questions were both used in the questionnaire. An open-ended question is a question that leaves the respondent free to respond in a relatively unrestricted manner, while a closed-ended question restricts the choice of responses by giving the respondents fixed responses from which to choose (Smith 1981; Zikmund 1994; Neuman 1997). According to Neuman (1997), both closed-ended and open-ended questions have advantages and disadvantages (Table 3.2). However, the issue is not which type of question is best, but under what conditions it is most appropriate.

Table 3.2 Advantages and disadvantages of open-ended and closed-ended questions (Neuman 1997).

Advantages of closed-ended questions	**Disadvantages of closed-ended questions**
▪ They are easier and quicker for respondents to answer. ▪ The answers of different respondents are easier to compare. ▪ Answers are easier to code and statistically analyse. ▪ The response choices can clarify question meaning for respondents. ▪ Respondents are more likely to answer about sensitive topics. ▪ There are fewer irrelevant or confused answers to questions. ▪ Less articulate or less literate respondents are not at a disadvantage. ▪ Replication is easier.	▪ They can suggest ideas that the respondent would not otherwise have. ▪ Respondents with no opinion or no knowledge can answer anyway. ▪ Respondents can be frustrated because their desired answer is not a choice. ▪ It is confusing if many (e.g. 20) response choices are offered. ▪ Misinterpretation of a question can go unnoticed ▪ Distinctions between respondent answers may be blurred. ▪ Clerical mistake or marking the wrong response is possible. ▪ They force respondents to give simplistic responses to complex issues. ▪ They force people to make choices they would not make in the real world.
Advantages of open-ended questions	**Disadvantages of open-ended questions**
▪ They permit an unlimited number of possible answers. ▪ Respondents can answer in detail and can qualify and clarify responses. ▪ Unanticipated findings can be discovered. ▪ They permit adequate answers to complex issues ▪ They permit creativity, self-expression, and richness of detail. ▪ They reveal a respondent's logic, thinking process, and frame of reference.	▪ Different respondents give different degrees of detail in answers ▪ Responses may be irrelevant or buried in useless detail. ▪ Comparisons and statistical analysis become very difficult. ▪ Coding responses is difficult. ▪ Articulate and highly literate respondents have an advantage. ▪ Questions may be too general for respondents who lose direction. ▪ Responses were written verbatim, which is difficult for interviewers. ▪ A greater amount of respondent time, thought, and effort are necessary. ▪ Respondents can be intimidated by questions. ▪ Answers take up a lot of space in the questionnaire.

According to Neuman (1996), mixing open-ended and closed-ended questions in a questionnaire can reduce the disadvantages of question type. Mixing them also offers a change of pace which can be helpful for the respondents.

In Question 1, an open-ended question was used to determine the student's perception of New Zealand prior to his/her arrival in the country. An open-ended question was used to allow respondents to express their own thoughts and perceptions. A closed-ended question was not appropriate because it can suggest ideas that respondents would not have.

In Question 2, respondents were asked if they consume dairy products, using a closed-ended question. Given responses to this question were: 1) never; 2) sometimes and 3) often. This question was used simply to determine whether the respondents were dairy consumers, the target group of the research.

In Question 3, respondents were asked if New Zealand dairy products were available in their country. Given responses were: 1) yes; 2) no; 3) don't know. This question was used to measure the students' level of awareness on the availability of New Zealand dairy products. As a follow-up, in Question 4 respondents were asked to name dairy products or brands that they recalled were available in their country. Question 4 was an open-ended question. As the range of New Zealand dairy export products is very large, with very many brands, it was impractical to make Question 4 a closed-ended question.

In Question 5, respondents were asked with a closed-ended question if they bought New Zealand dairy products in their home country. The response categories were "yes" and "no". Respondents who answered "yes" were asked to answer Questions 6 and 7 while those who answered "no" had to proceed to Question 8.

In Question 6, respondents were asked if their perceptions of New Zealand influenced their decision to buy its dairy products. Response categories were "yes" and "no". The purpose of this question was to determine whether New Zealand's image had an effect on the respondents' buying decisions. Respondents who answered "yes" in Question 6 were asked to answer Question 7, while those who answered "no" were asked to proceed to Question 8.

In Question 7, an open-ended question was used to ask the respondents how their perceptions of New Zealand influenced their decision to buy its dairy products. In Question 8, six statements about New Zealand's dairy products were given to measure the respondents' opinions about New Zealand dairy products before they came to the country. The format used for the question is the *matrix question format* (or grid question) (Table 3.3). A matrix question format is a compact way to present a series of questions using the same response categories (Neuman 1997).

Table 3.3. Matrix question format used to measure the opinions of international students towards New Zealand dairy products.

8. What did you think of New Zealand dairy products before you came to the country?

That they were....	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
Healthy and safe	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Produced in an animal-friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Produced in an environmentally - friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Good value for money	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Attractive and well-presented	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Tasty	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

In Question 9, six attributes of dairy products were presented and respondents were asked to rank each attribute according to its importance for buying dairy products. The six dairy product attributes are shown in Table 3.4.

Table 3.4 Question format used to obtain respondents' ranking of preferred dairy product attributes

Environmentally-friendly	________________
Taste	________________
Health and Safety	________________
Appearance and presentation	________________
Price	________________
Animal Welfare	________________

The "most important" attribute was given a rank number of 1 and the "least important" attribute was given a rank number of 6. Respondents were asked to give a different rank to each attribute in order to determine the relative importance of an attribute in comparison with the other attributes. As a self-completion questionnaire was used, it was decided to print six sets of questionnaires in order to avoid bias. In each set, attributes were rearranged in a different order.

In Question 10, respondents were asked, with a closed-ended question, to determine if they preferred to buy New Zealand dairy products now that they live in the country.

In Question 11, six statements were given to determine changes in perceptions now that the respondents live in New Zealand (*such as:* "*New Zealand is more polluted than I expected;*" "*New Zealanders are more concerned about the environment than I expected.*") again using the *matrix question format.* Response categories were as follows: 1 - strongly disagree; 2 – disagree; 3 – neither; 4 – agree; and 5 - strongly agree. To reduce bias, the statements were phrased differently. For example, an "agree" or "strongly agree" response for the statement: "*New Zealand is more polluted than I expected,*" meant a less favourable image of New Zealand, whereas the statement: "*New Zealanders are more concerned about the environment than I expected,*" meant that the respondent's perceptions had changed positively.

In Question 12, respondents were asked with a closed-ended question if they would buy New Zealand dairy products when they return to their home country. In Questions 13 to 18, the respondents were asked personal profile and background questions such as age, gender, programme of study, country of origin and duration of stay in New Zealand. The purpose of these questions was to determine if these factors affected the respondents' opinions and buying behaviour.

The questionnaire was pre-tested with ten international students to check for errors. Based on the pre-test, minor corrections were made before the questionnaires were finalised and printed.

Data Analysis. Completed questionnaires were checked for errors, and answers to closed-ended questions were coded. Responses for open-ended question were analysed and similar responses were categorised and given a code. In Question 1, for example, responses like *fresh air*, *lots of greens*, *clean country*, *no pollution etc.* were categorised as "clean and green"; while responses like *sheep and cows*, *kiwifruit*, *pasture land* etc. were categorised as "agricultural country."

All data files were imported into SPSS (Statistical Package for Social Science) for statistical analysis. SPSS for Windows provides a powerful statistical analysis and data management system in a graphical environment, using descriptive menus and simple dialog boxes (SPSS 1996). All variables were given a name for identification. Some variables were recoded for the analysis (i.e. respondent's age was calculated by deducting the year of birth from the present year). An exploratory data analysis using descriptive statistics was completed to check frequency distributions, outliers and missing values. Responses to all questions were cross-tabulated to determine the frequencies and corresponding percentages for each response.

The mean value of the five-point scale statements in Questions 8 and 11 were determined in order to compare these perceptions in relation to region of origin. The frequencies and the corresponding percentages of responses were calculated. To simplify data presentation, the five-point scale statements were regrouped as follows: 1 - strongly disagree and disagree; 2 - not sure and 3 - agree and strongly agree.

For Question 9, the ranking of six attributes of dairy products were subjected to uni-variate analysis to determine the frequency of each attribute in each corresponding rank. The rank mean values of the different attributes were calculated to determine their relative importance for each country group, as well as for the overall sample.

One-way analysis of variance (ANOVA) was performed to determine the differences in perceptions and the importance of the different dairy attributes in relation to region of origin. The USA and Europe group was not included in the analysis because the number of respondents from these regions was very small. A homogeneity test was performed to test the equality of the group variances and heterogeneous variables were not included in the test. When differences existed among the means, *post hoc* tests were performed using the Least Significant Difference (LSD) and Bonferroni to identify which of the means differed.

3.2.2 SUPERMARKET SURVEYS

Three separate supermarket surveys were conducted: one in New Zealand, one in the Philippines and one in England. Each survey used a different questionnaire and method of implementation, as will be explained in the following sub-sections. The data from each survey were analysed separately. Questions which were included in all three surveys, however, were compiled for further analysis in order to compare the perceptions and buying behaviour of the three different consumer groups.

3.2.2.1 Sampling Method & Survey Implementation

All three surveys used an intercept method, questioning consumers in supermarkets during or directly after shopping. For the New Zealand survey, a "convenience sampling method" was used. Convenience sampling refers to the procedure of obtaining units or people who are most conveniently available. This is generally used to obtain large number of questionnaires quickly and economically (Holbert & Speece 1993; Zikmund 1994; Hoek 1998). In the Philippines and UK surveys, however, the target group was limited to those who purchased New Zealand dairy products. This sampling method is called "judgement or purposive sampling." It is a non-probability sampling technique in which the sample selection is based upon the judgement about some appropriate characteristic required of the sample members (Zikmund 1994; Holbert & Speece 1993). The drawback of this method, as with other non-probability sampling, is that projecting the data beyond the sample is not statistically valid, thus, the sample cannot be considered to be an accurate representation of the total population.

The method used for the survey was face-to-face intercept interviews. The survey in New Zealand was conducted at two major supermarkets in Palmerston North, while the Philippine survey was conducted in a major supermarket in the researcher's hometown, Bacolod City. The UK survey was conducted in Ashford, a town located between Reading and London. A New Zealand student who was studying on an exchange programme in England volunteered to conduct this survey. Practical considerations and resource limitations were the basis of the choice of all survey locations.

According to Zikmund (1994), the problem with intercept surveys is that they may create some bias because each supermarket may have its own customer characteristics. However, intercept surveys may be appropriate when demographic factors are not likely to influence the survey's findings or when the target group is a special population segment (Zikmund 1994).

New Zealand. Prior to the survey, permission was sought from the manager of the supermarket. A total of 102 shoppers were surveyed inside the shop but directly outside the check-out counters, and given a questionnaire. The respondents were asked to read the questionnaire and answer the questions while the researcher filled-in the answers for them. The survey was conducted at different times of the day, and on different days of the week. Halfway through the survey, however, some problems were encountered. The supermarket was worried that the survey caused some delay among their customers and required the survey to be done outside the supermarket. Asking customers to answer the survey questions outside in the car park, created some difficulty, therefore, permission was sought from another supermarket, where the survey was completed.

The Philippines. Prior to the researcher's visit to the Philippines in December 1998, letters were sent to five supermarkets in Bacolod City, seeking permission to conduct surveys. Due to the holiday rush, however, only one company replied and gave consent to the request. This supermarket is located in the biggest shopping mall of the city and caters for different market segments.

Since the target sample of the survey was limited to shoppers who bought New Zealand dairy products, the researcher had to intercept them inside the shop as they selected their purchase from the shelf. The Christmas holiday shopping rush, however, caused some difficulty in approaching shoppers. According to Zikmund (1994), the incidence of refusal is high in intercept interviews because individuals may be in a hurry. Different New Zealand dairy products were also located in different shelves which made the survey more difficult. Therefore, a new strategy was implemented.

With the permissions of the supermarket manager and the local distributor of New Zealand dairy products, the researcher organised a merchandise promotion and announcements were posted inside the shop. Shoppers who bought New Zealand dairy products went into a draw with special give-aways (Anchor milk products, New Zealand calendars etc.) by showing their proof of purchase and by participating in the survey outside the check-out counter of the supermarket. Monetary or gift incentives are effective in increasing response rates (Zikmund, 1994; Cooper & Schindler 1998). The respondents filled-in the questionnaires themselves. A total of 100 responses were collected in 5 days. Two questionnaires, however, were not filled-in properly and were excluded from the analysis.

UK. Like the Philippine survey, the target sample was limited to the British shoppers who bought New Zealand dairy products, therefore, judgment or purposive sampling was used. Prior to the survey, permission was sought from the supermarket management. Like the New Zealand survey, shoppers were intercepted, only this time inside the shop. The survey volunteer stood near the shelf where New Zealand dairy products were displayed, and approached the shoppers who purchased the products. Respondents were also given a questionnaire to be read, while the survey volunteer helped them to fill in the details. Completed questionnaires were sent back to New Zealand for analysis.

3.2.2.2 Survey Instrument.

As noted earlier, three sets of questionnaires were developed for the three supermarket surveys (*Appendix 2-4*). Each questionnaire consisted of two pages, with coding boxes on the right hand side. The questionnaires were brief and took approximately five minutes to complete. Although the three surveys were different, as they targeted different customer groups, quite a few questions featured in all three surveys to enable comparisons among the groups of customers.

To determine consumer preference, New Zealand respondents were asked with a closed-ended question, if they preferred to buy New Zealand dairy products rather than those from other countries. An open-ended question was used to determine the purchase frequency of dairy products. Dairy products (i.e. butter, cheese, fresh milk, etc.) were presented and respondents were asked how often they bought each product. The "other" option was included for dairy products that were not specified on the list.

Filipino and British respondents were asked if they knew where the dairy product they purchased came from. This question was included to determine their level of awareness about New Zealand dairy products. The respondents were asked (with an open-ended question) to identify the New Zealand dairy products they purchased. The main purpose of this question was to obtain confirmation that the respondent had indeed bought New Zealand dairy product. An open-ended question was used to determine the purchase frequency of New Zealand dairy products.

A closed-ended question was used to ask the Filipino and British consumers if the fact that the dairy product they purchased came from New Zealand influenced them to buy it. The response categories were: "yes," "no" and "not sure." Respondents who answered "yes" to the question were then asked, through an open-ended question, to explain how they were influenced. Respondents were further asked if they heard had of the expression "clean and green." Respondents who answered "yes" were then asked with an open-ended question to explain what "clean and green" meant to them. The respondents were then asked if they thought New Zealand was "clean and green."

As for the university survey, six statements were presented to the supermarket respondents to measure their opinions about New Zealand dairy products. But, unlike the university surveys, where respondents were asked what they thought of New Zealand dairy products before they came to the country, the supermarket respondents were asked about their opinions of New Zealand dairy products compared to those from other countries (Table *3.5*).

Table 3.5. Question format to measure consumer opinions of New Zealand dairy products compared to those from other countries.

What do you think of New Zealand dairy products compared to those from other countries?

They are....	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
Healthier and safer	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Produced in a more animal-friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Produced in a more environmentally-friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Better value for money	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
More attractive and better presented	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Tastier	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Similarly, the six attributes of dairy products were presented to the consumers, who were asked to rank each attribute according to its importance to them in buying dairy products. Each dairy attribute was provided a blank space for the respondents to fill-in the rank as (1=most important; 6=least important) shown in Table 3.4.

Respondents from all three supermarket were asked with a closed-ended question if they were willing to pay more for dairy products that were identical to others except that they were produced in an "environmentally-friendlier" or "animal-welfare friendlier" way. The response categories were: "yes," "no" and "don't know". An open-ended question was used to determine the percentage increase they would be willing to pay for these products.

To develop a personal profile, respondents were asked their gender and age, using a closed-ended question. The age group brackets were: 30 & below; 31-40; 41-50; 51-60 and 60 and above. Age can be a sensitive issue and it was believed that the use of age group brackets would reduce refusal rates.

An open-ended question was used to determine the respondent's occupation. There are many types of occupations and providing response choices can be confusing. Also, people from different countries may perceive the same terms quite differently. For example, in the Philippines the term *farmer* generally refers to poor individuals who work on a small piece of land for a meagre living, whereas in New Zealand and UK, a *farmer* can be the owner of a huge farm and earn a high income.

Income was also considered to be a sensitive issue to some respondents (Neuman 1997). To determine a respondent's income, a closed-ended question, with five income ranges was used. The average family income for each country was determined and was used as the basis for establishing the income brackets.

3.2.2.3 Data Analysis

The completed questionnaires for each supermarket survey were analysed separately. Answers were coded and then entered into an Excel spreadsheet file. Open-ended responses for each questionnaire were listed and similar responses were categorised and given a code. Each data file was statistically analysed using the SPSS programme (Statistical Package for Social Science).

All variables were named. An exploratory data analysis using descriptive statistics was done to check frequency distributions, outliers and missing values. Responses to all questions were cross-tabulated to determine the frequencies and corresponding percentages of each response.

Following the same process used for the university survey (Section 3.2.1), responses to questions regarding perceptions of New Zealand dairy products (*Appendix 2, 3 and 4*) were scored on a five point scale, with 1 (strongly disagree), 2 (disagree), 3 (not sure), 4 (agree) and 5 (strongly agree). Positive and negative responses were regrouped into 1 (strongly disagree and disagree), 2 (not sure) and 3 (agree and strongly agree) to determine the frequency and percentage of each response.

The six attributes of dairy products were ranked according to their importance when buying dairy products and a uni-variate analysis was performed to determine the rank frequency of each attribute. The rank mean values of the different attributes were extracted to determine their relative importance for each group of consumers. Mean values for the percentage premium that the respondents were willing to pay for environmentally- and animal-welfare friendly dairy products were also determined.

To test the differences in perceptions and buying behaviour between countries, data from the three supermarket surveys were compared. This process, however, affected the sample distribution, therefore a non-parametric statistical test (Kruskal-Wallis) the was applied. In most cases, analysis of variance is used to determine variability. However, in cases where parametric statistics are not applicable due to distribution problems, non-parametric tests (such as Kruskal-Wallis) are more appropriate. According to Zikmund (1994), Kruskal-Wallis test is used to compare three or more groups or populations and can be considered as a non-parametric equivalent of an ANOVA.

3.4 DAIRY PRODUCERS

Two groups of dairy producers participated in this research: New Zealand dairy farmers and the different stakeholders of the dairy industry in the Philippines. A survey instrument was developed for the New Zealand dairy farmers to assess their views on consumers' perceptions and behaviour towards New Zealand dairy products, and the farming practices they use. Interviews were conducted in Luzon (Philippines) among the different sectors of the dairy industry to obtain an overview of another dairy farming system, to enable a preliminary comparison with New Zealand.

3.4.1 NEW ZEALAND DAIRY FARMERS

The survey looked at three distinct areas: 1) the farmers' opinions on New Zealand's "clean green" image and its impact on the marketing of dairy products internationally; 2) their opinions on the effects of dairy farming practices on the "clean and green" image of New Zealand; and 3) opinions on the attributes of New Zealand dairy products.

Sampling Method. The convenience sampling method was used in this survey. This is a non-probability sampling method, thus, the sample may not be considered as an accurate representative of the total population. Therefore, projecting the results beyond the sample is inappropriate.

One hundred dairy farmers in the North Island and 50 in the South Island were surveyed by mail in May 1999. The mail survey was selected because this minimised time and distance constraints. This was also the least expensive method of data collection and required the least labour and training to administer.

Due to the Privacy Act of New Zealand, the names and addresses of the farmers could not be obtained, thus, questionnaires were sent through the Kiwi Dairy Company and South Island Dairy Company and attached to the newsletters for their respective suppliers. A covering letter and a self-addressed stamped enveloped was attached to each questionnaire to improve the response rate.

Generally, mail surveys have a low response rate (Neuman 1996). Therefore, in order to get a higher response, an additional 200 questionnaires were given to 4 consulting officers from the Livestock Improvement Association (LIA), who volunteered to assist in the survey by handing the questionnaires out to the farmers who attended their discussion groups. Farmers were asked to fill-in the questionnaires on the spot. The completed questionnaires were collected by the consulting officers and sent back to the researcher. A total of 218 questionnaires were returned (from the mail surveys and discussion groups).

Survey Design. A 2-page self-completion questionnaire consisting of 12 questions with coding boxes on the right hand side was developed (*Appendix 5*). The questionnaire was brief to make it easy for the respondents to complete.

Closed-ended questions were used (questions 1 to 3) to determine the farmers' opinions on the "clean and green" image of New Zealand, and its effect on consumers' perceptions and the marketability of New Zealand dairy products overseas.

In Question 4, 12 farming practices (*i.e.* induction, tail docking etc.) were presented in a matrix question format and respondents were asked for their opinions on the effect of these practices on New Zealand's "clean and green" image. Response categories were: 1 – negative effect; 2- no effect; 3 – positive effect.

Like the consumers studied earlier, the New Zealand dairy farmers were asked for their opinions on New Zealand dairy products using the matrix question format (Question #5). The purpose of this question was to compare the farmers' opinions to those of the consumers. Examples of the questions were: "*Compared to dairy products from other countries, New Zealand dairy products are... healthier and safer; produced in an animal-friendlier way etc.*" Response categories for opinions were: 1- strongly disagree; 2- disagree; 3- not sure; 4 – agree; 5- strongly agree.

In Question 6, respondents were asked to name two farming practices they believe must be changed in order to meet consumers' expectations of "clean and green" dairy products from New Zealand. An open-ended question was used to allow the respondents to express their opinions freely and in detail.

The gender of the respondents was determined using a closed-ended question. The respondents were asked for their year of birth in order to determine their age. Open-ended questions were used to determine farm and herd size, and the farm location. The respondents were also asked to state their profession (*i.e.* farmer/owner, sharemilker etc.).

Data Analysis. Completed questionnaires were compiled and answers were coded and entered into SPSS (Statistical Package for Social Science) for statistical analysis. Open-ended responses were analysed and similar responses were categorised and given a code. An exploratory data analysis using descriptive statistics was done to check frequency distributions, outliers and missing values. Responses to all questions were cross-tabulated to determine the frequencies and their corresponding percentages.

In Question 4, the mean values of 3-point scale statements were determined to compare the opinions of farmers from different regions towards the farming practices identified. To simplify data presentation, the five-point scale statements in Question 5 were regrouped and the frequency and percentage distribution were determined. The new response categories were: 1 – strongly disagree and disagree; 2 – not sure and 3 – agree and strongly agree.

Responses to Question 5 were merged with the responses from the consumers' surveys. The mean values of the five-point scale statements were determined to compare the over-all perceptions of each group of respondents towards New Zealand dairy products. One-way analysis of variance was performed to determine the difference in perceptions between groups. Due to distribution problems, a parametric test could not be used, thus, a non-parametric statistical test (Kruskal-Wallis) was used to determine variability.

3.4.2 FILIPINO DAIRY PRODUCERS

Primary and secondary data were used in this study. The primary data were derived from the semi-structured interviews conducted among the different sectors of the dairy industry in the Philippines. Literature and annual reports from the National Dairy Authority (NDA) and Dairy Training and Research Institute (DTRI) were used as secondary data.

Selection of Area of Research and Respondents. The researcher contacted the National Dairy Authority (NDA), who provided information on the dairy industry, and the names of dairy farmers and processors who could participate in the research. The NDA is a government agency in charge of the development of the dairy industry in the Philippines. Permission was sought from the selected dairy cooperatives/farmers prior to the trip in the Philippines.

The Batangas, Laguna and Quezon provinces (Figure 3.1) were chosen as study areas for several reasons. First, these areas have the largest number of dairy farms (small-scale and large scale) in the country. Secondly, these three provinces are near Metro Manila, the capital city of the Philippines, where the main office of the NDA is located, while the Dairy Training and Research Institute (DTRI), is located in Laguna. These two agencies provided the researcher with assistance and information about the dairy industry. The researcher also has relatives in Manila, which minimised her travel and accommodation expenses.

The Interview Process. Representatives from three sectors of the dairy industry were interviewed: the government and research sector; the marketing and processing sector; and the farming sector. The main points covered by the interviews were: the industry structure, market trends, milk quality standards and milking and environmental practices used by the farmers.

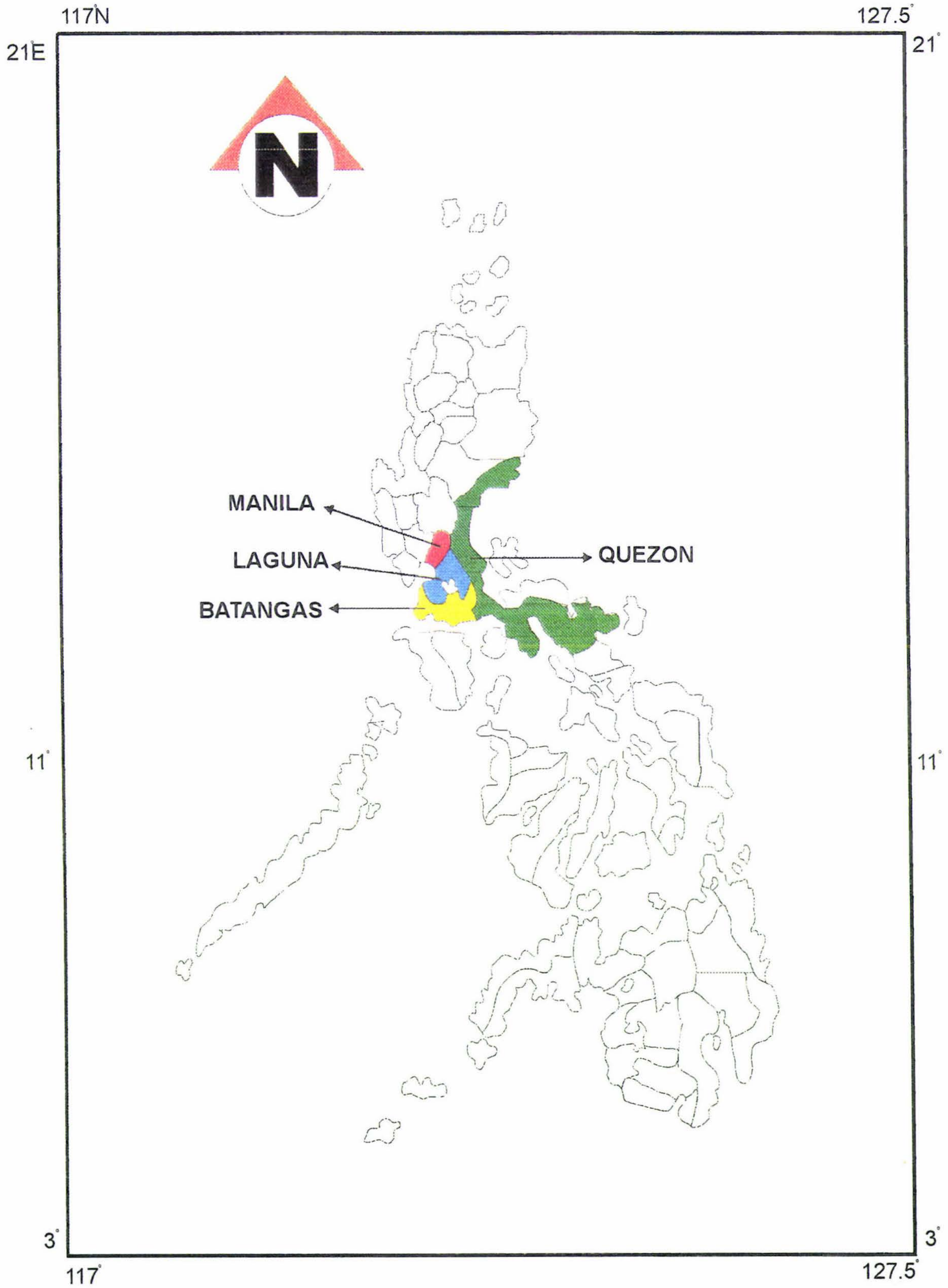

Figure 3.1 Selected study areas in the Philippines

One representative from the NDA was interviewed to get an overview of the structure and current status of the dairy industry. The interviewee also explained the role of NDA in the development of the dairy industry as well as the socio-economic well-being of the dairy farmers, especially those on small scale farms.

One researcher from the DTRI of the University of the Philippines – Los Baños (UPLB) was interviewed. The DTRI is a research facility that assists in the development of the local dairy industry through research, instruction and extension. The researcher provided some information on the current research being done by the Institute.

The Business Manager of the *Katipunan ng Kooperatibang Maggagatas, Inc. (KKMI)* (Federation of the Milkers' Cooperatives, Inc.) represented the processing and marketing sector. The interviewee provided some information on the marketing strategies used by the different cooperatives as well as the payment system used for their members. He also provided information on the quality standards used by the federation to maintain milk quality.

In the farming sector, 5 dairy farmers were interviewed. One farmer was the assistant manager of the DTRI dairy farm. This large-scale farm was both a commercial and educational entity. Another interviewee was themanager of a large-scale commercial farm owned by a cooperative. The respondent also owns a dairy farm, and is a member of the cooperative farm that he managed. The other three farmers were members of small-scale dairy cooperatives under the KKMI. The interview covered information such as the number of cows milked, feeding systems and levels of milk production. The interview also covered the current practices they used especially in the area of milk quality and environmental management.

All interviews were recorded and took approximately 30 to 60 minutes each. The researcher also visited the farms and observed the milking practices. In addition, the researcher observed the milk collection process one small-scale milk cooperative under the KKMI.

Data Analysis. All interviews were transcribed and translated into English by the researcher. The transcripts were analysed and important details from each interview were highlighted. All the data needed to meet Objective 5 (Section 1.4) were presented in the results. These results were summarised, and are compared to dairy farming in New Zealand in the discussion section.

Chapter Four

4.1 INTRODUCTION

This chapter is divided into three sections. In the first section (4.2), results of four consumer surveys are presented: a survey of international students from Massey University, and supermarket surveys of New Zealand, Filipino and British consumers. Details for each group are presented based on their personal profiles, buying behaviour and perceptions of New Zealand dairy products. Similarities and differences between four groups of consumers are described. In the second section (4.3), results from a survey of New Zealand dairy farmers are presented. This section also includes details about the farmers and their farms, and their perceptions of current farming practices relative to a "clean and green" image. In the last section (4.4), results from the interviews of stakeholders from different sectors of the Philippine dairy industry are provided and contrasted with those obtained for the New Zealand dairy farming system.

4.2 CONSUMERS

4.2.1 MASSEY INTERNATIONAL STUDENTS

Ninety-one international students from twenty-three countries participated in the survey using Survey Form 1 (see *Appendix 1*). The students were used as a proxy sample for "international consumers" of New Zealand dairy products and to elicit the data needed to meet the objectives as outlined in Section 1.3.

4.2.1.1 PROFILE

Gender and Age. The number of male (51%) and female respondents (49%) were approximately equal. The average age of the respondents was 28 years (range 18 to 48 years). The average duration of their stay in New Zealand up to the time of the survey was 21 months (range 3 months to almost six years: see *Appendix 6-Table 1A, 2A & 3A*).

Academic Classification. The students were from different academic programmes with half studying for a Bachelor's degree, while the other half were post-graduates (see *Appendix 6-Table 4A* for the distribution between country groups).

Region of Origin. Students from different countries were grouped together, based on their geographical location as well as the economic and cultural similarities of their countries (Figure 4.1). Students from Singapore, Philippines, Malaysia, Thailand, Indonesia, China and Taiwan represented the Southeast Asian group. They constituted 56% of the total sample and were the largest group. The Southern Asian and African group (10%) comprised students mostly from Sri Lanka, Nepal, India and Bangladesh. The few students from Africa were included in this group because they have some cultural similarities with Southern Asians. Fourteen percent of the respondents were from Japan and South Korea: the Northeast Asian group. A small number of students from Fiji and Solomon Islands represented the Pacific Islands (7% of the total respondents). Nine percent of the respondents were Latin Americans (Mexico, Brazil, Chile, Peru and Columbia). The smallest group (4%) consisted of three American students and one European (Figure 4.1).

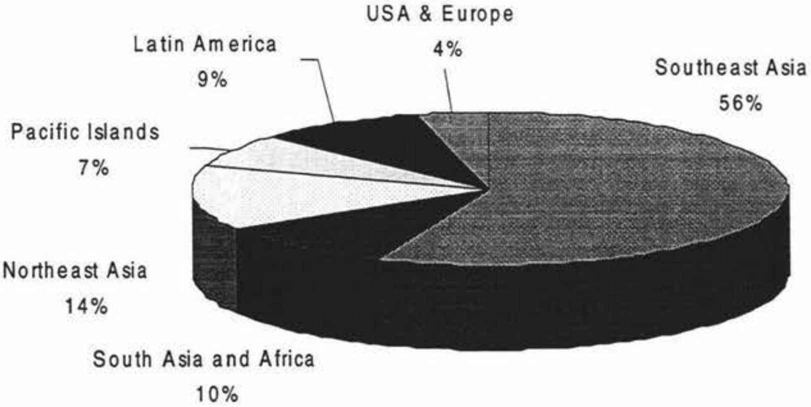

Figure 4.1 Distribution of international student respondents at Massey University based on geographical location.

4.2.1.2 PERCEPTION OF NEW ZEALAND

Most respondents held a positive perception of New Zealand before they came to the country (Tables 4.1 & 4.2). New Zealand was perceived as an agricultural country (43%) and "clean and green" (42%) by the respondents over-all. Some respondents also perceived it to be a country with a beautiful landscape (26%), and a peaceful and quiet environment (18%). A small number of respondents mentioned friendly people, cold weather and outdoor activities like bungee jumping. Five individuals (6%) stated they had no ideas about New Zealand before they arrived.

Table 4.1 Categorised perceptions of international students about New Zealand before they first arrived in the country.

Perceptions	%
Agricultural country (*cows, sheep, kiwifruit, milk products etc.*)	43
Clean and green, no pollution, nuclear-free zone	42
Beautiful landscape (*beautiful countryside, lakes, mountains etc.*)	26
Peaceful and quiet (*no traffic, low crime rate, small population*)	18
Friendly people	13
Developed country	5
Cold climate	4
Outdoor activities (*bungee jumping, mountain trekking, skiing etc*)	4
No idea	6

Note: Respondents could give more than one answer, thus percentages do not sum to 100%

A large number of the Pacific Islanders (83%), Northeast Asians (85%) and Latin Americans (63%) associated New Zealand with agricultural enterprises such as sheep, cows, kiwifruit and milk products. About one third of the Southeast Asians (28%), and Southern Asians/Africans, as well as a quarter of Americans/Europeans had the same association. This perception was reflected in comments such as: *"A cold country completely dedicated to the livestock industry based on grazing"* and *"Beautiful scenery, full of sheep, no traffic jams, friendly people."*

Table 4.2 Distribution of students from different countries who perceived New Zealand as an agricultural country, being clean and green and with a beautiful landscape.

Perceptions	Southeast Asia (n=51)	South Asia & Africa (n=9)	Northeast Asia (n=13)	Pacific Islands (n=6)	Latin America (n=8)	USA & Europe (n=4)
	% within country groups					
Agricultural country	28	33	85	83	63	25
Clean and green	49	33	46	33	25	-
Beautiful landscape	29	33	23	17	25	-
Peaceful and quiet	26	-	23	-	-	-

Note: Respondents could give more than one answer, thus percentages do not sum to 100%

Almost half of the Southeast Asians (49%) and Northeast Asians (46%) perceived New Zealand as "clean and green" and unpolluted. One third of the Southern Asians and Africans and Pacific Islanders, as well as a quarter of the Latin Americans, held the same perception. Typical comments were: *"Beautiful country, no pollution, friendly people"* and *"a clean green and environmentally-friendly country"*.

About one third of Southeast Asians (29%) and Southern Asians/Africans (33%), and about a quarter of Latin Americans (25%), Northeast Asians (23%) and Pacific Islanders (18%) associated New Zealand with a beautiful landscape. About a quarter of the Southeast Asians (26%) and Northeast Asians (23%) thought New Zealand was a peaceful and quiet country with a small population and light traffic. A comment like *"a lovely and peaceful country"* reflected this view.

4.2.1.3 CHANGE IN PERCEPTIONS

Although most respondents (38-76%) claimed that the positive perceptions about New Zealand that they held before they came have been met or exceeded, some expressed disappointment (Table 4.3).

For example, 15% of the respondents think New Zealand was more polluted than they previously thought. Expectations about concerns New Zealanders have for the environment were not met for 25% of the respondents. Eleven percent expressed that they thought New Zealand's countryside is not as beautiful as they expected. Eighteen percent think that New Zealand farmers are not as "animal-welfare sensitive" as they previously thought. Expectations concerning the quality of New Zealand products were not met for 16% of the respondents. Thirty-two percent also found that New Zealanders are not as health-conscious as they expected them to be (Table 4.3).

Table 4.3 Changes in perceptions of international students after living in New Zealand.

Questions	Strongly agree/ Agree (%)	Neither (%)	Strongly disagree /Disagree (%)
New Zealand is more polluted than I expected	15	19	66
New Zealanders are more concerned about the environment than I expected	53	22	25
New Zealand's countryside is not as beautiful as I expected	11	13	76
New Zealand farmers are not as animal-welfare sensitive as I expected	18	44	38
The quality of New Zealand food products is better than I expected	46	38	16
New Zealanders are more health-conscious than I expected	41	27	32

The opinion of Northeast Asians concerning New Zealand's level of pollution was significantly different ($P<0.05$) from that of Southeast Asian and Southern Asians/Africans (Table 4.4). The majority of the Northeast Asians (46%) found New Zealand to be more polluted than they expected.

Table 4.4 Variation in changes of perceptions between country groups.

Value: 1- Strongly disagree; 2-disagree; 3-not sure; 4-agree; 5-strongly agree	Southeast Asia	Southern Asia & Africa	Northeast Asia	Pacific Islands	Latin America
	n=51	n=8	n=13	n=6	n=8
PERCEPTIONS	Perception Means				
[1] New Zealand is more polluted than I expected	1.9^{A}	1.9^{A}	3.3^{B}	2.7^{AB}	2.5^{AB}
[1] New Zealanders are more concerned about the environment than I expected	3.6^{A}	3.6^{A}	2.5^{B}	2.8^{AB}	3.2^{AB}
New Zealand's countryside is not as beautiful as I expected	2.0	2.1	2.3	2.7	1.7
New Zealand farmers are not as animal-welfare sensitive as I expected	2.6	2.4	3.0	2.3	2.9
[2] The quality of New Zealand food products is better than I expected	3.5^{A}	3.5^{A}	3.3^{AB}	3.6^{A}	2.5^{B}
[2] New Zealanders are more health conscious than I expected.	3.3^{A}	3.0^{AB}	2.4^{B}	2.8^{AB}	2.7^{AB}

Note: USA/Europe group was not included in the analysis because the number of respondents was too small

[1] Mean values within rows with different letters are significantly different at $P<0.05$

[2] Mean values within rows with different letters are significantly different at $P<0.10$

The varying opinions towards New Zealanders' concern about the environment were mostly influenced by the Northeast Asians whose views were significantly different ($P<0.05$) from those of the Southeast Asians and Southern Asians/Africans. The majority of the Northeast Asians (54%) claimed that New Zealanders are less concerned about the environment than they expected, whereas the expectations of most Southeast Asians (59%) and Southern Asians/Africans (89%) were met. There was a significant difference ($P<0.05$) between age groups, wherein young respondents (25 years and below) "disagreed" with the statement compared with their older counterparts. This was also true for the difference between undergraduates and postgraduates. The undergraduates who disagreed belonged to the young age group and were from Northeast Asia.

Although there appeared to be differences between groups in their opinions about New Zealand's countryside and the sensitivity of New Zealand farmers toward animal welfare issues, these difference were not statistically significant.

There was a moderate variation ($P<0.10$) in opinions between countries concerning the quality of New Zealand food products. Most of the Latin Americans "disagreed" or "strongly disagreed" that "New Zealand food products are better than they expected", whereas the majority of the respondents from the other country groups "agreed" or "strongly agreed" with this statement.

A moderate variation ($P<0.10$) was also observed between countries in their opinions towards New Zealanders' health-consciousness. The variation was mostly influenced by the Northeast Asians who "strongly disagreed" or "disagreed" that New Zealanders were more health-conscious than they expected - whereas the Southeast Asians "agreed" with this statement. The comparison of opinions held by different age groups and their level of academic study was significant ($P<0.05$), wherein the younger and undergraduate students "disagreed" or "strongly disagreed" with this statement.

4.2.1.4 NEW ZEALAND DAIRY PRODUCTS

Most respondents (68%), indicated that New Zealand dairy products were available in their home country (Table 4.5). Around 7% of the respondents, who either came from Southern Asia and Africa or Latin America, stated that New Zealand dairy products were not available in their country. The majority (62%) of the respondents who stated that New Zealand dairy products were sold in their home country could name a specific brand (i.e. Anchor, Fernleaf etc.). Thirty percent could name only a product type (cheese, butter etc.), while the remaining 8% could not recall either any brands or product types (Table 4.6).

Table 4.5 Awareness of students from different geographical regions concerning the availability of New Zealand dairy products in their home country.

Are New Zealand dairy products available in your home country?	Southeast Asia n=51	South Asia & Africa n=9	Northeast Asia n=13	Pacific Islands n=6	Latin America n=8	USA & Europe n=4	TOTAL n=91
			% within country group				
YES	76	44	54	100	72	25	68
NO	-	56	-	-	14	-	7
DON'T KNOW	24	-	46	-	14	75	25

Table 4.6 Awareness of students from different geographical regions of the type of New Zealand dairy products that were available in their home country.

Awareness	Southeast Asia n=40	South Asia & Africa n=4	Northeast Asia n=6	Pacific Islands n=6	Latin America n=4	USA & Europe n=1	TOTAL n=61
			% within country group				
Could recall a specific brand name	63	50	33	83	75	100	62
Could recall a product type	27	50	50	17	25	-	30
Could not remember the brand name or product type	10	-	17	-	-	-	8

4.2.1.5 PERCEPTION OF NEW ZEALAND DAIRY PRODUCTS

Students' views about New Zealand dairy products before they left their own country are shown in Table 4.7. The frequency distributions of these perceptions between countries are shown in *Appendix 6-Table 5A*.

Table 4.7 Perceptions held by international students about New Zealand dairy products (n=70).

New Zealand dairy products are...	Strongly agree /agree	Not sure	Strongly disagree /disagree
	% within perceptions		
Healthy and safe	84	16	-
Produced in an animal-welfare friendly way	56	44	-
Produced in an environmentally-friendly way	64	34	2
Good value for money	43	48	9
Attractive and well-presented	66	27	7
Tasty	64	32	4

A large number of the respondents held a positive perception of New Zealand dairy products. The four statements that they most agreed with were: healthy and safe; produced in an environmentally-friendly way; attractive and well-presented; and tasty. However, a considerable proportion of respondents expressed that they were not sure if New Zealand dairy products possessed certain attributes. The majority of these respondents were from Northeast Asia. A number of the students - mostly again from Southeast Asia - disagreed that the products were good value, attractive and well presented, or tasty.

Perceptions held on health and safety, animal-welfare practices, value and taste of New Zealand dairy products were not significantly different between the regional groups (Table 4.8). However, the perceptions held on environmental-friendliness and attractiveness and presentation were significantly different ($P<0.05$). The variation in the environmental-friendliness factor was mostly influenced by the difference between the Southeast Asia and Pacific Island groups ($P<0.001$). The results indicate that Southeast Asians had a positive perception of the environmental practices for New Zealand dairy products, whereas Pacific Islanders were not sure about this.

Table 4.8 Variation in perceptions of New Zealand dairy products held by country groups.

Value: 1- Strongly disagree; 2-disagree; 3-not sure; 4-agree; 5-strongly agree	Southeast Asia	Southern Asia & Africa	Northeast Asia	Pacific Islands	Latin America
	n=51	n=8	n=13	n=6	n=8
New Zealand dairy products are...	Perception Means				
Healthy and safe	4.1	4.0	3.6	4.5	4.2
Produced in an animal welfare-friendly way	3.7	4.0	3.3	3.5	3.8
Produced in an environmentally-friendly way	4.0^{A}	3.6^{AB}	3.5^{AB}	3.2^{B}	3.6^{AB}
Good value for money	3.4	3.6	3.7	3.3	3.2
Attractive and well-presented	3.5^{AC}	4.2^{AB}	3.3^{C}	4.3^{B}	3.8^{ABC}
Tasty	3.6	4.0	3.9	4.1	4.0

Note: USA/Europe group was not included in the analysis because the number of respondents was too small
^{ABC} Mean values within rows with different letters are significantly different at P<0.05

The significant difference in views held on the attractiveness and presentation of dairy products existed between students from Southeast Asia and Pacific Islands (P<0.05), Southern Asia & Africa and Northeast Asia (P<0.05), and Northeast Asia and Pacific Islands (P<0.001). The results indicate that Southern Asians/Africans and Pacific Islanders hold a more positive perception of the appearance and presentation of New Zealand dairy products compared to the Southeast and Northeast Asians.

4.2.1.6 ATTRIBUTES OF DAIRY PRODUCTS

Different attributes of dairy products, and their relative importance when buying dairy products for each country group, are shown in Table 4.9. Rank means for each attribute show that, overall, the most important attribute was health and safety. Health and safety was ranked as the most important attribute by 42% of the respondents. Only one individual considered health and safety to be the "least important" product attribute.

Table 4.9 Dairy product attributes and their relative importance in buying decisions according to region of origin.

Attributes	Southeast Asia	Southern Asia & Africa	Northeast Asia	Pacific Islands	Latin America	USA & Europe	Total
	n=51	n=8	n=13	n=6	n=8	n=4	n=91
	Rank order						
Health and safety	1[1]	1	1	3	1	3	1
Animal welfare-friendliness	6	5	5	6	5	5	6
Environmental-friendliness	4	6	4	5	4	4	4
Price	3	3	3	2	2	2	3
Appearance and presentation	5	4	6	4	3	5	5
Taste	2	2	2	1	1	1	2

[1]Value: 1-Most important 6-Least important.

The rank mean showed that taste (μ=2.2) was considered to be the second most important product attribute: 33% of the respondents gave this attribute a rank of 1 while 34% gave it a rank of 2 (Table 4.10). Price was ranked as third, with a large number of respondents who ranked it as second (26%) and third (27%) in terms of importance. Environmental-friendliness (mean rank value of 4.2) followed price: the majority of the respondents ranked this as fourth (30%) and fifth (37%). This was followed by appearance and presentation (mean rank value 4.6). Animal welfare was ranked at a mean rank value of 5.0. In fact, the majority of the respondents (44%) considered it to be the "least important" attribute when they buy dairy products. The distribution of ranking scores for attributes is shown in *Appendix 6-Table 6A.*

Table 4.10 Differences between country groups of product attribute mean scores for New Zealand dairy products.

Attributes	Southeast Asia	Southern Asia & Africa	Northeast Asia	Pacific Islands	Latin America	Over-all Mean
	n=51	n=8	n=13	n=6	n=8	n=91
			Attribute means			
Health and safety	1.9	5.2	1.7	3.2	2.1	2.0
Animal welfare-friendliness	5.1	4.3	4.5	5.2	5.6	5.0
Environmental-friendliness	4.2	4.7	3.8	4.2	4.4	4.2
Price	2.9	3.1	3.3	2.5	2.7	2.9
Appearance and presentation	4.5^{A}	4.1^{A}	5.5^{B}	3.7^{A}	4.1^{AB}	4.6
Taste	2.3	2.7	1.9	2.3	2.1	2.2

Note: The USA/Europe group was not included in the analysis because the number of respondents was too small.
^{AB} Mean values within rows with different letters are significantly different at P<0.05.

There were no significant differences between scores for each country in price, taste, animal welfare, environmental-friendliness, and health and safety (Table 4.10). There was a significant difference (P<0.05) however, in the appearance and presentation ranking: Northeast Asians considered this to be much less important compared to respondents from the other countries.

4.2.1.7 BEHAVIOUR

Eating Habits. All respondents consumed dairy products. The majority of the respondents from Southern Asia and Africa, Latin America, USA and Europe ate dairy products often, while half of the respondents from Southeast Asia and the Pacific Islands ate dairy products less frequently (see *Appendix 6-Table 7A*).

Buying Behaviour. Fifty individuals had purchased New Zealand dairy products in their home country. This was equivalent to 51% of the total sample and 73% of the total respondents that were aware that New Zealand dairy products were available in their country. The majority of the Southeast Asians (74%), Northeast Asians (68%), Latin Americans (60%) and half of the Southern Asians/Africans had bought New Zealand dairy products. All respondents from the Pacific Islands had purchased New Zealand dairy products as also had the single respondent from Europe.

Twenty-three individuals agreed that their perception had influenced their decision to buy New Zealand dairy products. Some of the perceptions that influenced buying decisions were reflected in comments such as: *"Clean and low pollution environment will produce products that are definitely safe for daily consumption", "Dairy products are pure and uncontaminated because the country has pure and unpolluted environment", "Country of dairy food products",* and *"Being an agricultural country, their products had to be competitive for the export market".* The statements of perceptions were categorised and summarised and are presented in Table 4.11.

Table 4.11 Categorised perceptions held by international students that influenced their buying decisions to buy New Zealand dairy products.

Perceptions	% n=23
New Zealand's dairy products are healthy and safe because its environment is unpolluted.	49
New Zealand dairy products are of good quality because New Zealand is well-known for its agricultural products - especially dairy products.	51

Note: Respondents had given only one answer thus, percentages sum to 100%.

Eighty-nine percent of the respondents bought New Zealand dairy products now that they live in the country. The remaining 11% however, prefer to buy non-New Zealand brands. Eleven percent of the respondents also will not buy New Zealand dairy products when they return to their home country.

4.2.2 NEW ZEALAND CONSUMERS

4.2.2.1 Profile

Gender and Age. In total, 102 New Zealand consumers were surveyed. A large proportion of the respondents were female (67%). An equal number of respondents were either 40 years and younger or older. The frequency distribution for gender and age values are shown in *Appendix 6-Table 8A.*

Occupation and Income. Respondents were grouped into six categories according to their occupation (Table 4.10). Housewives and students were grouped separately from the retired or unemployed respondents. The majority of the respondents had a white-collar job (27%). This was followed by retirees/unemployed respondents (22%), students (18%), and housewives (17%). The smallest groups were the self-employed (8%) and the skilled workers (8%). A larger proportion (71%) of the respondents had a household income of $40,000 or less per annum. The remaining 29% were earning $41,000 or more per annum wherein almost half (14%) had white collar jobs. (See *Appendix 6-Table 9A* for details on the distribution for occupation and income).

Table 4.12 Distribution of New Zealand consumers (n=102) based on occupation.

Occupation	%
White collar job (*office work, paper work etc.*)	27
Retiree/unemployed	22
Student	18
Housewife	17
Blue collar job (*technical, skilled work*)	8
Self-employed, private practice, entrepreneur	8

4.2.2.2 Perceptions

The majority of the New Zealand consumers held a positive image of New Zealand dairy products (Table 4.13). A large number of respondents however, were not sure if New Zealand's dairy products were produced in an animal welfare-friendly or an environmentally-friendly way 35% and 30%, respectively. Six percent and 9% respectively, actually (strongly) disagreed with the statement that New Zealand dairy products were produced in this manner. A small proportion also doubted whether they were good value for money (13%), healthy and safe (6%), attractive and well-presented (5%), or tasty (2%).

Table 4.13 Perceptions held by New Zealand consumers (n=102) of New Zealand dairy products.

New Zealand dairy products are...	Strongly agree /agree	Not sure	Strongly disagree /disagree
		% within attributes	
Healthy and safe	94	6	-
Produced in an animal-welfare friendly way	59	35	6
Produced in an environmentally-friendly way	61	30	9
Good value for money	81	13	6
Attractive and well-presented	92	5	3
Tasty	98	2	-

4.2.2.3 Buying Behaviour

Preference. A large proportion (85%) of the respondents preferred to buy New Zealand dairy products, while 9% preferred to buy dairy products from other countries. The remaining 6% were undecided. Fresh milk was the most frequently purchased item (8 times a month on the average) although some of the respondents had their fresh milk home delivered. Cheese, butter and yogurt were also popular purchases, although these were bought less frequently than milk (twice a month on average). Half of the respondents bought cream but on average not very frequently (every 2 months or less). (See *Appendix 6-Table 10A* for the frequency distribution data).

Dairy Products Attributes. Taste was ranked a mean value of 2.2, making it the most important attribute in the purchase decision of the New Zealand respondents (Table 4.14). The frequency distribution showed that 35% of the respondents ranked taste as 1 while 30% ranked it as 2. Taste was closely followed by health and safety with a rank mean of 2.4. Thirty-five percent of the respondents ranked health and safety as 1. Price, with a rank mean of 2.8, was the third most important attribute. Most respondents (56%) gave it a score of 2 or 3. Only 4% gave "environmental-friendliness" a rank of 1, while the majority (68%) gave it a rank of 4 or 5. Appearance and presentation and animal welfare were ranked at 4.6 and 4.7, respectively, the least important attributes in the buying decisions of New Zealand respondents. See *Appendix 6 Table 11A* for details.

Table 4.14 The relative importance of dairy product attributes to New Zealand consumers (n=102).

Dairy product attributes	Rank #1	Rank #2	Rank #5	Rank #6	Rank order	Rank μ
		% within rank				
Health and safety	35	18	5	1	2	2.4
Animal-welfare-friendliness	2	11	26	41	6	4.7
Environmental-friendliness	4	11	38	7	4	4.1
Price	17	36	15	4	3	2.8
Appearance and presentation	2	9	12	43	5	4.6
Taste	35	30	5	-	1	2.2

Note: Some attributes were given equal ranks, thus percentages within column do not sum to 100%.

Premiums. Although environmental-friendliness and animal-welfare friendliness were not considered to be very important attributes for the buying decisions of New Zealanders, most were willing to pay more for a dairy product that had been produced in an environmentally-friendlier and animal-welfare friendlier way. Slightly over half (52%) of the respondents were willing to pay a premium up to 50% with an 11% average, for environmentally-friendlier products (see *Appendix 6-Table 12A* for the frequency distribution). Forty-nine percent of the respondents were willing to pay a premium of up to 50% with a 13% average for a product that was more animal-welfare friendly.

4.2.3 FILIPINO CONSUMERS

4.2.3.1 Profile

Age and Gender. A total of 98 Filipino shoppers were surveyed. The majority of the Filipino shoppers who participated in the survey were female (79%). Most (71%) were aged 40 years or younger, the frequency distributions for age group and gender are shown in *Appendix 6-Table 13A.*

Occupation and Income. Most respondents (46%) had a white-collar job (Table 4.15). Other occupations included housewives (20%), self-employed (13%), and students (12%). A small number were skilled workers (6%) and retired/unemployed (3%). Fifty-three percent of the respondents had an annual household income of P80,000 (NZ$4,000) or less while 21% earned a higher income. Twenty-six percent of the respondents did not indicate their household income. (See *Appendix 6-Table 14A* for details on distribution for occupation and income).

Table 4.15. The occupations of Filipino respondents (n=94).

Occupation	%
White-collar job (*office work, paper works etc.*)	46
Housewife	20
Self-employed, private practice, entrepreneur	13
Student	12
Skilled work (*technical, skilled work*)	6
Retiree/unemployed	3

Awareness. All but three respondents were aware that the dairy product they purchased was from New Zealand. Ninety-three percent of the respondents were familiar with the expression "clean and green". The respondents' understanding of the "clean and green" expression were: *"clean and plenty of plants", "clean surroundings and healthy environment", "sanitary and environment-friendly".*

4.2.3.2 Perceptions

The majority of the Filipino respondents had a positive image of New Zealand and its dairy products. Eighty-nine percent thought New Zealand was "clean and green". Eighty-five to 95% of the respondents also held a positive opinion about the attributes of New Zealand dairy products (Table 4.16).

Table 4.16 Filipino consumer perceptions of New Zealand dairy products.

New Zealand dairy products are...	Strongly agree /agree	Not sure	Strongly disagree /disagree
	% within attributes		
Healthier and safer	92	7	1
Produced in an animal-welfare friendlier way	86	12	2
Produced in an environmentally-friendlier way	89	8	3
Better value for money	85	13	2
More attractive and better-presented	94	4	2
Tastier	95	3	2

A number of respondents, however, were unsure of the monetary value of New Zealand dairy products (13%) and the animal-welfare practices used in their production (12%). A small number of individuals held negative perceptions of their health and safety (1%), animal-welfare practices (2%), environmental-friendliness (3%), monetary value (2%), appearance and presentation (2%), and taste (2%).

4.2.3.3 Buying Behaviour

Preference. Most respondents (40%) bought Anchor Full Cream Powder Milk for their children. Anchor butter was also a popular purchase (22%), followed by Anlene Non-fat milk powder (19%). Other milk products such as Anchor Nonfat milk powder, Anchor UHT milk, Anlene UHT milk and Anmum were also purchased by some of the respondents.

Dairy Product Attributes. Health and safety was ranked 1.6 overall, 59% of the respondents considering it to be the most important factor when they buy dairy products (Table 4.17). Taste was ranked 2.3 making it the second most important attribute. Twenty-two percent thought this was the most important in their buying decision. Environmental-friendliness was placed third (3.3) and price fourth (3.8). Ten percent ranked environmental-friendliness as 1 while only 7% had given price a rank of 1. Two percent ranked animal welfare as 1 while 59% ranked it as 5 and 6. Appearance and presentation was rank as 1 by 3% while 69% ranked it as 5 or 6. See *Appendix 6-Table 15A* for details.

Table 4.17 Attributes of the dairy products and their relative importance to the Filipino consumers.

Dairy product attributes	Rank #1	Rank #2	Rank #5	Rank #6	Rank order	μ
	% within rank					
Health and safety	59	33	1	-	1	1.6
Animal-welfare friendliness	2	9	38	21	5	4.6
Environmental-friendliness	10	25	22	2	3	3.3
Price	7	12	16	13	4	3.8
Appearance and presentation	3	5	23	46	6	4.9
Taste	22	45	3	-	2	2.3

Note: Some attributes were given equal ranks, thus percentages within column do not sum to 100%.

Perceptions that Influenced Buying Decisions. Sixty-two percent of the respondents agreed that their decision to buy a particular dairy product was influenced by the fact that it came from New Zealand (Table 4.18). Some of the factors that influenced the buying decisions were reflected in statements such as: "*I am sure it underwent a very strict quality control*", "*New Zealand* *is known for its quality dairy products", "They came from healthy cows bred in New Zealand", and "Guaranteed clean and fresh because it came from pure cow's milk as advertised on TV".*

Table 4.18. Categories of perceptions that influenced Filipino consumers to purchase New Zealand dairy products.

Perceptions	Stated by: (n=61)
New Zealand is unpolluted, thus its milk products are healthy and safe.	55%
New Zealand cows are fed on pastures, thus milk products are healthy and safe.	18%
New Zealand is a well-known milk producer with a strict quality control management, thus its milk products are healthy and safe.	27%

Note: All respondents had given only one answer, thus percentages within sum to 100%.

Premiums. Although environmental-friendliness was ranked third among the attributes, 63% of the Filipino respondents were willing to pay a premium of up to 20% (7% average) for an environmentally-friendlier product. Fifty-three percent were also willing to pay a premium for animal-welfare friendlier dairy products. The premium that they were willing to pay ranged from 2% to 20% (6% average). See *Appendix 6-Table 16A* for frequency distribution.

4.2.4 BRITISH CONSUMERS

4.2.4.1 Profile

Age and Gender. Fifty British supermarket shoppers participated in the survey conducted in a supermarket in Ashford, England. More female customers (64%) participated in the survey than male customers (36%). Less than half of the respondents (47%) were 40 years old or younger. The frequency distribution for age group and gender is shown in *Appendix 6- Table 17A.*

Income and Occupation. The occupations of the British respondents are shown in Table 4.19. More than half (54%) had an annual household income of £16,000 or less, while the remaining (46%) earned a higher income. See *Appendix 6-Table 18A* for details of distribution for occupation and income.

Table 4.19. Occupations of British respondents.

Occupation	% (n=50)
White-collar job (*office work, paper works etc.*)	31
Retiree/unemployed	21
Student	16
Blue-collar job (*technical, skilled work*)	14
Housewife	10
Self-employed, private practice, entrepreneur	8

Awareness. A large number of the respondents (82%) knew that the dairy products they bought were from New Zealand. Forty-six percent claimed they had heard of the expression "clean and green" which they all associated with environmental conservation.

4.2.4.2 Perceptions

British consumers' perceptions of the attributes of New Zealand dairy products varied (Table 4.20). Forty-four percent claimed they were not sure if they were healthy and safe; in fact, 28% disagreed or strongly disagreed that they were. The number of respondents who disagreed with (32%) or were unsure about (46%) the statement that New Zealand dairy products were produced in an animal-welfare friendly way exceeded the proportion who agreed (22%). A large proportion (62%) were not sure if they were produced in an environmentally-friendly way with only 18% agreeing that New Zealand's dairy products were produced in an environmental-friendly way. More respondents were unsure if they were of "good value for money" (40%) than those who either disagreed (26%) or agreed (34%) that they were. Nearly three in four (72%) agreed that New Zealand dairy products are tasty.

Table 4.20. British consumers' perceptions of New Zealand dairy products.

New Zealand dairy products are...	Strongly agree /agree (%)	Not sure (%)	Strongly disagree /disagree (%)
Healthy and safe	28	44	28
Produced in an animal-welfare friendly way	22	46	32
Produced in an environmentally-friendly way	18	62	20
Good value for money	34	40	26
Attractive and well-presented	34	30	36
Tasty	72	14	14

4.2.4.3 Buying Behaviour

New Zealand butter (original and spreadable) was the most popular purchase for the British respondents. Some respondents also bought New Zealand cheese. Only eight individuals (16%) stated that the fact that the dairy products came from New Zealand influenced their decision. Three indicated they were influenced by their perception that New Zealand was unpolluted and produced good quality products. The remaining five bought these products to support commonwealth countries such as New Zealand. Some of the statements given by the respondents were: *"Support a Commonwealth country"*, *"I believe in supporting the colonies"* and *"New Zealand has good products"*.

Table 4.21 Attributes of New Zealand dairy products and their relative importance to the British consumers.

Dairy product attributes	Rank #1	Rank #2	Rank #5	Rank #6	Rank order	μ
	% within rank					
Health and safety	2	30	20	12	3	3.6
Animal-welfare friendliness	12	4	28	4	4	3.7
Environmental-friendliness	4	22	14	16	4	3.7
Price	16	24	12	8	2	3.1
Appearance and presentation	-	-	20	55	5	5.2
Taste	64	18	4	-	1	1.6

Note: Some attributes were given equal ranks, thus percentages within column do not sum to 100%.

Dairy Product Attributes. The most important attribute for British consumers by far was taste, with a mean rank value of 1.6. Taste was ranked as the most important attribute by 64% of the respondents. Price (rank mean value of 3.1) was rated the second most important attribute for British consumers. While 16% ranked it as 1, 24% gave it a rank of 2. Health and safety scored a rank mean of 3.6, while animal-welfare and environmental-friendliness were equally ranked at 3.7. Only two individuals gave health and safety a rank of 1. A large proportion (50%) gave it a rank of 2 or 3. Four percent ranked environmentally-friendly as 1 while the majority ranked it as the second, third or fourth most important attribute. Twelve percent of the respondents rated animal-welfare friendliness as a 1, while the majority scored this 3, 4 or 5. These three attributes were almost of equal importance to British consumers. Appearance and presentation was considered to be the least important dairy product attribute (mean value of 5.2). See *Appendix 6-Table 19A* for details.

Premiums. The majority of the respondents (66%) were willing to pay a premium, of between 5% and 25% (10% average) for environmentally-friendlier dairy products. A larger number of respondents (70%) were willing to pay a premium of 1% to 25% (10% average) for animal-welfare friendlier products. See *Appendix 6-Table 20A* for the frequency distribution.

4.2.5 COMPARISON OF PERCEPTIONS AND BEHAVIOUR

4.2.5.1 Perceptions

The perceptions of New Zealand's dairy products held by the dairy product consumers from the three countries under study were significantly different (P<0.001). Except for taste, English consumers show the greatest level of uncertainty and negative perceptions toward New Zealand dairy products (Table 4.22). Filipino consumers on the other hand, held a strong positive perception of the products. New Zealand consumers, on average, also showed positive perceptions - except with respect to animal welfare and environmental practices.

Figure 4.22 Differences in the perceptions of New Zealand dairy products between consumers from three different countries. (Differences between countries were all significant at P<0.001).

New Zealand dairy products are:	New Zealand	Philippines	UK
		Perceptions μ	
Healthy and safe	4.1[1]	4.3[✧]	3.0
Produced in an animal-welfare friendly way	3.5	4.2	2.9
Produced in an environmentally-friendly way	3.5	4.3	2.9
Good value for money	3.9	4.2	3.1
Attractive and well-presented	4.1	4.3	2.9
Tasty	4.2	4.5	3.9

[1] Value: 1-Strongly disagree 2-Disagree 3-Not sure 4-Agree 5-Strongly agree

[✧] A non-parametric test was used to test the difference between groups, thus, which of the mean differs can not be identified.

4.2.5.2 Buying Behaviour

The determining factors that influenced the buying decisions of the consumers from the three countries are shown in Table 4.23.

Table 4.23 Importance of the different attributes in buying dairy products in the three different countries.

Attributes	New Zealand	Philippines	UK
	Attribute means		
**Health and safety	2.4[1]	1.6[✧]	3.6
**Animal-welfare friendliness	4.7	4.6	3.7
**Environmental-friendliness	4.1	3.3	3.7
**Price	2.8	3.8	3.1
Appearance and presentation	4.6	4.9	5.2
**Taste	2.3	2.3	1.6

[1] Value: 1-Most important 6-Least important.

**Difference between countries significant at P<0.001.

✧ Non-parametric test was used to test the difference between groups, thus, which of the mean differs cannot be identified.

The non-parametric test showed that there were significant differences ($P<0.001$) in the importance of these attributes between the three countries, except with respect to appearance and presentation. New Zealand and British consumers considered taste to be the most important attribute in their buying decisions. Filipinos, on the other hand, considered health and safety to be the most important attribute, while British consumers ranked this third overall.

Price was the second most important attribute for British consumers, while Filipinos ranked it as fifth. The New Zealanders, on the other hand, ranked price as the third most important attribute. The importance of animal welfare and environmental-friendliness was almost as important as health and safety for the British consumers. The New Zealanders on the other hand considered animal-welfare to be the least important product attribute in a purchase decision.

Table 4.24 Average premium (in % price increase) for animal-welfare friendlier and environmentally-friendlier dairy products consumers indicated they were willing to pay.

Consumers	Environmentally-friendlier[1]	Animal-welfare friendlier[2]
	Premium means	
New Zealand	11[✧]	13
Philippines	7	6
UK	10	10

[1] Difference between countries significant at $P<0.05$.

[2] Difference between countries significant at $P<0.001$.

[✧] A non-parametric test was used to test the difference between countries, thus, which of the mean differs could not be identified.

The majority of all consumers from all three countries were willing to pay more for environmentally-friendlier dairy products, although the proportion of British consumers (66%) was higher compared to New Zealanders (52%) and Filipinos (63%) (Table 4.21). The New Zealanders however, were willing on average to pay a higher premium (11%). This was significantly more ($P<0.05$) than the British (10%) or Filipino (7%) consumers.

A large proportion of British consumers (70%) was also willing to pay more for animal-welfare friendlier products. This is comparatively higher than the New Zealand (49%) or Filipino (53%) consumers. Despite this, New Zealanders were willing to pay a higher premium for an animal-welfare friendlier product (13%). This was significantly more ($p<0.001$) than the Filipino (6%) or British (10%) consumers.

4.3 FARMERS

4.3.1 NEW ZEALAND DAIRY FARMERS

Two hundred and eighteen dairy farmers from eight regions of New Zealand participated in the survey using Survey Form 5 (*Appendix 5*). The New Zealand dairy farmers were surveyed to elicit the data needed to meet Objective 3 of the research, as outlined in Section 1.4.

4.3.1.1 Profile

Personal Profile. A large proportion of the respondents were male (88%). More than half of them were 40 years old or younger (65%), with an average age of 37 years (range 16 to 72 years). Forty-five percent of the respondents were owner-operators while 31% were sharemilkers. The remaining groups were farm/herd managers (13%) and farm workers (11%). Frequency distributions of gender, age group and profession by region are presented in *Appendix 6-Table 21A, 22A & 23A.*

Farm Profile. The average farm size of the respondents was 171 hectares (ranging from 22 to 850), 71% own 200 hectares or a smaller area. Most (52%) owned a herd of 350 cows (peaked milk) or less. The average herd size was 413 head (ranging from 82 to 2000). The majority of respondents were located in the Taranaki, Manawatu/Wanganui, Waikato and Wellington regions (Figure 4.2). Others were located in Hawkes Bay, Otago, Canterbury and Southland. A breakdown of the farm and herd size for regions is presented in *Appendix 6-Table 24A & 25A.*

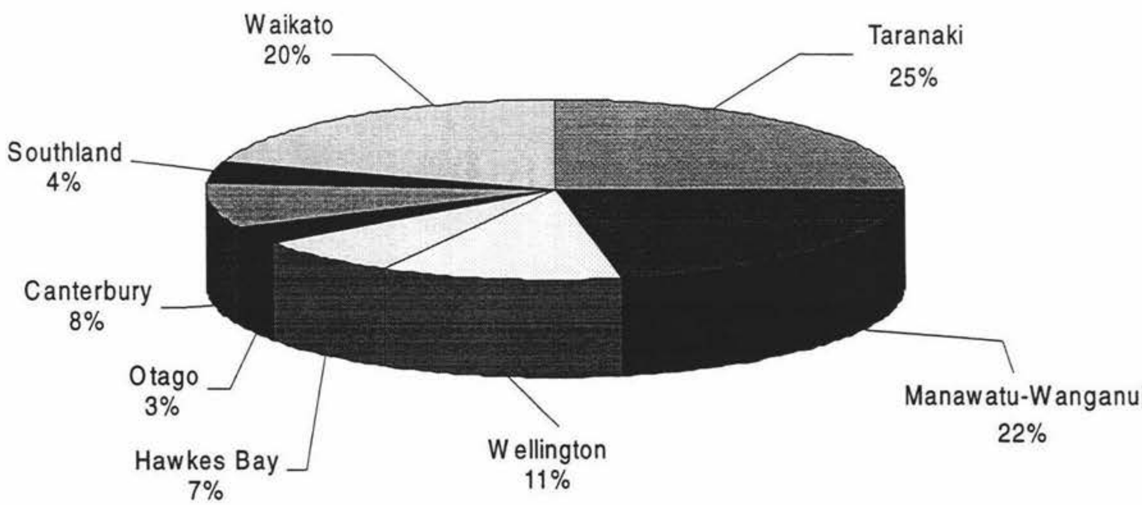

Figure 4.2 Distribution of New Zealand dairy farmer respondents between regions.

4.3.1.2 Opinions on New Zealand's "Clean and Green" Image

Clean and Green Image. The majority of respondents (81%) believed that New Zealand dairy farming deserved its "clean and green" image (Table 4.25). Ten percent of the respondents, however, disagreed with the statement, while 7% claimed they "didn't know" or were "not sure" about the industry's image. Four individuals (2%) made no comment.

Marketing Strategies. Ninety percent agreed that New Zealand's "clean and green" image improved the marketing of dairy products internationally, while 5% did not believe this was so. Four percent claimed they "didn't know" or were "not sure" if the industry's image affected the marketing of dairy products.

Consumers' Perceptions. Seventy-two percent of the respondents agreed that overseas consumer perceptions of New Zealand farming practices affect their decision to purchase dairy products from New Zealand. Thirteen percent on the other hand believed that it had no effect on consumer purchasing behaviour (Table 4.25).

Table 4.25. Opinions of New Zealand dairy farmers on New Zealand's "clean and green" image and consumer perceptions (n=218).

Opinions	Response (%)			
	Yes	No	Don't Know	No comment
New Zealand dairy farming deserves its "clean and green" image.	81	10	7	2
New Zealand's "clean and green" image improves the marketing of dairy products internationally	90	5	4	1
Overseas consumers' perceptions of New Zealand farming practices affect their decision to purchase dairy products	72	13	14	1

4.3.1.3 Opinions on New Zealand Dairy Farming Practices

Farming practices such as putting cows in muddy paddocks during winter (81%), induction (71%), bobby calf management (62%), and tail docking (59%) were viewed to have a negative effect on the "clean and green" image of New Zealand's dairy farming products (Table 4.26). However, the majority also believed that cows fed on pasture (87%) and grazed outside all year round (62%) had a positive effect on the industry's image. Practices such as large herd sizes (80%), bloat drenching (79%), dehorning (65%), intensive fertiliser use (61%), effluent disposal (58%) and antibiotic use (53%) were not believed to affect the "clean and green" image. A considerable proportion of respondents however, do believe that antibiotic use (39%), intensive fertiliser use (28%), current effluent disposal and dehorning (17%) have a negative effect on the industry's image.

Table 4.26 Opinions of New Zealand dairy farmers on the effect of dairy farming practices on the "clean and green" image of New Zealand's dairy products.

Farming Practices	Opinions (%)			
	Negative Effect	No Effect	Positive Effect	No opinion
Cows mainly fed on pasture	1	12	87	-
Cows being outside all year-round	5	33	62	-
Induction	71	25	2	2
Tail docking	59	34	6	1
Bloat drenching	5	79	16	-
Dehorning	17	65	15	3
Bobby calves on the roadside	62	30	7	1
Large herd sizes	7	80	13	-
Cows in muddy paddocks	81	17	2	-
Intensive fertiliser use	28	61	10	1
Use of antibiotics	39	53	7	1
Current methods of effluent disposal	18	58	22	2

Fifty-nine percent of the respondents stated that some farming practices need to be changed in order to meet consumers' expectation of "clean and green" products from New Zealand (Table 4.27). The three most important farming practices that they believed should be changed were: induction (30%), tail docking (22%) and cows in muddy paddocks (11%). A small number of respondents also stated that practices such as leaving dead cows on the roadside, extensive fertiliser use, bobby calf management, antibiotic use, underfeeding cows and effluent disposal should be changed. These opinions were reflected in comments such as: *"Farmers should take cows off the paddocks when wet/miserable and the stand off area should not be in sight of roads"* and *"eliminate tail docking and stop induction."* The differences in opinion between gender, age, region and profession were not significant. The frequency distribution for regions is shown in *Appendix 6-Table 21A, 22A & 23A.*

The remaining 41% did not mention a farming practice that should be changed. One farmer stated: *"I have been to other parts of the world and we already have the best practices."* Another statement was: *"there are none I think need changing,"* while another farmer stated: *"stop promoting "clean and green" forthwith, it invites challenge, should be environmentally sustainable."*

Table 4.27. Practices dairy farmers believed must be changed in order to meet consumer expectations of "clean and green" dairy products from New Zealand (n=218).

Farming Practices	N	%
Induction	65	30
Tail docking	47	22
Cows in muddy paddocks	23	11
Dead cows on the roadside	18	8
Bobby calves management	18	8
Effluent disposal	10	5
Intensive fertiliser use	11	5
Underfeeding cows	9	4
Extensive antibiotic use	7	3

Note: Respondents could give more than one answer, thus percentages do not sum to 100%.

4.3.1.4 Opinions on New Zealand Dairy Products

New Zealand dairy farmers generally had a positive opinion of their dairy products. These farmers agreed that New Zealand dairy products were healthier and safer (85%), "animal-welfare friendlier" (83%), "environmentally-friendlier" (80%), better value for money (76%), more attractive and better presented (80%) and tastier (82%), compared to those from other countries (Table 4.28). There were no significant differences in opinions between regions and professions.

Table 4.28. New Zealand dairy farmers' opinions on New Zealand dairy products (n=214).

Compared to those from other countries, New Zealand dairy products are:	Strongly agree/ agree	Not sure	Strongly disagree/ disagree
		% within opinions	
Healthier and safer	85	12	3
Produced in an animal-welfare friendlier way	83	12	5
Produced in an environmentally-friendlier way	81	15	4
Better value for money	76	18	6
More attractive and better presented	80	18	2
Tastier	82	16	2

The non-parametric test (Kruskal Wallis) showed that the perception held by New Zealand farmers and consumers (supermarket respondents) (Table 4.29) were all significantly different (P<0.0001). New Zealand farmers held strong positive perceptions towards New Zealand dairy products, as did the Filipino consumers (Section 4.2.5.1). English consumers, however, were uncertain and held negative perceptions of the products, except for taste. New Zealand consumers also showed positive perceptions, except with respect to animal welfare and environmental practices.

Figure 4.29 Differences in the perceptions of consumers from three different countries and New Zealand dairy farmers (Differences between groups were all significant at P<0.0001).

New Zealand dairy products are:	New Zealand	Philippines	UK	New Zealand dairy farmers
	Perception μ			
Healthy and safe	4.1[1]	4.3[✧]	3.0	4.2
Produced in an animal-welfare friendly way	3.5	4.2	2.9	4.0
Produced in an environmentally-friendly way	3.5	4.3	2.9	4.0
Good value for money	3.9	4.2	3.1	4.1
Attractive and well-presented	4.1	4.3	2.9	4.1
Tasty	4.2	4.5	3.9	4.1

[1] Value: 1-Strongly disagree 2-Disagree 3-Not sure 4-Agree 5-Strongly agree.

[✧] A non-parametric test was used to test the difference between groups, thus, which of the mean differs can not be identified.

4.3.2 PHILIPPINES

In this section, primary and secondary data were used to describe the Philippine Dairy Industry. The primary data were derived from the interviews among different sectors of the industry, while the secondary data were derived from project reports and additional literature obtained from the National Dairy Authority (NDA) and Dairy Training and Research Institute (DTRI) of the University of the Philippines – Los Baños (UPLB).

4.3.2.1 General Background

This section is based on the secondary data derived from literature on the Philippine dairy industry, and project reports of the National Dairy Authority and Dairy Training and Research Institute.

The Philippines comprise 7,100 islands covering a total land area of 30 million hectares, with a projected population for 1999 is more than 73 million, and is growing at a rate of 2.3% per year (NSO 1999).

As the Philippine population increases, the demand for milk and other dairy products also increases (Tan 1997). According to NDA (1998), in 1997, the total milk requirement based on the required Dietary Allowance was 2,160 million kilograms (Table 4.30). nearly 3% increase on the previous year's requirements (NDA 1998). Unfortunately, the local dairy industry is not capable of meeting the requirements of the domestic market (Tan 1997).

Table 4.30. Estimated domestic requirement and supply of dairy products for 1996-97.

Supply ('000 MT)	1996	1997
Estimated domestic requirement	2,100.00	2,160.00
Local production	11.50	10.22
Import	1,379.34	1671.02
Total supply	1,391.84	1,681.24
% Imported	99.1	99.4

Source: NDA 1998.

According to Cecilia Pelaez, 1993 chairperson of the Dairy Confederation of the Philippines, "the local dairy industry is providing only three drops of milk for every Filipino daily" (cited in Tan 1997). The country's milk reprocessing and repackaging sector supplies 99% of the Philippines' dairy needs. Milk is imported from countries like Australia, New Zealand and Holland and distributed by more than 100 milk importers such as local processors, independent importers, traders and others (NDA 1998).

In January 1997, the Philippine dairy industry was based on 21,054 dairy animals, with 52% cattle, 39% water buffalo (*carabao*) and 9% goat. The total number of dairy cattle was 11,341 head, approximately half of which were female, producing 1.98 million litres of milk. Forty-four percent of these dairy cattle were owned by dairy cooperatives, while the remainder were owned by commercial dairy farmers (36%), individual farmers (15%), and institutional farms (5%) (NDA 1998).

4.3.2.2 The Government Sector

In this section, primary data were used, based on the interview with the representatives from the National Dairy Authority and Dairy Training and Research Institute.

National Dairy Authority (NDA). The National Dairy Authority, a government agency under the Department of Agriculture, was established under the National Dairy Development Act of 1995, R.A. 7884, primarily to promote and provide direction for the accelerated development of the Philippine dairy industry.

One of the basic functions of the NDA was to provide dairy animals to small farmers for the purpose of providing additional income. Unlike other government projects, under which the animals were given free, the NDA livestock dispersal programme required the farmer to pay for the animal acquired. The animals were given as loan, which the farmers repaid by interest-free installments. According to the NDA representative, *"the farmers should pay for the animals in order to fully realise their value."*

The NDA deals with the dairy cooperatives and not with individual farmers. Therefore, a farmer has to be a member of a dairy cooperative in order to become a beneficiary of the livestock dispersal programme. The cooperative provides the members with secure market for their milk. It also collect the payments for the animals from the farmer by deducting them from the monthly milk payments, and remits them to the NDA. The beneficiary must also meet the basic requirements of the NDA with respect to items such as the milking shed, water source and forage used for the animals.

Due to limited resources, the NDA can only put one processing plant in every identified dairy zone. Therefore, some cooperatives organized themselves and formed a federation to take charge of the collection, processing and marketing of milk and milk products for all the cooperative members within the dairy zone.

Another function of NDA is to provide technical support to farmers, especially the beneficiaries of the animal dispersal programme. NDA veterinarians provide free services for animal health problems, semen and artificial insemination. In addition, they conduct training and seminars for farmers to disseminate new information and technology that can improve the farmers' production system.

Another agency that is involved in the development of the dairy industry is the **Dairy Training and Research Institute (DTRI).** DTRI is a unit of the University of the Philippines – Los Baños was mandated to assist in the development of the local dairy industry through research, instruction and extension. The researchers from the DTRI are focused on basic and applied research and development of dairy production systems and improved technologies for processing milk produced in the countryside. DTRI is also involved in extension activities designed to develop the local dairy industry. Training courses are targeted at improving the competence of those already involved in dairy development and preparing those who are interested in taking up a dairying enterprise.

4.3.2.3 Milk Producer and Processor Sectors

In the following sections, the results of the interviews with farmers and milk processors are presented. Comments from three milk producers/processors, and their respective marketing strategies, are described in the first section. Farming practices currently used by Filipino farmers – such as the feeding system, milking practices and effluent disposal are described in the succeeding sections.

Katipunan ng Kooperatibang Maggagatas, Inc (KKMI). KKMI (Federation of Dairy Cooperatives, Inc.) comprises 11 cooperatives of about 300 farmers in Southern Luzon. Approximately 100 farmers are producing milk: other members are inactive. The total number of cows within the federation is approximately 500 head, with a range of 1 to 30 head per farmer. This includes young stock and bulls.

Milk payments are based on the volume of milk produced by each member. Payments for the animals provided by NDA are deducted from the monthly milk income of the members.

KKMI do not own a processing plant but contract DTRI to process their milk. The average production volume for the whole federation is 600 liters per day. A large volume of the milk is processed either in liquid form or as chocolate milk under the brand name

"*Gatas Pinoy* or Filipino Milk". Most of this fresh milk is used for the government's feeding programme. They also sell some milk to households and schools in the capital city, Manila.

KKMI does not sell their milk in supermarkets due to the presence of many competitors. The liquid milk sold in supermarkets is UHT milk or "long life milk" which has a longer shelf life than the fresh milk pasteurised product. These products also carry imported brand names and have very good packaging. Therefore, although the price of locally produced fresh milk is very competitive, they cannot out-compete other brands. Besides, their production volume is insufficient to cater for their current market share.

The other dairy products they produce are yogurt, mozarella, white and cottage cheese and the popular local candy "*pastellas de leche*". Most of these products, however, are processed only in a small volume.

Batangas Dairy Multi-Purpose Cooperative (BADACO). The BADACO farm is a large commercial dairy farm owned by a cooperative of twenty members. It has 250 head of cattle, including 166 cows and 22 buffaloes (*carabao*), in the milking herd. They are producing an average of 1700 litres per day (including buffalo milk). Aside from the cooperative farm, two cooperative members also supply approximately 160 litres of raw milk per day from their own farms.

BADACO processes the milk in their own processing plant. Their products are mostly liquid and chocolate milk, and a small volume is used to produce white cheese. The liquid and chocolate milk is sold under the brand name "Milk Joy". The majority of the liquid milk is supplied to an American coffee shop chain in Manila. Some of the raw milk is also sold to other processing plants while the buffalo milk is sold to a local ice cream company.

DTRI Dairy Farm. This dairy farm is both a commercial and an educational entity. Its primary objective is to be a profitable farm and, at the same time, provide a teaching and research resource for academic programmes. The total number of animals on the farm is 194, including 47 cows in the milking herd. The average daily milk production for the whole farm is 300 litres. Approximately 60 litres per day are given to the calves, and the remaining 240 litres are processed into fresh milk, chocolate milk, and small amounts of cheese, ice cream, yogurt and *"pastellas de leche."* DTRI milk products are sold through the university dairy bar. Most of their customers are students and local residents.

4.3.2.4 Feeding System

Small-scale farmers. The majority of the KKMI members own less than 10 cows, so they normally tie their cows within vacant lots near their homes every morning after milking and allow them to graze the whole day while they attend to other work (on- and off-farm). They take their cows home in the afternoon and keep them in small dairy sheds. For the few members who own a larger herd (12 head or more), a "cut and carry" method is used wherein forage crops such as napier grass are planted and harvested as "cut and fed" green silage.

These farmers often also feed their cows concentrates (3 to 4 kgs). Dairy cow concentrates however are expensive and sometimes farmers make use of cheaper feeds such as "hog mash" or concentrates for pigs. At times when they do not have enough money to buy concentrates, local feeds such as banana trunk are used. As one farmer stated: *"We're supposed to give them concentrates in order to meet their nutrient requirements and achieve higher milk production. Sometimes, however, my money is needed for more important things so I just use whatever feeds I can get."*

At BADACO, the feeding system for cows is a combination of feed concentrates and grass. They normally formulate their own feed concentrates using the local ingredients available. The 7 hectares of pasture land which they own are used to graze their stock occasionally, and another area is used for forage crops such as napier grass. Napier grass is normally cut and chopped and given to the animals as green silage. BADACO also utilises by-products such as soya pulp and brews grains from local food and beverage processors as supplementary feeds.

The DTRI has developed 24 hectares into a pasture area for their milking cows. They also allocate some of the area for forage crops, which are cut and carried as fresh silage to other livestock. All livestock are also given some concentrates formulated within the farm.

4.3.2.5 Milking Practices

The majority of the KKMI members use hand milking, although some members with larger herds (10 milking cows or more) own a portable milking machine. Some milk twice daily but the majority milk their cows only in the morning. Milk collection occurs every morning and most farmers do not have the facilities to store the afternoon milk for the next day's collection. Both BADACO and DTRI use a herringbone type milking machine with an individual milk tank. Both farms milk their herds twice a day because they are able to process the milk in their own plant.

Both the small- and the large-scale farms wash the udders before milking. Farmers who hand milk use wash cloths with soap and water to clean the udders. Farmers normally apply "strip milking" to clean the teat canal as well as to check for any abnormalities in the milk. Cows with mastitis are separated and their milk is discarded.

On the large-scale farms like BADACO and DTRI, the udders are also washed with soap and water as well as disinfectant before milking. They also apply "strip milking" before putting on the milking cups to clean up the teat canal and check for abnormalities in the milk. BADACO staff use a teat spray such as gentian violet, after milking. The milking machines are cleaned and disinfected after every milking. Every week, the milking machine is also cleaned with nitric acid.

4.3.2.6 Milk Quality System

Individual farmers deliver their milk to their respective cooperative collection centre every morning. Before delivery, the KKMI farmers filter their milk with a clean cloth to remove impurities. The milk is measured, tested and recorded by the cooperative staff before it is collected by the KKMI collector and taken to the DTRI for processing. The KKMI milk collector performs a lactometer and alcohol precipitation test to check for adulteration and milk stability. BADACO and DTRI apply the same tests to their milk.

Somatic cell counts and antibiotic tests were not performed at all processing plants. According to the Business Manager of KKMI: *"we just have their word of honour. We tell our* *members to exclude mastitis infected cows from the milking line and follow the withholding period specified in the drug labels and expect honesty from them. But otherwise, we have no way of knowing".*

4.3.2.7 Effluent Disposal

Effluent disposal is not a big problem for small-scale dairy farmers, especially those who take their animals out for grazing. For some farmers whose animals are housed, however, faeces have to be scraped and disposed of daily. These are normally dried and used as an organic fertiliser for the forage crops.

For large scale farms like BADACO and DTRI, faeces are scraped from the dairy shed and dried to be used as organic fertilisers. The shed is cleaned with water, which drains to a septic tank from which it is later pumped onto the pasture.

4.4 SUMMARY

This chapter contains the results of the university and supermarket surveys. The results of the New Zealand dairy farmers' survey and interviews of stakeholders from different sectors of the Philippine dairy industry were also presented. In the next chapter, the results will be analysed further and discussed with reference to theories and other research presented in the review of literature.

Discussion

Chapter Five

5.1 INTRODUCTION

In this chapter, the outcomes of the study are discussed with reference to other research and theories presented in the review of literature. The perceptions and behaviour of the different consumer groups studied are compared and analysed. The two dairy farming systems are also analysed and contrasted. The limitations of, and the biases that may have been introduced into, the research are discussed in the final section of the chapter.

5.2 PERCEPTIONS OF NEW ZEALAND'S "CLEAN AND GREEN" IMAGE

The literature reviewed indicated that the "clean and green" expression is commonly used to describe New Zealand and that New Zealand's agricultural products are promoted overseas on the basis of this "clean and green" image (Section 2.2.1).

Both the university and supermarket surveys suggested that people from overseas had a positive image of New Zealand, although this varied substantially between countries. The university student survey showed that New Zealand was closely associated with agriculture and food products by the majority of the Northeast Asians and Pacific Islanders, while most of the Southeast Asians perceived it as "clean and green". The supermarket surveys also showed that the majority of the Filipino consumers, but a smaller percentage of the British consumers perceived New Zealand as "clean and green". These results were consistent with the results of the farmer survey: most dairy farmers believed that their farming practices were deserving of a "clean and green" image.

5.2.1 EFFECTS OF IMAGE ON CONSUMER BEHAVIOUR

According to the consumer behaviour theory reported in the literature, the second stage in the purchase decision process is the search for information (Section 2.4.4). Consumers need information on the attributes and the quality of the products that they want to buy. The theory on image also suggested that when consumers are not familiar with all of the features of a particular product, "images" can help them decide which product to buy (van Riel 1995). Therefore, consumers will buy the product with the most favourable image.

The New Zealand dairy farmers believed that a "clean and green" image improved the marketing of their dairy products internationally. They also believed that consumers' perceptions can affect their decision to purchase dairy products. The literature on New Zealand's is agricultural industries also emphasized the importance of the "clean and green" image in promoting products overseas and the importance of meeting consumers' expectations.

The theory and the farmer survey results agreed with the findings of the consumer survey. A significant number of respondents from both the university and supermarket surveys claimed that their perception of New Zealand influenced them to buy its dairy products. Although the number of respondents varied between countries, they claimed that they were influenced by their perception that New Zealand is an agricultural country with a "clean and green" environment and they associated this with high quality, healthiness and safety of the products.

The literature on green marketing shows that consumers' environmental concerns influence their buying preferences (Section 2.3.2). Perceptions or "image" also influence an individual's attitude and behaviour towards a company or a product (Section 2.2.2). The consumer survey results confirmed this theory. However, the results did not provide evidence of which environmental concerns were associated with a purchase decision – this could be a subject for further research. The farmers, on the other hand, did indicate practices that they thought could harm a consumer's perceptions of dairy products.

The relationship between the image of New Zealand and that of its dairy products was strong. Thus, respondents who held a positive perception of New Zealand also held a positive perception of its dairy products. For example, Filipino consumers who perceived New Zealand as "clean and green" thought likewise of its products. The British consumers on the other hand, were not sure of New Zealand's "clean and green" image, and this was associated with a lower rating of its dairy products' attributes.

Differences in consumer perceptions were most evident with respect to "environmental-friendliness" and appearance and presentation. The Southeast Asians were more positive about "environmental-friendliness" of New Zealand's dairy products compared to other groups. The Southern Asians/African and Pacific Islanders on the other hand, were more positive towards the appearance and presentation of New Zealand's dairy products compared to other groups.

According to Schutte & Ciarlante (1998), in Asia, the way in which a company is perceived is supremely important; a positive image serves as a means of assuring consumers of the quality of the company's full line of goods and services. Therefore, the positive image of New Zealand held by Southeast Asians university students and Filipino shoppers may explain their positive views on its dairy products.

The positive image of Asian consumers toward New Zealand's dairy products could also be influenced by the fact that they are not locally produced. Generally, Asian consumers associate imported products with quality. According to Schutte & Ciarlante (1998), in Asia and some other developing countries, imported products tend to be more appreciated, especially when they come from an industrialised country.

5.2.2 CHANGES IN PERCEPTIONS

Oliver & Desarbo (1988) argued that consumers form an expectation of product performance characteristics prior to a purchase, and actual performance levels are compared to expectation levels using a "better than" or "worse than" heuristic (see Section 2.4.7.1) . Cardozo (1966) stated that consumers used their expectations as a guideline to evaluate the product. The failure of a product to measure up to these guidelines may result in no initial sale, no repeat sale, and possibly unfavourable word-of-mouth publicity.

Some of the university students' perceptions had changed since they lived in New Zealand. Although most claimed that their positive expectations of New Zealand had been met, several perceptions had changed negatively, although the number involved varied per country.

If the theory on consumer expectations is applied, the university students formed their expectations of New Zealand prior to their arrival in the country (as shown by the results in Section 4.2.1.2). These expectations could have been compared with the actual situation they saw when they first arrived in the country. If expectations are not met, perception may change negatively. Since both the theory and the results suggest that a positive image can influence buying decisions, the contrary applies: a negative change of image or perception results in product avoidance.

5.3 DAIRY PRODUCT ATTRIBUTES

5.3.1 TASTE

Health, according to Bareham (1995), is a predominant concern among consumers in most Western societies. Products which are, or are perceived to be, healthy are sought after. In contrast to this, the New Zealand and British consumer surveys suggested that taste is the most important factor in their buying decisions. Nearly two thirds of British consumer respondents ranked "taste" as number 1, while only 2% considered "health and safety" as the most important attribute in dairy products. Similarly with the university students: respondents from the USA/Europe considered taste more important than health and safety (although the number of respondents was very small).

Except for taste, the majority of British consumers were uncertain or negative about the attributes of New Zealand dairy products. These findings, therefore, suggest that taste is the main determinant behind British consumers' decisions to buy New Zealand dairy products.

The Business Review Weekly (1992; cited by Craig Less *et al.* 1995), reported that taste will be the main theme in food marketing during the 1990s. In Australia, health and convenience remain important concerns for food buyers, but they are no longer the main concern. A study of food marketing trends in the US also indicates that taste is staging a dramatic comeback in influencing consumer choice (Craig Lees *et al.* 1995).

5.3.2 HEALTH AND SAFETY

In contrast to the British and New Zealand consumers, the Filipino consumers supported Bareham's (1995) statement that health and safety is the most important attribute in a purchase decision. Also for university students, health and safety was the most important attribute, especially for the Southeast Asians, Southern Asians/Africans, Northeast Asians and Latin Americans. The Pacific Islanders and the USA/Europe group, however, ranked health and safety only as the third most important attribute – the same as the British consumers.

New Zealand's "clean and green" image was associated with health and safety rather than environmental-friendliness and animal-welfare friendliness. The factors that influenced Filipino consumers to purchase New Zealand dairy products were their perceptions that New Zealand is: unpolluted, cows are fed on pastures and a well-known reputation for milk production, thus, milk products are healthy and safe. Therefore, their purchasing behaviour was based more on their concern for health and safety than on environmental or animal-welfare concerns.

5.3.3 PRICE

Maslow's theory of hierarchy of needs suggests that four types of needs must be met in a specific order of importance before person can act unselfishly (Section 2.4.3.1). A person's behaviour will be dominated by trying to satisfy the lowest unsatisfied need before stepping to the next level (Griffin 1991; Bareham 1995; Blythe 1997; Schutte & Ciarlante 1998). This is one reason why some people from underdeveloped cultures tend to remain in one of the lower levels of needs (Coddington 1993). In the context of the current study, consumers from the less-developed countries appeared to be less concerned about price than those from economically-advantaged countries: Filipino consumers considered price to be less important than did their New Zealand or British counterparts. However, amongst the University students, who generally consider themselves to be "short of money", price was more important in a purchase decision, particularly for non-Asians. The university survey also showed that the Pacific Islanders, Latin Americans and USA & Europe groups consider price as an important attribute compared to the Asians.

According to Schutte & Ciarlante (1998), price is perceived to be a surrogate indicator of quality. A survey by INSEAD's Euro-Asia Centre showed that the perception that higher price means higher quality is found everywhere in Asia, although the strength of this association varies between countries (Figure 5.1).

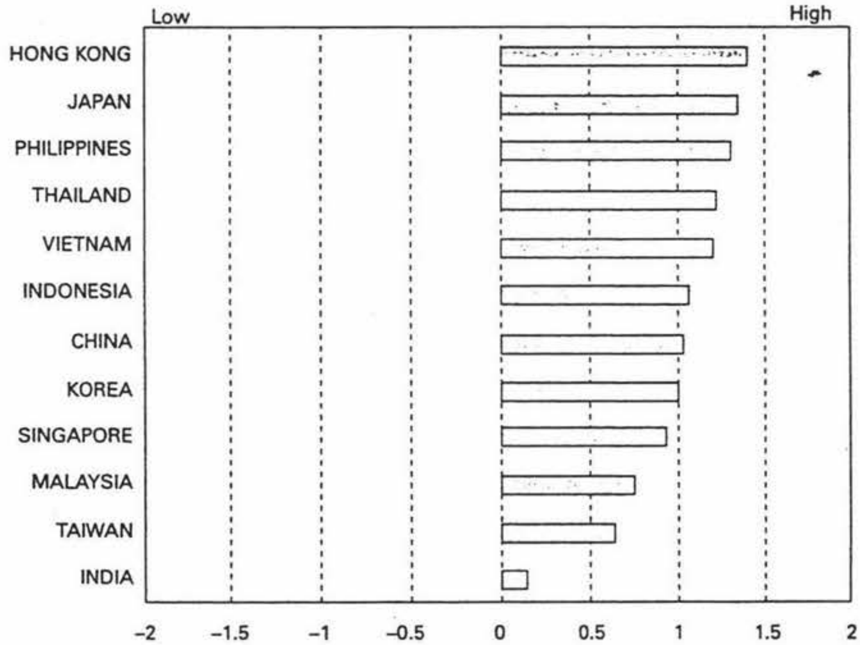

Figure 5.1. Customers' association of higher prices with higher quality (Schutte & Ciarlante 1998).

Lawson *et al.* (1996) on the other hand, reported that an American shopping simulation showed that better-educated homemakers from the middle- and working-class have a strong belief that price and quality are related, but that they still preferred lower priced product alternatives. They felt capable of judging the product alternatives on their own merits rather than having to rely on general beliefs in price/quality to make a decision. This report can likely explain the British and New Zealand consumer's attitude towards price.

It is also important to note, however, that the majority of the Filipino respondents held "white-collar" jobs, and less retirees/unemployed and students participated in the survey, compared to the other two countries. Therefore, this behaviour may also be influenced by social class or economic factors, neither of which was investigated in this research.

5.3.4 ENVIRONMENTAL-FRIENDLINESS

The literature on green marketing (Section 2.3) suggested that consumers are integrating their concern for the environment into their purchasing behaviour. However, the results of the university and supermarket surveys showed that health and safety, taste and price were still considered to be more important attributes than environmental-friendliness when buying dairy products. These results are therefore consistent with Ottman's (1993) statement that "product efficacy should and will continue to be the primary influence on purchase decisions".

Although the British and New Zealand consumers considered price to be an important factor in their purchase decisions, a large number of them also stated that they were willing to pay premiums for environmentally- and animal-welfare friendly products. This is consistent with the literature that showed that consumers are willing to pay more for environmentally-friendly products (Section 2.3.2). The British group had the highest proportion of respondents who were willing to pay a premium for environmentally-friendly products, closely followed by the Filipino consumers. New Zealand consumers were least willing to pay a premium, although those who did were willing to pay a higher premium than the former two groups.

Consumers' unwillingness to pay a premium may not necessarily indicate that they are less concerned with the state of the environment. According to Ottman (1992), although a significant number of consumers are environmentally-committed, there is also a significant portion who are doggedly non-environmentalists or who are more or less environmentally concerned but for various reasons not really committed. A number of the New Zealand respondents who claimed they were unwilling to pay a premium for environmentally-friendly and animal-welfare products, stated that these attributes should already be part of the over-all quality of the product they were buying and that they should not pay more for it.

Another logical explanation for such behaviour is that consumers could not afford to pay more for it. According to Ottman (1993), consumers are not willing to pay a premium for enhanced environmental performance because they do not have the discretionary income that allows them to pay a premium for a green or any other type of product. As mentioned in the previous section, the numbers of retirees/unemployed respondents from New Zealand and UK were higher than in the Filipino group. Therefore, these economic factors may have influenced their behaviour, although no formal data were collected to support this assumption.

5.3.5 ANIMAL WELFARE

According to Eastwood (1995), animal welfare is by far the most emotive consumer issue which surrounds the consumption of meat and other animal products. Some consumers have expressed increasing concern about the impact of intensive livestock production on animal and bird welfare (Hughes 1995). A large number of the respondents were willing to pay a premium for animal-welfare sensitive products, despite this generally being considered one of the least important attributes when buying dairy products. This result contradicts the fact that British and New Zealand consumers considered price to be the primary factor in their purchase decisions. According to Hughes (1995), the British have a reputation for being an animal-loving nation. This may explain why 70% of the British respondents claimed that they would be willing to pay more for animal-welfare friendly products; much more than either the Filipino or New Zealand consumers. Twelve percent of the British consumers ranked animal welfare as the most important attribute when they buy dairy products, almost as important as health and safety overall. New Zealand consumers, however, were, on average, willing to pay a higher premium for animal-welfare friendly products than were either British or Filipino consumers.

The number of British consumers who disagreed, or who were uncertain, that New Zealand dairy products were produced in an animal-welfare friendly way exceeded the proportion who agreed (Section 4.2.4.2). However, the fact that these consumers participated in the survey meant that they purchased New Zealand dairy products and that their perception of the animal-welfare friendliness of New Zealand dairy products did not seem to affect their actual purchase decision.

5.3.6 APPEARANCE AND PRESENTATION

The Southern Asian/African and Pacific Island students had a more positive image of the appearance and presentation of New Zealand dairy products than those from Southeast or Northeast Asia. The latter groups found New Zealand dairy products to be less attractive than the former groups. Consumer behaviour towards appearance and presentation of a product varies between cultures (Schutte & Ciarlante 1998). For example, the Chinese consider quality to be more important than appearance, thus they are more likely to purchase a product because of its function than for its beauty. The Japanese, on the other hand, often value outer appearance more than function (Schutte & Ciarlante 1998).

5.4 DAIRY FARMING SYSTEMS

In the review of literature, a number of dairy farming practices were identified as having an effect on New Zealand's "clean and green" image (Section 2.5). Some of the major concerns were focused on animal welfare issues such as induction, tail docking, herd management, and environmental issues such as fertiliser application and effluent disposal. The results of the farmer survey were consistent with the literature. Most farmers identified induction, tail docking, bobby calf handling and "cows in muddy paddocks" as farming practices that had some negative effect on the industry's image.

While the effects of these farming practices on the industry's image were not covered in the consumer surveys, some consumers, like the British were either in doubt, or showed some negative perception of the animal-welfare friendliness and environmental-friendliness of New Zealand dairy products.

With their current farming practices, these concerns were not evident among Filipino farmers. The major challenge faced by the Filipino is to increase their production efficiency and use of technology. For example, New Zealand dairy farmers have been using the milking machine for the past 70 years, while most small dairy farmers in the Philippines still use hand milking. However, as the majority of them milk only 2 to 5 cows, the use of a milking machine is not practical.

To ensure milk quality, dairy companies in New Zealand generally penalise suppliers who do not meet the quality standard by reducing payment for milk failing to pass the standard grade test (MacDonald 1997). While milk processing plants in the Philippines also implement quality measures, the technology necessary to to test bulk somatic cell counts (BSCC) and antibiotics was not available in the plants visited. These small dairy cooperatives had to rely on their members' honesty and word of honour for assuring the quality of their milk.

It is important to note however, that while New Zealand exports 95% of its milk production, 99% of the milk supply in the Philippines is imported. Therefore, the Philippine dairy industry only caters for a very small market segment. Since New Zealand is dependent on export markets, any change in market trends can affect industry profitability. Therefore, the industry must be vigilant on all issues that may affect consumer perceptions and create a market backlash.

5.5 LIMITATIONS AND BIASES

5.5.1 RESEARCH METHOD

Surveying was chosen as the appropriate method to elicit the data required to meet the objectives. However, like any other research method, surveys have some disadvantages that can affect the research results. According to Zikmund (1994), surveys are based on asking people for answers. If respondents cooperate and give truthful answers, then the survey is likely to accomplish its goal. Occasionally some people misrepresent answers in order to appear intelligent, conceal personal information, avoid embarrassment and so on. Sometimes respondents who become bored provide answers simply to get rid of the interviewer. At other times respondents provide the answers they think are expected of them in order to appear well-informed, or to please the interviewer.

Response bias can also arise from question format or content. Respondents who misunderstand the question may unconsciously provide a biased answer. Respondents may be willing to answer but be unable to do so because they have forgotten the exact details.

5.5.2 LOCATION

Supermarket shoppers do not have time to answer long questionnaires thus, the survey instrument was designed to be brief and simple to answer. This limited the amount of data that could be collected. A longer questionnaire would have elicited more information that could have strengthened the findings from the research. The in-shop and close to store environment may have limited the respondents' ability to think carefully about their answers: this might have caused some bias in their replies.

The selection of the supermarkets was based on the researcher's judgement and convenience. Different supermarkets may cater for different market segments; the selection of the survey site, therefore, may have introduced some bias.

5.5.3 SAMPLING METHOD

The "snowball" sampling method for the university survey may have introduced some bias. For example, the basis for the selection of international students was their physical features as they appeared to the researcher. International students from Europe, Australia, North America and even Latin American have physical features similar to the local students and, therefore, were more likely to be excluded from the selection. Also, the researcher is from Southeast Asia, and most of her acquaintances are Asians. This may explain why Asians dominated the total sample.

The time and date of the survey implementation may have affected the distribution of the survey sample. The supermarket surveys in New Zealand and UK were conducted during weekdays which may explain why the number of retirees/unemployed respondents was much higher than working respondents. In the Philippines, on the other hand, the surveys were done during the Christmas holidays and weekends, which may explain the larger number of respondents with white-collar jobs.

Although the survey covered different market segments, the use of a non-probability sampling method limits its validity. According to Zikmund (1994), there is no appropriate statistical technique for measuring random sampling error from a non-probability sample, thus, samples may not be considered as representative of their respective population groups. Care must, therefore, be excercised in extrapolating the results of the research to consumers in general.

5.5.4 ANALYSIS OF RESULTS

One-way analysis of variance is an appropriate statistical tool when the means of more than two populations are to be compared (Zikmund 1994). The compilation of different data from the three surveys caused some problems in the sample distribution, hence analysis of variance could not be used. In cases where a parametric test is not applicable due to distribution problems, non-parametric tests can be an alternative. These are normally applied when no assumption is needed to be made about the population distribution and there is no estimate of the population parameter (Zikmund 1994). The Kruskal-Wallis test is non-parametric and is used to compare three or more groups or a population and is the non-parametric equivalent to an ANOVA. However, non-parametric tests have limitations. Although they can predict the difference between distributions, it is not known whether they have different means, different variances, or differently shaped distributions (Zikmund 1994).

5.5.5 CROSS-CULTURAL ISSUES

Different countries have some degree of economic, political, professional and cultural variation. Understanding these differences is important when conducting international market research (Malhotra *et al.* 1996). Although some of the results are supported by behavioural theories of consumers of different cultures, the research did not cover an in-depth review of the cultural differences of the different survey samples. The surveys were also limited to the general behaviour of the consumers, specifically in relation to the consumption of New Zealand dairy products, and cross-cultural issues were not investigated further in the data collection.

Conclusions and Recommendations

Chapter Six

The objectives set for this research were to determine: perceptions held by different consumers of New Zealand's dairy products; the attitudes and buying behaviour of different consumers in relation to New Zealand's dairy products; the importance of "clean and green" image on their purchase decisions; and the perceptions and beliefs of New Zealand dairy farmers in relation to the dairy industry's "clean and green" image. A secondary objective was to assess the current practices of New Zealand dairy farmers relative to their counterparts in the Philippines in sustaining a "clean and green" image.

In Section 6.1 of this chapter, conclusions from the research are presented. Recommendations arising from the research are presented in Section 6.2, and areas for further study are suggested in Section 6.3.

6.1 MAIN FINDINGS

In the field of marketing, the relationship between environmental concerns and buyer behaviour remains a controversial subject. Nevertheless, the new emphasis in the marketplace on environmental integrity and sustainable production and practices, have driven profit-oriented businesses to change their direction and improve their systems so that they are able to demonstrate that they are indeed environmentally sustainable. A significant and growing number of consumers indicate that this influence their purchase decisions. It is this driving force that motivates the New Zealand dairy industry to ensure that the production of milk meets consumer expectations.

In this research, the trading of New Zealand's dairy products on a "clean and green" image was found to be effective. Some consumers perceived New Zealand as "clean and green" and this had influenced their decision to buy its dairy products. However, caution needs to be exercised in extrapolating these conclusions to all markets as they were derived mainly from Filipino supermarket consumers and Asian international student respondents. British consumers, on the other hand, indicated that their decisions were influenced less by the image they held of New Zealand than product attributes such as taste, health and safety, and price.

The image held of products may change positively or negatively once individuals are exposed to reality. In this research, some student respondents expressed disappointment with New Zealand's level of pollution, its landscape, and New Zealanders' concern for the environment and animal welfare. Similarly, some did not buy New Zealand dairy brands while they were in New Zealand, while others claimed they had no intention of buying New Zealand dairy brands when they returned to their home country. However, the number of dissatisfied students in the survey (n=91) and details about them was insufficient to establish a causal linkage between the negative change in their perceptions and the decision not to buy New Zealand dairy products.

Of the attributes studied, health and safety, taste, and price were found to be the main determinants of consumer buying decisions. Environmental-friendliness, animal welfare-friendliness, and appearance and presentation were on average considered less important. The order of importance of these attributes, however, did vary between country groups, indicating that different marketing strategies could be worthwhile for each country/market segment.

The "clean and green" image of New Zealand was associated with health and safety rather than environmental-friendliness or animal welfare-friendliness by Filipino shoppers and Asian university students. In contrast, the British consumers who bought New Zealand dairy products mainly did so for their taste.

Consumer buying decisions were found to be influenced by image, but this could not be linked directly to consumers' environmental concerns. However, while environmental- and animal welfare-friendliness were not the main determinants of dairy product purchase decisions, some consumers indicated they were willing to pay more for products that had these attributes. The proportion of consumers who were willing to do this, and the premium they were willing to pay, differed between countries. These findings suggest that it may be possible to charge a premium for environmentally-friendly and animal welfare-friendly products. However, as Hoek *et al.* (1998) stated, "this must be balanced against marketplace characteristics; because some brands possess certain characteristics, consumers may be conditioned into expecting all brands to display those features and, despite active promotion of green attributes, consumers may see brands as interchangeable".

The concepts of animal welfare- and environmental-friendliness have recently been the subject of a lot of debate. Each person has their own interpretation on what is "right" and "wrong", "sustainable" and "not sustainable", or "cruel" and "kind". Even within New Zealand, dairy farmers hold different views about the practices used on their property. While the majority believed that the continued use of some practices threaten the industry's "clean and green" image, others saw these as being essential for maintaining the efficiency of their production system and cost competitiveness in milk production. A similar variation in the views of consumers from different countries can be expected depending on factors such as cultural norms, social class, demographics and even product choice.

This research did not provide conclusive evidence that current practices on New Zealand dairy farms affect the marketability of its dairy products. As noted earlier, however, some consumers were willing to pay more for products that could assure them on environmental and animal-welfare issues. For example, animal-welfare was a very important attribute for some British consumers. Since New Zealand dairy products are promoted as being "clean and green", current farming practices need to be aligned to satisfy the raised consumer expectations, without sacrificing economic efficiency.

Despite concerns about some practices on dairy farms, New Zealand's dairy systems are far more advanced than those in the Philippines. The Filipino dairy industry is still in its infancy and the major focus of its dairy farmers is on improving production. The New Zealand dairy industry, on the other hand, is reliant on export markets and is, therefore, vulnerable to any changes in market trends and perceptions. Therefore, its main goal is to sustain a competitive edge amongst giant rivals in the global dairy markets.

6.2 RECOMMENDATIONS

The research could not establish a strong relationship between environmental concerns and buying behaviour. The literature also indicates that this is still a subject of debate in the marketing arena. Despite this, "green marketing" is here to stay. The New Zealand Dairy Board, therefore, should continue using the "clean and green" image for promoting dairy products. However, many companies also "jump" on the latest marketing trends and are vying for the market niches for "green" products. Furthermore, environmental and animal welfare legislation and regulation are being refined by some countries, and these could be used as a market barrier to New Zealand's dairy products. Therefore, efforts must continue to be made to enhance the New Zealand dairy industry's "clean and green" image.

To assure consumers of product quality, some agricultural industries have already developed a traceback system that informs consumers about rigid quality control "from the farm to the plate". While this traceback system is difficult to impose in dairying, a similar system could be implemented in order to provide a consumer a guarantee on the quality of New Zealand's dairy products. An independent body that can certify or attest that dairy products meet high environmental and animal welfare standards could also help to assure consumers of the New Zealand dairy industry's integrity in environmental management.

In order to achieve this, however, total support from the farmers will be needed. The significant number of survey farmers who believed that some farming practices have a negative effect on their industry's image indicates that the message on animal welfare and sustainable environmental management is reaching them. Some dairy farmers, however, are still reluctant to change their practices. The industry, therefore, should continue to develop alternative methods that can minimise or even eliminate the use of practices that threaten the industry's image. This needs to be done in a manner that does not sacrifice economic efficiency at the farm level. In addition, penalties to modify the behaviour of farmers who persistently neglect the standards required may need to be considered.

It would be preferable for the industry to motivate farmers to consider improving environmental performance as an opportunity rather than cost. They should communicate with, and emphasise to, farmers that the "clean and green" image is vital for growing industry's export trade. By maintaining or enhancing the industry's image, it could provide an important element in the competitive advantage that would assure the industry's sustainability. Farmers who can achieve "clean and green" management systems should also be commended in order to encourage them and stimulate their peers to adopt the same quality systems.

The bulk of New Zealand's dairy products are exported. New Zealand's dependence on export makes it vulnerable to changes in consumer expectations. The New Zealand Dairy Board, therefore, should continue to conduct research on consumer behaviour, and monitor marketing trends in order to establish a competitive advantage in the international marketplace.

6.3 SUGGESTIONS FOR FURTHER STUDY

This research showed that different consumers have different buying behaviour. Therefore, different marketing strategies should be used for different market segments. For example, Filipino supermarket shoppers and some Asian students considered health and safety to be the most important attribute in their buying decisions. Since Asia is one of the major markets for New Zealand's dairy products, future research is recommended to investigate the different factors that Asian consumers associate with "health and safety".

The current research has shown that perceptions do influence purchase decisions, but a direct link with environmental and animal welfare concerns could not be established. Further research on consumer behaviour is recommended to investigate how strongly their environmental and animal welfare concerns affect purchasing behaviour. It is important that this research investigates consumers' actual knowledge about environment and animal welfare. Behaviour such as checking product labels for environmental assurance prior to purchase, the importance of recycling and whether they donate money to environmental causes, should be quantified. It is equally important to look at whether factors like social class, demographics, cultural norms and even location influence behaviour with respect to the willingness to pay for environmentally- and animal welfare-friendly dairy products. A quota sampling approach could be used to ensure that occupational category, gender and income group are proportionately represented from each country or market segment. This sampling method could establish a statistical relationship between buying behaviour and the personal background of respondents. A variety of supermarkets selected at random could also ensure a less-biased sample of consumers for future study.

In this research, consumers also indicated a willingness to pay premiums for environmentally- and animal welfare-friendly products. Therefore, it is important to investigate the factors that consumers associate with these attributes. Research should also be carried out to determine the level of awareness and opinions of different consumers on New Zealand farming practices in order to measure its impact on the "clean and green" image. It is also important to investigate the sources of information on environmental- and animal-welfare issues.

Competition in the global market for agricultural products is steadily increasing and New Zealand needs to employ new strategies to grow export markets. The information derived from this study and recommended follow-up research could provide the New Zealand dairy industry with information that can be used as a basis for improving farm practices, marketing strategies and meeting the standards consumers expect of "clean and green" dairy products.

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REFERENCES

"$200,000 fines waiting." *New Zealand Farmer*, 13 July 1994, p. 7.

"Adverse animal management perceptions." *Dairy Exporter*, March 1997, 67.

Ajzen, I.; Fisbein, M. 1980. *Understanding Attitudes and Predicting Social Behaviour.* Englewood Cliffs, N.J. Prentice Hall.

"Animal welfare, trade issues mix in tail docking debate." *Dairy Exporter*, March 1995, 60.

Animal Welfare Advisory Committee 1997. *Code of Recommendations and Minimum Standards for the Welfare of Bobby Calves.* Code of Animal Welfare No. 8 (Revised), Wellington, New Zealand.

Anonymous 1993. "Trust is key to bottom line." *Communication World*, 1993 October, 10 (9): 11-12.

Auldist, M.J.; Coats, S.; Rogers, G.L.; McDowell, G.H. 1995. "Changes in the composition in the milk from healthy and mastitic dairy cows during the lactation cycle." *Australian Journal of Experimental Agriculture*, 35:427-436.

Bareham, J. 1995. *Consumer Behaviour in the Food Industry – A European Perspective.* Butterworth-Heineman, 1995.

Bennett, R.M. 1996. "People's willingness to pay for farm animal welfare." *Animal Welfare*, 5: 3-11 pp.3-11.

Berger, I. 1993. "The Relationship Between Environmental Attitudes and Behaviour." *Canadian Journal of Marketing Research*, 12:36-43.

Bergstrom, K. 1993. "The Eco-label and Exporting in Europe." *Business America.* November, 114 (24): 21.

Bernstein, D. 1986. *Company Image and Reality – A Critique of Corporate Communications.* Butler & Tanner Ltd., Great Britain.

Birkigt, K.; Standler, M.M. 1986. *Corporate Identity, Grundlagen, Funktionen und Beispielen*, Verlag, Moderne Industrie: Landsberg an Lech.

Blythe, J. 1997. *The Essence of Consumer Behaviour.* Prentice Hall, Great Britain.

Bodeker, P.C.W. 1998. "The New Zealand Dairy Industries approach to on farm quality issues." *1998 Dairyfarming Annual*, Massey University, New Zealand pp 66-70.

Brown, J.D.; Wahlers, R.G. 1998. "The environmentally-concerned consumer: an exploratory study." *Journal of Marketing Theory & Practice*, 1998 Spring 6 (2): 39-47.

Bryceson, S. 1997. "Communicating your environmental image." *PPI, Pulp & Paper International*, 39(9):5.

Bunny, J. 1992. *Induction of premature parturition in New Zealand dairy herds.* Thesis: Diploma Veterinary Clinical Sciences, Massey University.

Cairncross, F. 1992. *Costing the Earth – The Challenge for Governments, The Opportunities for Business.* Harvard Business School Press, Boston, Massachusetts.

Cardozo, R.N. 1965. "An experimental study of customer effort, expectation, and satisfaction." *Journal of Marketing Research*, 1965 August, Vol. 2 pp. 244-249.

Caudron, S. 1997. "Forget image, it's your reputation that matters." *Industry Week*, 246 (3): 13-16. 1997 February 3.

Charter, M. ed. 1992. *Greener Marketing, A Responsible Approach to Business.*

Clark, D.A. 1997. "How much nitrogen is enough?" *Ruakura Dairy Farmers Conference 1997 Proceedings*, Hamilton, New Zealand p. 92-98.

Coddington, W. 1993. *Environmental Marketing – Positive Strategies for Reaching the Green Consumers.* McGraw Hill, Inc. USA.

Cooper, D.R.; Schindler 1998. *Business Research Methods*, 6th Edition. Irwin McGraw Hill, USA.

"Cow stress can originate in management practices." *Dairy Exporter*, March 1993, 40.

Craig-Lees M.; Joy, S.; Browne, B. 1995. *Consumer Behaviour.* John Wiley & Sons, Australia.

CWS Retail 1995. "Responsible retailing: a survey of consumers' ethical concerns."

d'Astous; A.; Ahmed, S.; Valence. G.; Houde, F. 1997. *Proceedings of the European Marketing Academy Conference*, University of Warwick: 287-301.

Dairying and the Environment Committee, 1996. "Dairying and the Environment – Managing Farm Dairy Effluent." New Zealand.

Davis, J.J. 1994. "Consumer response to corporate environmental advertising." *Journal of Consumer Marketing.* 11 (2): 25-37.

Donald, R. 1995. "NZ practices faces resistance abroad." *New Zealand Farmer*, p. 12.

Dryden, R.; Radich, P. 1998. "Resource management non-compliance costly." *Dairy Exporter*, February p. 47.

Eastwood, P.J. 1995. "Farm animal welfare, Europe and the meat manufacturer." *British Food Journal.* 97(9): 4-11.

"`Enviropreneurial' strategy is a free-market approach." *Marketing News* 1997 February, 31(3):22.

Fombrun, F.J. 1996. *Reputation – Realizing Value from the Corporate Image.* Harvard Business School Press, USA.

Franks, R. 1998. "Industry Image ad the Likely Impact on Future Farming Practices." *Continuing Education in Agriculture,* No. 4 Dairy farm Field Workshop, Massey University, New Zealand.

Frause, B.; Colehour, J. 1994. *The Environmental Marketing Imperative.* Probus Publishing Company, USA.

"GATT, A Big Deal for New Zealand Agriculture", 1994. *Final Report of the Agricultural Development Steering Committee and Conference Proceedings,* Wellington, New Zealand.

Gregory, J.R. 1995. *Marketing Corporate Image – The Company as Your Number One Product.* NTC Business Books, USA.

Griffin, E. A. 1994. *A First Look at Communication Theory.* New York: McGraw-Hill 2nd ed.

Gutierrez, P.L. 1996. *Milk Quality management strategies on a dairy farm system in New Zealand.* Unpublished Masters thesis, Massey University, New Zealand.

Hawkins, D.I.; Best, R.J.; Coney, K.A. 1983. *Consumer Behaviour – Implications of Marketing Strategy.* Business Publications, Inc. Texas.

Hewison, G. 1995. *Reconciling Trade and Environment, Issues for New Zealand.* Victoria University, Wellington, New Zealand.

Hini, D.; Gendall, P.; Kearns, Z. 1995. "The link between environmtal attitudes and behaviour." *Marketing Bulletin,* 6:22-31

Hoek, J.; Gendall, P.; Hederley, D.; Jardine, A.; Peterson, G. 1998. "Green Attributes: How Do They Affect Consumer's Behaviour?" *Paper presented at the Australian and New Zealand Marketering Educators' Conference,* University of Otago, Dunedin, New Zealand.

Holbert, N.B.; Speece, M.W. 1993. *Practical Marketing Research – An Integrated Global Perspective.* Prentice Hall, Singapore.

Holmes, C.W.; Wilson, G.F. 1987. *Milk Production from Pasture.* Butterworths of New Zealand, Wellington, New Zealand.

Holmes, C.W.; Edwards, N.; Parker, W.J. 1994. "The Use of Supplementary Feeds to Extend Lactation." *1994 Dairyfarming Annual,* Massey University, New Zealand.

Horne, D.J.; Singleton, P. 1997. "Managing Wet Soils in Wet Years: A Cautionary Tale." *1997 Dairyfarming Annual,* Massey University, New Zealand pp 117-124.

Hughes, H.R. 1993. "New Zealand's Clean Green Image – Fact or Fiction?" *Thomas Cawthron Memorial Lecture No. 52,* Cawthron Institute, Nelson, New Zealand.

Hughes, D. 1995. "Animal Welfare: The consumer and the food industry." *British Food Journal.* 97(10):3-7.

Hunter, A. 1997. "Green won't wash any more." *Export News*, 10 November 1997, p. 9 New Zealand.

Kalafatis, S.; Pollard, M.; Gilpin, S. 1994. "Stability of consumer trade-offs when considering environmentally-friendly product attributes." *Proceedings of the Marketing Educators' Group*, University of Ulster.

Kerlinger, F.N. 1986. *Foundations of Behavioral Research*, 3rd Edition. Holt, Rinehart and Winston, USA.

Kerr, P. 1996 "Change in attitudes to animals." *The New Zealand Farmer* 1996.

Kinnear, T.C.; Taylor, J.R.; Ahmed, S.A. 1974. "Ecologically-concerned consumers: who are they?" *Journal of Marketing*, (April) 38:20-24.

Kotler, P. 1976. *Marketing Management – Analysis, Planning and Control.* 3rd ed. Prentice Hall International editions. London.

Lacy-Hulbert, S.J.; Woolford, M.W. 1996. "Mastitis control and teat preparation." *Proceedings of the Ruakura Farmer's Conference* pp. 62-64, Hamilton, New Zealand.

Lawson, R.; Tidwell, P; Rainbird, P.; Loudon, D.; Della Bitta, A. 1996. *Consumer Behaviour in Australia & New Zealand.* McGraw-Hill Book Company, Sydney, Australia.

Levin, G. 1990. "Consumers Turning Green: JWT Survey." *Advertising Age*, November, 61:74.

Livestock Improvement Corporation 1998. *Dairy Statistics 1997-98.*

MacDonald, A. 1997. *Implementing a Quality Programme on a Seasonal Supply Dairy Farm.* Masters thesis, Massey University, New Zealand.

MacDonald, A. 1998. "Quality Systems in the Dairy Industry – Who Benefits? Who Pays? *1998 Dairyfarming Annual*, Massey University, New Zealand.

Macmillan, K.L.; Henry, R.I.; Taufa, V.K.; Phillips, P. 1990. "Calving Patterns in Seasonal Dairy Herds", *New Zealand Veterinary Journal*, 38 (4): 151-155.

MAF Quality Management 1996. "Concerns for Cows in Mud." Dairying Today, September 1996.

MAF Policy Technical Paper 1993. *Changes in Sharemilking 1973-93.*

Malhotra, N.K.; Agarwal, J.; Peterson, M. 1996. "Methodological issues in cross-cultural marketing research – A state of the art review." *International Marketing Review* 13(5):7-43.

Marconi, J. 1996. *Image Marketing – Using Public Perceptions to Attain Business Objectives.* NTC Business Books, USA.

Marshall, K. 1996. "The Contributions of the Dairy Industry." *The Contribution of Plant and Animal Production to the Nation's Environment Convention '96*, August 1996, Ruakura, New Zealand.

Martin, B.; Simintiras, A. 1995. "The impact of green product lines on the environment: Does what they know affect how they feel?" *Marketing Intelligence and Planning*, 13(4):16-23.

"Massey paper terms bobby calf industry "waste of resources". *Dairy Exporter*, June 1991, 27.

Mathias, R. "Dairy Board goes `free range' in Britain." *Farm Adviser* 1998, p.6-7.

Maughan, C.W. 1985. "Sharemilking: it's Contribution to the New Zealand Dairy Industry – Past, Present and Future." *1985 Dairyfarming Annual*, Massey University, New Zealand.

Maxwell, J.A. 1996. *Qualitative Research Design – An Interactive Approach*. Sage Publications, USA.

McDougal, G. 1993. "The Green Movement in Canada: Implications for Marketing Strategy." *Journal of International Consumer Marketing*, 5(3):69-87.

Mendleson, N.; Polonsky, M.J. 1995. "Using strategic alliances to develop credible green marketing." *Journal of Consumer Marketing*, 12(2):4-18.

Michael Peters Group (1991). *Assessing the Environmental Consumer Market*, United States Environmental Protection Agency, Washington DC.

Mogridge, B. 1996. "Project 98 – Green Initiative for New Zealand's Food and Beverage Industry, A Vision of Leadership." *The Contribution of Plant and Animal Production to the Nation's Environment Convention '96*, Hamilton, New Zealand.

Mohr, L.A.; Eroglu, D.; Ellen, P.S. 1998. "The development and testing of a measure of skepticism toward environmental claims in marketers' communications." *Journal of Consumer Affairs*. 1998 Summer 32(1): 30-55.

MORI, June 1994.

Mounfort, M. 1991. "Organic produce trend is driven." *Dairy Exporter*, January 1991.

National Dairy Authority 1998. "Philippine Dairy Update – January-December 1997." Quezon City, Philippines

"Neglect worries officials." *The Dominion*, July 1995, p. 23.

Nestel, G.K. *The Road to ISO 14000*. Irwin Professional Publishing, USA.

Neuman, W.L. 1997. *Social Research Methods – Qualitative and Quantitative Approaches*, 3rd Edition. Allyn and Bacon, USA.

Newell, S.J.; Goldsmith, R.E.; Banzhaf, E.J. 1998. "The effect of misleading environmental claims on consumer perceptions of advertisements." *Journal of Marketing Theory & Practice*, 1998 Spring 6 (2): 48-60.

New Zealand Dairy Board 1998. *Annual Report 1998.*

New Zealand Dairy Board 1997. *Corporate Profile*, New Zealand.

New Zealand Dairy Board 1997. *Overview*, New Zealand.

New Zealand Dairy Board, 1994. *Quality in New Zealand Dairy Industry from the Cow to the Customer.*

New Zealand Dairy Code of Practice, 1991

New Zealand Trade Development Board, 1996. *Environmental Integrity, New Zealand's Competitive Advantage.*

Norman, G. 1995. "Animal stress and welfare studied." *The Dominion.* 23 June 1995, Section1 p. 16.

Oliver, R.L.; Desarbo, W.S. 1988. "Response Determinants in Satisfaction Judgments." *Journal of Consumer Research.* 1988 March, Vol. 14 p. 495-505.

Ottman, J.A. 1992. "Sometimes, Consumers Will Pay More to Go Green." *Marketing News,* 1992 July 6, 26 (14): 16.

Ottman, J.A., 1993. *Green Marketing – Challenges & Opportunities for the New Marketing Age.* NTC Business Books, USA.

Ottman, J.A. 1995a. "Edison winners show smart environmental marketing." *Marketing News*, 1995 July 17, 29(15): 16,19.

Ottman, J.A. 1995b. "Mandate for the 90s: Green corporate image." *Marketing News* 1995 September 11, 29 (19): 8.

Ottman, J.A. 1996. "Suggestions for environmental labelling." *Marketing News,* 1996 June 3, 30 (12): 13.

Ottman, J.A. 1998a. "Stonyfield Farm exemplifies new green marketing model." *Marketing News*, 1998 January 5, 32(1): 20.

Ottman, J.A. 1998b. "Innovative marketers give new products the green light." *Marketing News*, 1998 March 30 32 (7): 10.

Ottamn, J.A. 1998d. "Environmental branding blocks competitors." *Marketing News* 1998 August 17, 32(17):8.

Ottman, J.A. 1998e. "Back up green programs with corporate credibility." *Marketing News* 1998 October 26, 32 (22): 9-10.

Ottman, J.A. 1998e. "Back up green programs with corporate credibility." *Marketing News* 1998 October 26, 32 (22): 9-10.

Ottman, J.A. 1998f. "The debate over eco-seals: Is self-certification enough?" *Marketing News*, 1998 March 2, 32 (5): 7, 9.

Owen, J. 1991. *Cattle Feeding*. Farming Press Books, United Kingdom.

Parker, W.J.; Holmes, C.W. 1997. "How much will the average farm have to produce in 2010 in order to maintain its present level of net income." *1997 Dairyfarming Annual*, Massey University, New Zealand pp 25-33.

Parker, W.J. 1998. "The Future of Small Dairy Farm." *1998 Dairyfarming Annual*, Massey University, New Zealand.

Peattie, K. 1992. *Green Marketing*. Longman Group, UK Ltd 1992.

Poiesz, T.b.C.; 1988. "The image concept: it's place in consumer psychology and its potential for other psychological areas." Paper presented at the *XXIVth International Congress of Psychology*, Sydney, Australia.

Roberts, A.; Morton, J.; Edmeades, D. 1994. *Fertiliser Use on Dairy Farms*. Dairy Research Corporation, Ltd., Hamilton, New Zealand.

Schuman, H.; Presser, S. 1981. *Questions and Answers in Attitude Surveys*. New York Academic Press.

Schwepket, C.; Cornwell, B. 1991. "An examination of ecologically concerned consumers and their intention to purchase ecologically packaged goods." *Journal of Public Policy and Marketing*, 10:77-101.

Scutte, H.; Ciarlante, D. 1998. *Consumer Behaviour in Asia*. Macmillan Press, Ltd., London.

Shearer, J.K.; Schmidt, R.H.; Reneau, J.K. 1992. "Monitoring Milk Quality and Udder Health". Pp. 475-485 *in*: *Large Dairy Herd Management*, Cox, H.H.; Wilcox, C.J. *ed.* Illinois, USA.

Shrum, L.J.; McCarty, J.A.; Lowrey, T.M. 1995. "Buyer characteristics of the green consumer and their implications for advertising strategy." *Journal of Advertising*, Summer, 14(2):71-82.

Smith, H.W. 1981. *Strategies of Social Research – The Methodological Imagination 2nd ed.*. Prentice Hall, New Jersey.

SPSS Base 7.0 for Windows User's Guide, 1996. USA.

Stafford, K. 1993. "The Welfare of Dairy Cattle in New Zealand – Implications for Dairy Farmers." *1993 Dairyfarming Annual*, Department of Animal Science, Massey University, New Zealand.

Steidl P.; Emery, G. 1997. *Corporate Image and Identity Strategies – Designing the Corporate Future.* Business & Professional Publishing, Australia.

Stevenson, G.W.; O'Harrow, R.; Romig, Douglas 1996. *Dairy Farmer Career Paths, Farm Entry and Exit Transitions in New Zealand and Wisconsin: Observations, Challenges, and Opportunities for Exchange.* University of Wisconsin, USA.

Stringleman, H. 1993. "Call for better PR overseas." *The New Zealand Farmer* 06 January 1993 p. 7.

Tan, I.Q. 1997. "The Dairy Industry – Getting its act together." *Agribusiness Digest*, Manila, Philippines.

Taylor, R. 1996. "Project 98 wants it clean, green, safe." *The New Zealand Farmer*, 18 July 1996.

Tillman, R. 1993. "Principles of Fertilser Use in Dairy Farms." *1993 Dairyfarming Annual*, Massey University, New Zealand.

Thomson, N.A.; Holmes, C.W. 1995. "Supplementary Feeding for Increased Milk Production." *1995 Dairyfarming Annual*, Massey University, New Zealand.

Tucker, L.R.; Dolich, I.j.; Wilson, D. 1981. "Profiling environmentally responsible consumer-citizens." *Journal of the Academy of Marketing Science*, 9(4):454-478.

Unnevehr, L.; Deaton, L.; Kramer, C. 1994. "International Trade Agreement Provides New Framework for Food-safety regulation." *FoodReview*, December 1994.

van Liere, K.; Dunlap, R. 1980. "The Social Basis of Environmental Concern: A Review of Hypotheses, Explanations and Empirical Evidence." *Public Opinion Quarterly*, 44:181-207.

van Riel, C.B.M. 1995. *Principles of Corporate Communication.* Prentice Hall, Great Britain.

Verkerk, G.A.; Goble, G.; McDougall, S.; Woods, M.; Clark, B. 1997. "Induction of parturition in dairy cows: a survey from spring 1996 in the Waikato region." *Proceedings of the New Zealand Society of Animal Production 1997*, Vol. 57.

Walker, A.B.; Morriss, S.D. 1996. "Quality Products from a Quality Environment: Some Practical and Policies Issues." *The Contribution of Plant and Animal Production to the Nation's Environment Convention '96*, August 1996, Ruakura, New Zealand.

Waroka, W. 1996. *Farmer Attitudes towards the 1991 Resource Management Act (RMA) and Dairy Shed Effluent Disposal in the Manawatu-Wanganui Region.* Unpublished Dissertation for Diploma in Applied Science, Massey University, New Zealand.

Williams, P.J. 1997. *Rapport Building Processes Used by an Expert Farm Management Consultant.* Unpublished dissertation for Diploma in Applied Science, Massey University, New Zealand.

Wunderlich, G. 1991. "The Ethics of Animal Agriculture." *Food Review*. 14(4): 24-27, 1991 October-December.

Yin. R.K. 1994. *Case Study Research – Designs and Methods*, 2nd Edition. Sage Publications, California, USA.

Zikmund, W.G. 144. *Business Research Methods*, 4th ed. The Dryden Press, USA.

Zinkhan, G.M.; Carlosn, L. 1995. "Green Advertising and the Reluctant Consumer." *Journal of Advertising*, (Summer) 16.

APPENDIX 1

Please leave this section blank

Survey Form 1 **MASSEY UNIVERSITY INTERNATIONAL STUDENTS**

Dear Fellow International Student,

I am conducting research on the "New Zealand Dairy Industry's Image" for my masterate thesis. Part of my research is to assess the opinions of international consumers about New Zealand dairy products. You, as international student, represent this group. I am therefore asking you to assist me by filling-in this questionnaire.

Your support is greatly appreciated.

Regina G. Billones

3

Before you came to New Zealand, what was your perception of the country? Please describe this briefly

4

10

1. Do you eat dairy products?

☐ 1 **Never** ☐ 3 **Sometimes** ☐ 5 **Often** 11

2. Are New Zealand dairy products available in your country? 12

☐ 1 **Yes (PLEASE PROCEED TO Q4)**

☐ 2 **No (PLEASE PROCEED TO Q7)**

☐ 3 **Don't Know (PLEASE PROCEED TO Q7)**

3. Please name the NZ dairy products or brands you recall that are available in your country? 14

20

4. Did you buy New Zealand dairy products in your home country? 21

☐ 1 **Yes (PLEASE PROCEED TO Q6)**

☐ 2 **No (PLEASE PROCEED TO Q7)**

Please leave this section blank

5. **Did your perception of New Zealand influence your decision to buy these products?**

☐ 1 **Yes (PLEASE PROCEED TO Q6)** 22

☐ 2 **No (PLEASE PROCEED TO Q7)**

6. **How did your perception influenced to buy New Zealand dairy products?** 24

____

____ 30

7. **What did you think of NZ dairy products before you came to New Zealand?**

They are….	**Strongly disagree**	**Disagree**	**Not sure**	**Agree**	**Strongly Agree**	
Healthy and Safe	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	31
Produced in an animal-friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Produced in an environmentally - friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Good value for money	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Attractive and well-presented	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Tasty	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	36

8. **Please read the following criteria and rank their importance when you buy dairy products. (1 –MOST IMPORTANT 6 – LEAST IMPORTANT)**

Environmentally-friendly	____________	37
Taste	____________	
Health & safety	____________	
Appearance & presentation	____________	
Price	____________	
Animal welfare	____________	42

Please leave this section blank

9. Now that you're in New Zealand, do you buy NZ dairy products?

☐ 1 Yes ☐ 2 No

43

10. Now that you lived in New Zealand, has your perception of the country changed?

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	
New Zealand is more polluted than I expected	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 44
New Zealanders are more concerned about the environment than I expected	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
New Zealand's countryside is not as beautiful as I expected	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
New Zealand farmers are not as animal-welfare sensitive as I expected	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
The quality of New Zealand food products is better than I expected	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
New Zealanders are more health-conscious than I expected	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 49

11. When you return to your home country, will you buy New Zealand dairy products?

☐ 1 Yes ☐ 2 No

☐ 49

12. What is your gender? ☐ 1 Female ☐ 2 Male

☐ 50

13. What year were you born? 19______

☐ 50

14. Degree programme: ____

☐ 51

15. Classification: ☐ 1 Postgraduate ☐ 2 Undergraduate

☐ 52

16. How long have you been in New Zealand?

_________ **years** __________ **months**

☐ 53

13. Country of Origin (*please specify*):__________________________________

☐ 54

Thank you very much for your support!

APPENDIX 2

Please leave this section blank

Survey Form 2 **NEW ZEALAND CONSUMERS**

Dear Respondent,

I am conducting research on the "New Zealand Dairy Industry's Image" for my masterate thesis. Part of my research is to assess the opinions of consumers about New Zealand dairy products. I am therefore asking you to assist me by filling-in this questionnaire.

Your support is greatly appreciated.

Regina G. Billones

☐☐ 2

1. Do you prefer to buy New Zealand dairy products rather than other brands?

☐ 1 **Yes** ☐ 2 **No** ☐ 3 **Don't know**

☐ 3

2. When you shop, how often do you buy the following dairy products?

Butter	______________	☐ 4
Cheese	______________	☐
Fresh Milk	______________	☐
Yogurt	______________	☐
Cream	______________	☐
Others:	______________	☐ 9

3. What do you think of New Zealand dairy products?

they are....	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree	
Healthy and safe	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 10
Produced in an animal welfare-friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
Produced in an environmentally - friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
Good value for money	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
Attractive and well-presented	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
Tasty	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 15

Please leave this section blank

4. Please read the following criteria and rank their importance when you buy dairy products. (1 –MOST IMPORTANT 6 – LEAST IMPORTANT)

Environmentally-friendly ______ 16

Taste ______

Health & safety ______

Appearance & presentation ______

Price ______

Animal welfare ______ 21

5. Are you willing to pay more for a dairy product that is identical to others except that it is produced in an environmentally-friendlier way?

☐ 1 **Yes** ☐ 2 **No** ☐ 3 **Don't know** 22

6. If yes, how many percent (%) more would you be willing to pay?

______ 23

7. **Are you willing to pay more for a dairy product that is identical to others except that it is produced in a more animal welfare-friendly way?**

☐ 1 **Yes (Proceed to Q8)** ☐ 2 **No (Proceed to Q9)** ☐ 3 **Don't know (Proceed to Q9)** 24

8. If yes, how many percent (%) more would you be willing to pay?

______ 25

9. **What is your gender?** ☐ 1 Female ☐ 2 Male 26

10. What is your age group?

☐ 1 30 & below ☐ 2 31-40 ☐ 3 41-50 ☐ 4 51-60 ☐ 5 60 & above 27

11. What is your occupation

______ 28

12. What is your household income?

☐ 1 <20,000 ☐ 2 21-30 K ☐ 3 31-40K ☐ 4 41-50K ☐ 5 >50K 29

Thank you very much for your support!

Please leave this section blank

APPENDIX 3

Survey Form 3 **FILIPINO CONSUMERS**

2

New Zealand dairy product (type and brand) purchased

____ 3

1. **Do you know where this dairy product came from?**

____ 4

2. **Did the fact that this product came from New Zealand influence your decision to buy it?**

☐ 1 Yes ☐ 2 No ☐ 3 Not sure 5

3. **If yes, why?**

____ 6

4. **How often you do buy this product?**

____ 7

5. **Have you ever heard of the expression "clean and green"?**

☐ 1 Yes ☐ 2 No ☐ 3 Not sure 8

6. **What does "clean and green" mean to you?**

____ 9

7. **Do you think New Zealand products are "clean and green"?**

☐ 1 Yes ☐ 2 No ☐ 3 Not sure 10

8. **Compared to other dairy products, those from New Zealand...**

are....	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree	
Healthier and safer	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	11
Produced in a more animal-friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Produced in a more environmentally - friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Better value for money	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
More attractive and better presented	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Tastier	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	16

Please leave this section blank

8. Please read the following criteria and rank their importance when you buy dairy products.
(1 –MOST IMPORTANT 6 – LEAST IMPORTANT)

Environmentally-friendly ________ 17

Taste ________

Health & safety ________

Appearance & presentation ________

Price ________

Animal welfare ________ 22

9. Are you willing to pay more for a dairy product that is identical to others except that it is produced in an environmentally-friendly way?

☐ 1 **Yes (Proceed to Q6)** ☐ 2 **No (Proceed to Q7)** ☐ 3 **Don't know (Proceed to Q7)** 23

10. If yes, how much of a percentage (%) increase would you be willing to pay?

________________________________ 24

11. **Are you willing to pay more for a dairy product that is identical to others except that it is produced in an animal welfare sensitive way?**

☐ 1 **Yes (Proceed to Q8)** ☐ 2 **No (Proceed to Q9)** ☐ 3 **Don't know (Proceed to Q9)** 25

12. If yes, how much of a percentage (%) increase would you be willing to pay?

________________________________ 26

13. What is your age group?

☐ 30 & below ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 60 & above 27

14. **What is your gender?** ☐ 1 Female ☐ 2 Male 28

15. Occupation

________________________________ 29

16. What is your household income?

☐ 1 <40,000 K ☐ 2 41-60K ☐ 3 61-80K ☐ 4 81-100K ☐ 5 >100K 30

Thank you very much for your support!

Please leave this section blank

APPENDIX 4

Survey Form 4 **UK CONSUMERS**

2

New Zealand dairy product (type and brand) purchased

____ 3

1. **Do you know where this dairy product came from?**

____ 4

2. **Did the fact that this product came from New Zealand influence your decision to buy it?**

☐ 1 Yes ☐ 2 No ☐ 3 Not sure 5

3. **If yes, why?**

____ 6

4. **How often you do buy this product?**

____ 7

5. **Have you ever heard of the expression "clean and green"?**

☐ 1 Yes ☐ 2 No ☐ 3 Not sure 8

6. **What does "clean and green" mean to you?**

____ 9

7. **Do you think New Zealand products are "clean and green"?**

☐ 1 Yes ☐ 2 No ☐ 3 Not sure 10

8. **Compared to other dairy products, those from New Zealand…**

are….	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree	
Healthier and safer	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	11
Produced in a more animal-friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Produced in a more environmentally - friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Better value for money	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
More attractive and better presented	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Tastier	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	16

Please leave this section blank

8. Please read the following criteria and rank their importance when you buy dairy products.
(1 –MOST IMPORTANT 6 – LEAST IMPORTANT)

Environmentally-friendly ________ 17

Taste ________

Health & safety ________

Appearance & presentation ________

Price ________

Animal welfare ________ 22

9. Are you willing to pay more for a dairy product that is identical to others except that it is produced in an environmentally-friendly way?

☐ 1 **Yes (Proceed to Q10)** ☐ 2 **No (Proceed to Q11)** ☐ 3 **Don't know (Proceed to Q11)** 23

10. If yes, how much of a percentage (%) increase would you be willing to pay?

________________________________ 24

11. **Are you willing to pay more for a dairy product that is identical to others except that it is produced in an animal welfare sensitive way?**

☐ 1 **Yes (Proceed to Q12)** ☐ 2 **No (Proceed to Q13)** ☐ 3 **Don't know (Proceed to Q13)** 25

12. If yes, how much of a percentage (%) increase would you be willing to pay?

________________________________ 26

13. What is your age group?

☐ 30 & below ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 60 & above 27

14. **What is your gender?** ☐ 1 Female ☐ 2 Male 28

15. Occupation

________________________________ 29

16. What is your household income?

☐ 1 <20,000 K ☐ 2 21-30 K ☐ 3 31-40 K ☐ 4 41-50 K ☐ 5 >50K 30

Thank you very much for your support!

APPENDIX 5

Please leave this section blank

Survey Form 5

NEW ZEALAND DAIRY FARMERS

1. **Do you believe New Zealand dairying deserves its "clean and green" image?**

☐ 1 Yes ☐ 2 No ☐ 3 Don't know

2. **Do you think that New Zealand's "clean and green" image improves the marketing of dairy products internationally?**

☐ 1 Yes ☐ 2 No ☐ 3 Don't know

3. **Do you think overseas consumer perceptions of New Zealand farming practices affect their decision to purchase dairy products?**

☐ 1 Yes ☐ 2 No ☐ 3 Don't know

4. **What do you think are the effects of the following dairy farming practices on the "clean and green" image of New Zealand's dairy products?**

	Negative Effect	No Effect	Positive Effect
Cows mainly fed on pasture	☐ 1	☐ 2	☐ 3
Cows being outside all year-round	☐ 1	☐ 2	☐ 3
Induction	☐ 1	☐ 2	☐ 3
Tail docking	☐ 1	☐ 2	☐ 3
Bloat drenching	☐ 1	☐ 2	☐ 3
Dehorning	☐ 1	☐ 2	☐ 3
Bobby calves on the roadside	☐ 1	☐ 2	☐ 3
Large herd sizes	☐ 1	☐ 2	☐ 3
Cows in muddy paddocks	☐ 1	☐ 2	☐ 3
Intensive fertiliser use	☐ 1	☐ 2	☐ 3
Use of Antibiotics	☐ 1	☐ 2	☐ 3
Current methods of effluent disposal	☐ 1	☐ 2	☐ 3

2 3 4 5 6 17

5. What do you think of New Zealand dairy products compared those of other countries?

Please leave this section blank

they are….	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree	
Healthy and safe	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 18
Produced in an animal-friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
Produced in an environmentally - friendly way	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
Good value for money	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
Attractive and well-presented	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐
Tasty	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 23

6. Can you name two dairy farming practices you believe must be changed in order to meet consumer's expectation of "clean and green" dairy products from New Zealand?

____ ☐ 24

____

7. What is your gender? ☐ 1 Female ☐ 2 Male ☐ 25

8. In what year were you born? 19______ ☐ 26

9. Farm Size: ____________________ *(effective ha)* ☐ 27

10. Herd size: _______________ *(cows peak milked)* ☐ 28

11. Profession:

☐ 1 Share Milker ☐ 3 Farm Manager ☐ 29

☐ 2 Farmer/Owner ☐ 4 Other ______________________________

12. Farm location *(Region)*:___________________________________ ☐ 30

Thank you very much for your support!

APPENDIX 6

Table 1A. Age distribution between country groups of Massey international students.

Country	18-20	21-25	26-30	31-35	35-40	40 & above
	n (% within country)					
Southeast Asia n=51	3 (6%)	18 (36%)	12 (24%)	8 (16%)	8 (16%)	1 (6%)
South Asia & Africa n=9	-	1 (13%)	2 (25%)	2 (25%)	2 (25%)	1 (12%)
Northeast Asia n=13	-	9 (69%)	3 (23%)	1 (8%)	-	-
Pacific Islands n=6	1 (16%)	3 (50%)	-	-	1 (17%)	1 (17%)
Latin America n=8	-	-	5 (63%)	2 (25%)	-	1 (12%)
USA & Europe n=4	-	2 (67%)	1 (33%)	-	-	-

Frequency missing – 3 (3%)

Table 2A. Gender distribution between country groups of Massey international students.

Gender	Southeast Asia n=51	South Asia & Africa n=9	Northeast Asia n=13	Pacific Islands n=6	Latin America n=8	USA & Europe n=4
	N (% within country)					
Female	27 (53%)	3 (33%)	9 (69%)	3 (50%)	2 (25%)	1 (25%)
Male	24 (47%)	6 (67%)	4 (31%)	3 (50%)	6 (75%)	3 (75%)

Table 3A. Duration of stay of Massey international students from different geographical regions.

Duration of stay	Southeast Asia n=48	South Asia & Africa n=9	Northeast Asia n=13	Pacific Islands n=6	Latin America n=8	USA & Europe n=4
	n (% within country)					
1-12 months	14 (29%)	2 (22%)	5 (39%)	2 (33%)	6 (75%)	4 (100%)
13 –24 months	23 (48%)	3 (33%)	3 (23%)	4 (67%)	2 (25%)	-
25-36 months	1 (2%)	4 (45%)	2 (15%)	-	-	-
37-48 months	6 (6%)	-	1 (8%)	-	-	-
49-60 months	7 (15%)	-	2 (15%)	-	-	-

Table 4A. Academic classification of Massey international students from different country groups

Classification	Southeast Asia n=51	South Asia & Africa n=9	Northeast Asia n=13	Pacific Islands n=6	Latin America n=8	USA & Europe n=4
	N (% within country)					
Undergraduates	26 (51%)	2 (22%)	10 (77%)	5 (83%)	-	3 (75%)
Postgraduates	25 (49%)	7 (78%)	3 (23%)	1 (17%)	8 (100%)	1 (25%)

Table 5A. Perception of Massey international students on New Zealand dairy products.

New Zealand dairy products are…	Southeast Asia n=44	South Asia & Africa n=5	Northeast Asia n=9	Pacific Islands n=6	Latin America n=5	USA & Europe n=1
	N (% within country)					
Healthy and safe						
AGREE	21 (61%)	3 (60%)	4 (45%)	3 (50%)	4 (80%)	1 (100%)
NOT SURE	6 (14%)	1 (20%)	4 (44%)	-	-	-
DISAGREE	11 (25%)	1 (20%)	1 (11%)	3 (50%)	1 (20%)	-
Produced in an animal-welfare friendly way						
AGREE	26 (59%)	4 (80%)	3 (33%)	3 (50%)	3 (60%)	-
NOT SURE	18 (41%)	1 (20%)	6 (67%)	3 (50%)	2 (40%)	1 (100%)
DISAGREE	-	-	-	-	-	-
Produced in an environmentally-friendly way						
AGREE	23 (77%)	3 (60%)	1 (33%)	1 (17%)	3 (60%)	1 (100%)
NOT SURE	10 (23%)	1 (20%)	6 (67%)	5 (83%)	2 (40%)	-
DISAGREE	-	1 (20%)		-	-	-
Good value for money						
AGREE	20 (46%)	2 (40%)	4 (44%)	3 (50%)	-	-
NOT SURE	19 (43%)	3 (60%)	5 (56%)	2 (33%)	4 (80%)	1 (100%)
DISAGREE	5 (11%)	-	-	1 (17%)	1 (20%)	-
Attractive and well-presented						
AGREE	27 (61%)	4 (80%)	4 (45%)	6 (100%)	4 (80%)	1 (100%)
NOT SURE	13 (30%)	1 (20%)	4 (44%)	-	1 (20%)	-
DISAGREE	4 (9%)	-	1 (11%)	-	-	-
Tasty						
AGREE	24 (54%)	-	-	6 (100%)	4 (80%)	1 (100%)
NOT SURE	17 (39%)	1 (25%)	3 (33%)	-	1 (20%)	-
DISAGREE	3 (7%)	3 (75%)	6 (67%)	-	-	-

Table 6A. Dairy products attributes and its relative importance to Massey international students.

Attributes	Rank Order 1	2	3	4	5	6
	n=91 (% within attributes)					
Health and safety	38 (42%)	28 (31%)	15 (17%)	4 (4%)	4 (5%)	1 (1%)
Animal-welfare	1 (1%)	5 (6%)	6 (7%)	15 (17%)	23 (25%)	40 (44%)
Environmental-friendliness	-	13 (14%)	10 (11%)	27 (30%)	33 (37%)	7 (8%)
Price	16 (18%)	23 (25%)	24 (27%)	14 (16%)	9 (10%)	4 (4%)
Appearance and presentation	4 (4%)	2 (2%)	14 (15%)	25 (28%)	14 (15%)	31 (34%)
Taste	30 (34%)	31 (34%)	17 (19%)	9 (10%)	2 (2%)	1 (1%)

Table 7A. Dairy product eating habits of Massey international students of different country groups.

Do you eat dairy products?	Southeast Asia n=51	South Asia & Africa n=9	Northeast Asia n=13	Pacific Islands n=6	Latin America n=8	USA & Europe n=4
	n (% within country)					
ALWAYS	24 (47%)	3 (33%)	2 (15%)	3 (50%)	1 (13%)	1 (25%)
SOMETIMES	27 (53%)	6 (67%)	11 (85%)	3 (50%)	7 (87%)	1 (75%)
NO	-	-	-	-	-	-

Table 8A. Frequency distribution of New Zealand consumers based on age and gender.

Gender	Age (years) 30 & below n=31	31-40 n-21	41-50 n=21	51-60 n=9	61 & above n=20
	n (% within country)				
Female	22 (34%)	13 (20%)	14 (21%)	7 (11%)	9 (14%)
Male	9 (24%)	8 (22%)	7 (19%)	2 (5%)	11 (30%)

Table 9A. Frequency distribution of New Zealand consumers based on occupation and income.

Occupation	Household Income ($NZ)					
	<20,000K	21-30K	31-40K	41-50K	>50K	Missing value
	n (% within occupation)					
Housewife	1 (6%)	3 (18%)	7 (41%)	-	4 (24%)	2 (11%)
White collar job (*office work etc.*)	3 (11%)	4 (15%)	5 (19%)	7 (26%)	6 (22%)	2 (7%)
Student	12 (67%)	2 (11%)	2 (11%)	1 (6%)	-	1 (5%)
Self-employed, private practice, entrepreneur	1 (13%)	-	4 (50%)	1 (12%)	2 (25%)	-
Retiree/unemployed	11 (50%)	3 (14%)	5 (23%)	-	2 (9%)	1 (4%)
Blue collar job (*technical, skilled work*)	-	4 (50%)	1 (12%)	1 (13%)		1 (25%)

Table 10A. Dairy products bought by New Zealand consumers.

Product	Frequency					
	Daily 3x/week	Weekly	Fortnightly	Monthly	2 monthly or less	Did not buy
	n (% within product)					
Butter	-	48 (47%)	19 (19%)	17 (17%)	3 (3%)	14 (14%)
Cheese	-	47 (46%)	32 (31%)	18 (18%)	1 (1%)	3 (3%)
Fresh Milk	38 (37%)	55 (54%)	5 (5%)	2 (2%)	-	2 (2%)
Yogurt	1 (1%)	36 (35%)	20 (20%)	15 (15%)	1 (1%)	28 (28%)
Cream	-	14 (14%)	9 (9%)	16 (16%)	8 (8%)	54 (55%)

Table 11A. Dairy products attributes and its relative importance to New Zealand consumers.

Attributes	Rank Order 1	2	3	4	5	6
	% within attributes					
Health and safety	35	18	27	14	5	1
Animal-welfare	2	11	11	10	25	41
Environmental-friendliness	4	11	10	30	38	7
Price	17	36	19	9	15	4
Appearance and presentation	2	9	12	22	12	43
Taste	35	30	15	15	5	-

Table 12A. Premium payments New Zealand consumers were willing to pay for environmentally-friendly and animal-welfare friendly products.

Attributes	Premiums 5% or less	6-10%	15%	20%	25%	30-50%	Not willing to pay more
	% within attributes						
Environmentally-friendly products	20	20	2	3	1	3	51
Animal welfare friendly products	18	16	4	3	3	5	51

Table 13A. Frequency distribution of Filipino consumers based on age and gender.

Gender	Age (years) 30 & below	31-40	41-50	51-60	61 & above
	n (% within gender)				
Female	38 (50%)	21 (27%)	11 (14%)	3 (4%)	4 (5%)
Male	7 (35%)	3 (15%)	7 (35%)	2 (10%)	1 (5%)

Table 14A. Frequency distribution of Filipino consumers based on occupation and income.

Occupation	Household Income (Philippine Peso)					
	<40,000	41-60K	61-80K	81-100K	>100K	Missing value
	N (% within occupation)					
Housewife	6 (32%)	2 (10%)	4 (21%)	1 (5%)	3 (16%)	3 (16%)
White collar job	17 (39%)	4 (9%)	6 (14%)	2 (4%)	8 (18%)	7 (16%)
Student	3 (27%)	-	1 (9%)	-	-	7 (63%)
Self-employed, private practice, entrepreneur	4 (33%)	1 (8%)	-	1 (8%)	4 (33%)	2 (17%)
Retiree/unemployed	-	-	-	1 (33%)	-	2 (67%)
Blue collar job	4 (67%)	-	-	-	1 (17%)	1 (16%)

Table 15A. Dairy products attributes and its relative importance to Filipino consumers.

Attributes	Rank Order					
	1	2	3	4	5	6
	% within attributes					
Health and safety	59	33	5	2	1	-
Animal-welfare	2	9	6	24	38	21
Environmental-friendliness	10	25	21	20	22	2
Price	7	12	24	28	16	13
Appearance and presentation	3	5	6	17	23	46
Taste	22	45	21	9	3	-

Frequency missing - 1

Table 16A. Premium payments Filipino consumers are willing to pay for environmentally- and animal-welfare friendly dairy products.

Attributes	Premiums 2-5%	6-10%	15%	20%	Not willing to pay more
	% within attributes				
Environmentally-friendly products	30	23	2	2	43
Animal welfare friendly products	30	14	1	2	53

Table 17A. Frequency distribution of British consumers based on age and gender.

Gender	Age (years) 30 & below	31-40	41-50	51-60	61 & above
	% within gender				
Female	9 (28%)	4 (13%)	2 (6%)	10 (31%)	7 (22%)
Male	6 (35%)	4 (23%)	1 (6%)	2 (12%)	4 (24%)

Table 18A. Frequency distribution of British consumers based on occupation and income.

Occupation	Household Income (UK £) <6600	7-10K	10-13K	14-16K	>16K	Missing value
	n (% within occupation)					
Housewife	-	1 (20%)	-	1 (20%)	1 (20%)	2 (40%)
White collar job	-	-	5 (33%)	2 (13%)	8 (53%)	-
Student	8 (100%)	-	-	-	-	-
Self-employed, private practice, entrepreneur	-	-	-	-	4 (100%)	-
Retiree/unemployed	-	-	1 (10%)	3 (30%)	6 (60%)	-
Blue collar job	1 (14%)	1 (14%)	1 (14%)	2 (29%)	2 (29%)	-

Table 19A. Dairy products attributes and its relative importance to British consumers.

Attributes	Rank Order 1	2	3	4	5	6
	%					
Health and safety	1 (2%)	15 (30%)	10 (20%)	7 (14%)	10 (20%)	6 (12%)
Animal-welfare	6 (12%)	2 (4%)	11 (22%)	14 (28%)	14 (28%)	2 (4%)
Environmental-friendliness	2 (4%)	11 (22%)	10 (20%)	11 (22%)	7 (14%)	8 (16%)
Price	8 (16%)	12 (24%)	8 (16%)	11 (22%)	6 (12%)	4 (8%)
Appearance and presentation	-	-	6 (12%)	6 (12%)	10 (20%)	27 (54%)
Taste	3 (64%)	9 (18%)	4 (8%)	2 (4%)	2 (4%)	-

Table 20A. Premium payments British consumers are willing to pay for environmentally- and animal-welfare friendly dairy products.

Attributes	Premiums 1-5%	15%	20%	25%	Not willing to pay premiums
	n (% within attributes)				
Environmentally-friendly products	11 (22%)	6 (12%)	3 (6%)	2 (4%)	28 (56%)
Animal welfare friendly products	9 (18%)	9 (18%)	3 (6%)	2 (4%)	27 (54%)

Table 21A. Age distribution of New Zealand dairy farmers between regions

Regions	Age Group (years0				
	30 & below	31-40 yrs	41-50 yrs	51-60 yrs	61 & above
	n (% within region)				
Taranaki	9 (18%)	19 (38%)	17 (34%)	4 (8%)	1 (2%)
Manawatu-Wanganui	14 (27%)	16 (37%)	6 (14%)	6 (14%)	1 (2%)
Waikato	21 (49%)	9 (22%)	8 (19%)	4 (10%)	-
Wellington	8 (37%)	8 (36%)	3 (14%)	2 (9%)	1 (4%)
Canterbury	1 (6%)	5 929%)	7 (41%)	3 (18%)	1 (6%)
Hawkes Bay	3 (20%)	10 (66%)	1 (7%)	1 (7%)	-
Southland	1 (17%)	2 (33%)	1 (17%)	2 (33%)	-
Otago	-	-	1 (14%)	1 (14%)	5 (72%)

Table 22A. Gender distribution of New Zealand dairy farmers between regions.

Regions	Gender	
	Male	Female
	n (% within region)	
Taranaki	43 (84%)	8 (16%)
Manawatu-Wanganui	40 (89%)	5 (11%)
Waikato	34 (83%)	7 (17%)
Wellington	22 (100%)	-
Canterbury	16 (94%)	1 (6%)
Hawkes Bay	13 (87%)	2 (13%)
Southland	6 (100%)	-
Otago	7 (100%)	-

Table 23A. Frequency distribution of profession of New Zealànd dairy farmers from different regions.

Regions	Farmer/ Owner	Sharemilker	Farm/Herd Manager	Farm worker/ employee
	Profession			
	n (% within region)			
Taranaki	28 (56%)	14 (28%)	5 (10%)	3 (6%)
Manawatu-Wanganui	20 (44%)	14 (31%)	7 (16%)	4 (9%)
Waikato	12 (30%)	11 (27%)	9 (23%)	8 (20%)
Wellington	6 (27%)	8 (37%)	2 (9%)	6 (27%)
Canterbury	2 (12%)	14 (82%)	-	1 (6%)
Hawkes Bay	8 (53%)	5 (33%)	2 (13%)	-
Southland	2 (33%)	4 (67%)	-	-
Otago	1 (14%)	5 (72%)	-	1 (14%)

Table 24A. Frequency distribution of farm size of New Zealand dairy farmers between regions.

Regions	<100	101-200	201-300	301-400	401-500	501+
	Farm Size					
	n (% within region)					
Taranaki	24 (49%)	13 (27%)	6 (12%)	4 (8%)	-	2 (4%)
Manawatu-Wanganui	26 (59%)	11 (25%)	4 (9%)	-	2 (5%)	1 (2%)
Waikato	11 (28%)	14 (35%)	15 (37%)	-	-	-
Wellington	8 (44%)	5 (28%)	4 (22%)	-	1 (6%)	-
Canterbury	3 (18%)	3 (18%)	3 (18%)	4 (23%)	1 96%)	3 (17%)
Hawkes Bay	4 (29%)	9 (64%)	1 (7%)	-	-	-
Southland	2 933%)	3 (50%)	-	1 (17%)	-	-
Otago	-	2 (33%)	2 (33%)	1 (17%)	1 (17%)	

Table 25A. Frequency distribution of herd size of New Zealand dairy farmers between regions.

Regions	Herd Size				
	300 or less	301-500	501-700	701-1000	1001 or more
	n (% within region)				
Taranaki	17 (33%)	10 (20%)	7 (14%)	3 (6%)	14 (27%)
Manawatu-Wanganui	15 (33%)	16 (36%)	5 (11%)	3 (7%)	6 (13%)
Waikato	13 (32%)	5 (12%)	1 (2%)	15 (37%)	7 (17%)
Wellington	8 (37%)	5 (23%)	1 (4%)	8 (36%)	-
Canterbury	2 (12%)	3 (18%)	1 (6%)	1 (6%)	10 (59%)
Hawkes Bay	5 (36%)	4 (29%)	3 (21%)	2 (14%)	-
Southland	-	2 (33%)	2 (33%)	1 (17%)	1 (17%)
Otago	1 (14%)	-	3 (43%)	2 (29%)	1 (14%)