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**Organics in New Zealand:
Consumer Perception and Purchase
Behaviour of Organic Food**

A dissertation
submitted in partial fulfilment
of the requirements for the Degree of
Bachelor of Agricultural Science (Honours)

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by
Hannah M. Chamberlain

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Abstract

The purpose of this study was to gain a better understanding of New Zealand consumer perception and purchase behaviour of organic food. Research in this area is of importance as the popularity of organic food has been increasing in New Zealand and many other countries. Many studies have investigated consumer perception of organic food in other countries, but there is limited literature available that is specific to New Zealand. Data was collected using a mixed method survey involving the mall-intercept technique and mail survey. A mall intercept survey of consumers was carried out in three locations around Christchurch, Canterbury, with a total of 97 respondents. 72 responses were obtained at the time of the mall intercepts. An additional 78 questionnaires with postage-paid return envelopes were given to consumers who did not have time to respond on the day, with 25 mail responses received. Descriptive (i.e. frequencies and averages) and inferential (i.e. one-way Anova and independent sample t-tests) statistics were used to analyse the data. This study contributes to knowledge about the perceptions and purchase behaviour of New Zealand consumers in regards to organic food. The most frequently bought organic food items are *fruit/vegetables*, followed by *dairy* and *meat/eggs*. The most important benefits of organic food perceived by New Zealand consumers were found to be *health and well-being of current and future generations*, *animal welfare protection*, *no/minimal pesticides*, *no/minimal food additives* and *good taste*. The biggest barrier to the purchase of organic food for New Zealand consumers was shown to be *high price*, followed by *limited availability of organic food* and *limited choice/variety of organic food* options. Except for

gender, demographic factors were generally not found to have a statistically significant effect on consumer perception or purchase behaviour for organic food. The results of an independent sample T-test indicate a statistically significant relationship between gender and the importance placed on the attributes of *more nutritious*, *health benefits*, *no/minimal fertilisers*, *no/minimal food additives* and *animal welfare protection*. The means for these attributes suggested that they were significantly more important to women than to men. The only significant result to take note of for the effect of income would be for the attribute of *biodiversity protection*. The calculated means suggested that biodiversity protection was significantly less important to respondents with a high income. The attributes *no/minimal pesticides* and *climate protection* were significantly more important to the group of respondents with undergraduate degrees. The conclusions of this study indicate which attributes are the most important to consider in future research of the production of organic food for New Zealand consumers, and give an indication of the attributes that should be emphasised in the marketing of organic food in New Zealand.

Key words: consumer perceptions, New Zealand, organic food, purchase behaviour

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1.0 Introduction

The popularity of and demand for organic food is increasing globally, as consumers become more aware of the potential benefits that organic foods offer (MarketsandMarkets, 2011). In the USA, sales of organic food have been increasing steadily from 2005 (13.26 billion USD) to 2015 (39.75 billion USD) (Statista, n.d.). Growth of the organic food and beverages market is also expected in Europe, with a CAGR of 6.79% forecasted for the years of 2016-2020 (Business Wire, 2016). New Zealand's organic sector is also growing, as discussed in the Organics Aotearoa New Zealand (OANZ) 'New Zealand Organic Market Report 2012'. The OANZ report stated that the total value of New Zealand's organic sector was estimated to be NZ\$340million-\$360million, having increased by 25% from 2009. It was also stated that both New Zealand's domestic market and the value of exported New Zealand organic products were growing: the domestic market in 2012 was reported to be worth \$126million-\$133million, while the value of organic exports increased by 25% from 2009 to \$215million-\$225million in 2012 (NZD) (Cooper et al., 2012). Euromonitor International (2015) reported sales of organic packaged food in New Zealand to be \$126.1 million (NZD) in 2014, which was a large increase from \$77.2 million in 2009.

In New Zealand, an example of the increasing importance of organic food is the increasing interest in organic dairy. As of 2012, organic dairy products were recognised by OANZ as the second biggest category of New Zealand organic exports, with a value of \$36.95million (Cooper et al., 2012). Euromonitor International (2015) reported packaged organic dairy sales in New Zealand to be \$72.0 million in 2014 (NZD), which was also a large increase from 2009 (when packaged organic dairy sales were reported to be \$42.5 million) (Euromonitor International, 2015). Many dairy farmers are looking for ways to protect their businesses in the future, and with Fonterra (New Zealand's major dairy co-operative) offering to pay their organic dairy farmers a premium along with the conventional milk price (or a more stable, market-linked price from June 2016) (Fonterra, 2016), converting to organic dairy farming may be an option many farmers are considering. The viability of organic milk production as an option for New Zealand's dairy farmers to improve their income depends on the continued demand for organic dairy products and justifying the higher cost to consumers.

Identifying the attributes of organic products that are the most important to consumers will help to focus the research of New Zealand organic food products on the most important

areas, and will indicate what the best attributes are to emphasise when marketing these products. The trends of healthism and environmentalism could have a big impact on consumer perception of organic food and which attributes consumers value the most. With healthism revolving around the increasing importance of healthiness as a measure of accomplishment (Solomon, Russell-Bennett & Previte, 2013), attributes of organic food that could affect human health may be very important to consumers. Globally, there have been many studies done on consumer perception of organic food in general, but there are limited studies which focus specifically on New Zealand consumers. This study adds to existing knowledge by identifying what attributes of organic food products are important to New Zealand consumers and what barriers exist to the purchase of organic food in New Zealand. The study generates insights which could improve the production and marketing of organic food products in New Zealand.

2.0 Literature Review

The four principles of organic production refer to *health, ecology, fairness* and *care* (IFOAM-Organics International, n.d. a). The definition of organic agriculture given by IFOAM-Organics International (n.d. b) is: *“Organic Agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved”*. Organic food is produced using minimal external inputs such as antibiotics, synthetic pesticides and fertilisers, and genetic modification (Ministry for Primary Industries, n.d. a). For a food to be marketed as organic in New Zealand, the producer needs to be able to show that organic production practices were used, and for a product to be labelled as ‘certified organic’ it must have been certified by a suitable certification body such as AsureQuality or BioGro New Zealand Ltd (Ministry for Primary Industries, n.d. b). Organic agriculture gives organic food a range of attributes that may be beneficial to the health and well-being of humans, animals and the environment.

This study examines which of these attributes resonate with consumers, with the literature review focussing on consumer perception of organic food. The numerous advertised benefits of organic agriculture make it difficult to see why any consumer would not want to purchase organic food, so there must be some significant purchase barriers for consumers who don't buy organic. These barriers are also considered in the review of literature.

For the literature review, 23 studies were covered. The majority of studies were conducted in European countries, but there were also studies from some other countries such as China, Taiwan, Brazil, Australia and New Zealand. There was very limited literature relating to organic food that was specific to New Zealand consumers. Most of the literature reviewed was relatively recent, with a majority of the studies carried out within the last five years. The abundance of recent literature is an indication of the increasing interest in organic food. A table with the details of each study reviewed can be found in Appendix 1.

2.1 Consumer Perceptions and Expectations of Organic Food

Of the reviewed literature, many studies showed positive consumer perceptions of organic food. A mail survey of 1,154 consumers in Sweden that investigated the effect of demographic factors on consumer attitudes and purchase behaviour of organic foods found that most respondents had positive attitudes towards organic food (Magnusson, Arvola & Hursti, 2001). A scale of consumer loyalty to organic food was developed by Dias, Schuster, Talamini and Révillion (2016) through a web-based survey of 604 consumers in Brazil. Dias et al. (2016) found that the mean for 'loyalty' was high among these respondents which indicated that they were "true organic loyal".

Positive perceptions of organic foods in regards to consumer health benefits were a common finding. A study by Lea and Worsley (2005) which involved a mail survey of 223 consumers in Australia found that most respondents believed organic foods to be better for human health. This finding was consistent with those of Radman (2005), Thøgersen and Zhou (2012) and Vega-Zamora, Parras-Rosa, Murgado-Armenteros and Torres-Ruiz (2013). Radman (2005) carried out a face-to-face survey of 179 consumers in Croatia. Vega-Zamora et al. (2013) carried out personal interviews of 800 consumers in Spain, determining that the term 'organic' was a heuristic cue for consumers, as they associated it with higher quality and chose to believe that organic foods were healthier, safer and better tasting. Thøgersen

and Zhou (2012) conducted a mall intercept survey of 529 consumers in China and found that many consumers believed organic food to be healthy (as well as better tasting and beneficial to the environment) which contributed to positive attitudes. Xie, Wang, Yang, Wang and Zhang (2015) surveyed 388 consumers by questionnaire and interviewed 18 consumers in depth in Eastern China, also finding that respondents who bought organic food believed it to be healthier and safer. Organic food was also perceived as natural and healthy by consumers in a qualitative study of 32 respondents carried out in Spain by Vega-Zamora, Torres-Ruiz, Murgado-Armenteros and Parras-Rosa (2014). Consumers in this study perceived the quality of organic food to be better than conventional foods, even if they did not perceive a tangible, specific difference between the two alternatives (Vega-Zamora et al., 2014).

Positive consumer perceptions of the taste of organic food were also a common finding in the literature. Lea and Worsley (2005), Thøgersen and Zhou (2012), Radman (2005) and Vega-Zamora et al. (2014) found that respondents believed organic food to taste good, and most of the respondents in the study by Lea and Worsley (2005) believed that organic food tasted better than conventional food alternatives.

Some consumers also had positive perceptions of organic food in regards to environmental concerns. Lea and Worsley (2005) found that most respondents believed organic foods to be better for the environment, and Thøgersen and Zhou (2012) found that positive attitudes towards organic food were partly attributed to consumers believing it was better for the environment.

It was noted by Thøgersen and Zhou (2012) that the attitudes of consumers towards organic food were important for them to form an intention to buy organic products (in the context of the relatively new organic food market in China), although this did not necessarily translate to them actually making a purchase.

While there seemed to be largely positive consumer perceptions of organic food, some studies found that not all consumers had positive perceptions. Hill and Lynchehaun (2002) gathered information from secondary data and four focus groups (with two groups of people who bought organic food and two groups who did not) in the UK. In this study it was found that the respondents who did not buy organic foods did not understand how the

higher prices for organic food could be justified (Hill & Lynchehaun, 2002). Padel and Foster (2005) gathered data in the UK from 181 consumers in focus groups and laddering interviews, and found that most respondents did not trust the claims that were made about the benefits of organic food products. Some negative perceptions found in the study by Vega-Zamora et al. (2014) included organic food being seen as expensive, more perishable and less attractive in appearance than conventional foods. However, many consumers were willing to accept the less attractive appearance of organic food because they recognised that this was due to the more natural methods of production (Vega-Zamora et al., 2014).

Nasir and Karakaya (2014) conducted a survey of 316 European consumers to determine some market segments for organic food. The market segments identified were differentiated by their attitudes toward organic foods, with the three segments identified being those with favourable, neutral or unfavourable attitudes (Nasir & Karakaya, 2014). Consumers in the segment with favourable attitudes toward organic food were most likely to consume organic food frequently at high levels, and were the most likely to continue to buy organic food in the near future (Nasir & Karakaya, 2014).

Von Meyer-Höfer, Nitzko and Spiller (2015) conducted an online survey of 1,180 consumers in the European Union to investigate the expectations consumers had of organic food. It was found to be important to consumers that organic food was natural, good-tasting and of good quality, although consumer dissatisfaction was noted to be a big risk because these attributes do not always have clear definitions and may differ between each consumer (Von Meyer-Höfer, Nitzko and Spiller, 2015). The more specific expectations that Von Meyer-Höfer, Nitzko and Spiller (2015) found consumers to have were for organic food to have had no chemical pesticides or mineral fertilisers used, and for it to be non-GMO.

2.2 Consumer Values and Personal Identities that Affect Organic Food Consumption

Previous literature supports the view that consumers' personal values and self-identities are an important influence on attitudes towards and purchase behaviour of organic food products. Squires, Juric and Cornwell (2001) carried out a cross-national study of 154 consumers in New Zealand and 144 consumers in Denmark. Questionnaires were distributed to consumers of organic products at supermarkets and health food shops. It was concluded that, in regards to the purchase of organic products, because of their perceived

environmental benefits, consumers' personal identities played a more consistent role than demographic factors did (Squires et al., 2001). The factors that were reported to have a major influence were "personal eco-identity" in New Zealand and "green self-perception" in Denmark (Squires et al., 2001). Squires et al. (2001) also reported that the level of market development for organic food had an influence on organic food consumption, with consumers in New Zealand (the "novice market") having a bigger focus on health and consumers in Denmark (the "mature market") having a bigger focus on the environment. Hill and Lynchehaun (2002) determined that there were two major target groups of consumers who bought organic food. One of these groups was referred to as "the Greenies", whose members were thought to buy organic products for external reasons such as environmental benefits or keeping up with social trends (Hill & Lynchehaun, 2002). The other major group was referred to as "the Foodies", and the consumers in this group were thought to buy organic food for internal reasons such as the taste and potential health benefits (Hill & Lynchehaun, 2002). Lea and Worsley (2005) found that if a consumer had the "personal value factor" pertaining to concerns about the environment, nature and equality, it was likely they would have a positive attitude towards organic food.

Aertsens, Verbeke, Mondelaers and Van Huylenbroeck (2009) completed a general review of previous literature, considering Schwartz' Values Theory and the Theory of Planned Behaviour. They reported that abstract values such as security, benevolence, hedonism and self-direction could help explain consumer decisions to buy organic food (when the values were related to specific aspects of the organic food) (Aertsens et al., 2009). Aertsens et al. (2009) also found that perceived behavioural control, subjective norms and personal norms also affected the consumption of organic food. Shafie and Rennie (2012) also carried out a review of previous literature and concluded that consumer attitudes and beliefs about the environment and health may play a bigger role than demographic factors in the consumption of organic food.

In Denmark, Hjelmars (2011) conducted 16 exploratory interviews (with 22 respondents in total) to investigate patterns of organic food consumption. The two major groups that Hjelmars (2011) identified were the "politically/ethically-minded consumers" and the "convenience-oriented" consumers. The politically/ethically-minded consumers were found to have reflexive behaviours, possibly buying organic foods after events like having children,

or because of stories they heard from the media (Hjelmar, 2011). Health benefits, environmental impacts, animal welfare and the taste of food products were important to the politically/ethically-minded consumers (Hjelmar, 2011). For the convenience-oriented consumers, availability and lower prices were more important when purchasing organic food products (Hjelmar, 2011).

Thøgersen and Zhou (2012) found that consumers of organic food in China (the early adopters at least) tended to consider the same values and motivations as consumers in European studies when purchasing organic food, with a large part of their motivation being their perception that the characteristics of organic food contributed to “the common good”.

Nikolić, Uzunović and Spaho (2014) conducted 800 face-to-face interviews in Bosnia and Herzegovina to investigate the lifestyle patterns of consumers who bought traditional food products and organic foods. They found that organic foods had symbolic meaning to consumers, and that the lifestyle pattern of organic consumers was driven largely by beliefs about social equality, nature, health and family (Nikolić et al., 2014).

From the consumer segments for the organic food market identified by Nasir and Karakaya (2014), consumers accorded differing levels of importance to factors relating to health, environmental responsibility, socially responsible consumption and other values and lifestyles. Consumers in the segment with positive attitudes toward organic foods tended to place high levels of importance on behaviours relating to health and socially responsible consumption, whereas consumers in the segment with neutral attitudes toward organic foods were the most likely to place high levels of importance on environmental responsibility (Nasir & Karakaya, 2014). It was suggested that marketing messages focusing on health-related benefits of organic food, socially responsible consumption, and environmental responsibility would resonate with consumers (Nasir & Karakaya, 2014).

While positive perceptions of organic food have been mentioned in regards to environmental benefits in some studies (e.g. Lea & Worsley, 2005; Thøgersen & Zhou, 2012), Vega-Zamora et al. (2014) found that environmental concerns were not central to the values held by the consumers in their Spanish focus groups. Environmental responsibility was not seen to be very important to these consumers, and although relevant issues such as pesticide and fertiliser use were discussed, these were only raised in the context of their

impact on human health (Vega-Zamora et al., 2014). Vega-Zamora et al. (2014) attributed this lack of concern about environmental responsibility to the limited knowledge of consumers, and it was suggested that the level of knowledge about environmental impacts (and therefore the importance placed on environmental responsibility) differs between cultures.

Wooliscroft, Ganglmair-Wooliscroft and Noone (2014) carried out a two-stage study in New Zealand, interviewing 10 consumers in stage one (to determine which behaviours were believed to be ethical by New Zealand consumers) and conducting a survey of 403 consumers in stage two to develop a “Hierarchy of Ethical Consumption Behaviour (HECB)”. It was found that New Zealand consumers considered a completely organic diet (or buying mostly organic products) to be very difficult, second only to the “no mainstream supermarkets” and “carbon offset” behaviours. Buying some organic products appeared to be perceived as an easier behaviour, but it was still in the upper-middle part of the continuum (Wooliscroft et al., 2014).

2.3 Demographic Factors

Numerous studies have found that demographic factors have an impact on consumer perceptions and purchase behaviour of organic food. Lea and Worsley (2005) found that gender had an impact on attitudes towards organic food, with women having a more positive attitude than men. This finding was consistent with those of Magnusson et al. (2001) and Nasir and Karakaya (2014). Davies, Titterington and Cochrane (1995) conducted a study in Northern Ireland and found that gender also influenced purchase behaviour, with women being more likely than men to purchase organic food products.

Income level was another important factor that influenced purchase behaviour. Davies et al. (1995) found it was consumers who had higher amounts of disposable income that were more likely to purchase organic products, which was consistent with findings from the studies by Thøgersen and Zhou (2012) and Xie et al. (2015). Nasir and Karakaya (2014) had slightly different findings in that the consumer segment identified as having positive attitudes toward organic food was mostly comprised of consumers with low or middle levels of income. The possible explanation that Nasir and Karakaya (2014) gave for this was that the segment with positive attitudes was comprised mostly of young individuals who would

be less likely to have high incomes. It was noted, however, that when this segment was compared to the segments with neutral and positive attitudes toward organic food, the size of the high-income group was the biggest in the segment with positive attitudes (Nasir & Karakaya, 2014).

Xie et al. (2015) also found that families with children were more likely to buy organic food products, which supported the suggestion by Hjelmars (2011) that the purchase of organic food was a reflexive behaviour that could be caused by having children. Consumers who bought organic food products were also found to be more likely to have a higher level of education (Thøgersen & Zhou, 2012; Xie et al., 2015). Nasir and Karakaya (2014) also found that consumers who had positive attitudes toward organic food were more likely to have a higher level of education.

The age of consumers was another factor thought to influence purchase behaviour and attitudes towards organic food, but there was not one specific age range that had the most positive attitude as well as being the one most likely to purchase organic food. While Magnusson et al. (2001) and Davies et al. (1995) believed younger consumers to have positive attitudes and interest towards organic food, Xie et al. (2015) noted that the consumers who actually bought organic food were often older than consumers who did not purchase organic food products. Davies et al. (1995) suggested that this might be the case because younger consumers could not afford to buy organic products at premium prices.

Baruk and Iwanicka (2016) carried out a study of 550 consumers in Poland (using face-to-face questionnaires) to investigate the expectations consumers had of dairy product packaging. Although this study did not focus specifically on organic food products, the results could be relevant, particularly to organic dairy products. It was found that ecological features of the packaging (such as the impacts it would have on the environment) were more important to older consumers (Baruk & Iwanicka, 2016).

However, as Shafie and Rennie (2012) noted, the impact of demographic factors on organic food consumption has not always been consistent, with conflicting results having been found about whether demographic factors play a major role in levels of organic consumption. Squires et al. (2001) also found that demographic factors could not be consistently used to predict intensity of organic consumption.

2.4 Price

High prices being a barrier to the purchase of organic food products has been a very common theme in previous studies. Hill and Lynchehaun (2002), surveyed both “users” and “non-users” of organic products, and found that the high price of organic food products was the main reason the “non-users” had for not buying organic food. Buder, Feldmann and Hamm (2014) carried out 817 computer-aided, personal interviews in Germany and reported that high price was one of the main barriers to the purchase of organic food. Lea and Worsley (2005), Magnusson et al. (2001), Padel and Foster (2005), Thøgersen and Zhou (2012), Vega-Zamora et al. (2014) and Xie et al. (2015) also all found high prices to be an important barrier to the purchase of organic food products, although as Padel and Foster (2005) noted, there were other barriers as well.

However, price was not always found to be the most important influence on purchase behaviour of organic food products. Radman (2005) noted that, while organic foods were generally perceived as being expensive, some consumers who had more positive attitudes toward organic foods could be more willing to pay the premium prices. Hjelm (2011) found that price was less important to “politically/ethically-minded” consumers than to the “convenience-oriented” consumers.

Stolz, Stolze, Hamm, Janssen and Ruto (2011) carried out a study of 293 consumers in Switzerland and Germany, investigating their price sensitivity and purchase behaviour of organic, “conventional-plus” and conventional food products. It was found that the consumers who bought organic products tended to be less sensitive to price, and the consumers who were more sensitive to price (but still wanted to buy products with extra benefits over conventional food) tended to buy “conventional-plus” products (Stolz et al., 2011).

2.5 Availability of Organic Food Products

In previous studies, low availability was found to be another major potential barrier to the purchase of organic food products. Lea and Worsley (2005), Thøgersen and Zhou (2012), Buder et al. (2014), Vega-Zamora et al. (2014) and Xie et al. (2015) all identified lack of availability as being a barrier to the purchase of organic foods. Buder et al. (2014) found that the only reason some consumers bought some types of conventional products (cheese, for

example) instead of organic alternatives was the lack of suitable organic options.

Wooliscroft et al. (2014) theorised that ethical behaviours relating to the purchase of organic food products may have been perceived by New Zealand consumers as being more difficult because of the limited proportion of organic foods available (compared to many other countries). For the “convenience-oriented” consumers in the study by Hjelmars (2011), availability of food products was of high importance: these consumers would not go out of their way just to get organic food. Organic food products would need to easily fit into the busy lifestyles of these consumers (Hjelmars, 2011).

Nasir and Karakaya (2014) had slightly differing findings, indicating that limited availability and variety may not be a significant purchase barrier for every consumer of organic food. In this study it was found that, while consumers in the segment with positive attitudes toward organic food believed it to be difficult to find and limited in variety, limited availability and variety was not a huge barrier to purchase, because these consumers with positive attitudes were willing to put in effort and go out of their way to find the organic food products they wanted (Nasir & Karakaya, 2014).

2.6 Trust, Knowledge and Credible Information

In the reviewed literature, it appeared that consumer trust and knowledge of organic products were connected with the perception and purchase of organic food. Xie et al. (2015) believed consumers’ lack of knowledge about organic products to be another barrier to purchase. Radman (2005) found that many of the respondents did not know what the actual definition of organic production was, and believed it would be beneficial to increase consumers’ knowledge of the benefits of organic production (particularly in the group of respondents who would potentially pay higher prices for organic food products). Shafie and Rennie (2012) believed that, for consumers to be willing to pay the premium price for organic products, it was important to give the consumers information (which the consumers deemed to be credible) about the environmental and health benefits. Padel and Foster (2005) also found that there was a group of consumers who would potentially buy more organic food products. In order for the consumers to make the sacrifice of paying higher prices, there would need to be credible information given about the benefits of the products and the reasons for the premiums, as many consumers were not very trusting of

the claims already made about the benefits and they did not have much knowledge about organic certification or labelling (Padel & Foster, 2005).

Vega-Zamora et al. (2013) had a slightly different view on consumer knowledge. It was found that the term 'organic' was a heuristic cue, and consumers chose to believe that 'organic' meant better quality even though they were not very knowledgeable about organic food products (Vega-Zamora et al., 2013). The heuristic role of the term 'organic' was further investigated in a later study by Vega-Zamora et al. (2014), and it was suggested that the impact of the term 'organic' on consumer perception of specific attributes of organic food would depend on the state of consumer knowledge of organic food in that culture, and the knowledge and importance of environmental issues to consumers in that culture. Vega Zamora et al. (2014) noted that messages given to consumers about the attributes of organic food should come from credible sources in order for them to be effective, and that messages relating to organic food quality, health benefits or authenticity could be more effective than messages relating to protection of the environment.

Teng and Wang (2015) conducted a survey of 693 consumers in Taiwan and took a different view to the other studies in regards to consumer trust and knowledge: they believed that consumer trust (rather than knowledge) was the more important factor. Their reasoning was that consumer trust was the antecedent to attitudes and that it "mediates the relationships between revealing information, perceived knowledge, and organic purchase intentions" (pp. 1066), whereas perceived knowledge did not have a big influence on attitudes (Teng and Wang, 2015). Teng and Wang (2015) therefore suggested that it would be more beneficial to focus on increasing consumer trust rather than trying to increase consumer perceived knowledge.

3.0 Research Questions

Past research (e.g. Lea and Worsley (2005), Radman (2005), Vega-Zamora et al. (2013) and Xie et al. (2015)), found that consumers perceived various benefits from buying organic food. The perceived benefits ranged from health and taste benefits to environmental benefits. With limited research available on New Zealand consumer perception of organic products, there is a need to investigate if the previously researched perceived benefits apply to organic food products in New Zealand. This is addressed in the first research question:

RQ1-What are the most important benefits that New Zealand consumers perceive of organic food products?

The important barriers to purchase of organic food were also discussed in the previous literature. The price of organic products has been a major factor in many studies (see Magnusson et al., 2001; Hill and Lynchehaun, 2002; Lea and Worsley, 2005; Padel and Foster, 2005; Buder et al., 2014; Xie et al., 2015) investigating the purchase behaviour for organic foods. In many cases, price was named as the biggest barrier to the purchase of organic food products, so it is an important factor to consider when investigating purchase behaviour in New Zealand. Other than price, the key barriers identified were the lack of availability of organic food (e.g. Lea & Worsley, 2005; Buder et al., 2014; Xie et al., 2015), lack of consumer knowledge about organic food (Xie et al., 2015) and consumer distrust of organic food (Padel & Foster, 2005). In order to find the key purchase barriers which apply in New Zealand, the second research question asks:

RQ2-What are the key barriers to the purchase of organic food for New Zealand consumers?

Some demographic factors have been found in previous studies (e.g. Davies et al. (1995), Magnusson et al. (2001), Lea and Worsley (2005) and Xie et al. (2015)) to have an impact on consumer perception of the benefits of organic food as well as purchase behaviour for organic food. (It is important to note that a positive perception of the benefits of organic food does not necessarily predict the purchase of organic food products.) Gender, income level and age were some of the main demographic factors discussed in previous literature, although there was no consensus on the impact of demographic factors on perception and purchase of organic foods. To investigate how the effects of demographic factors apply to organic food products in New Zealand, the third research question is:

RQ3-Which demographic factors impact consumer perception of (a) benefits of and (b) barriers for buying organic food products in New Zealand?

4.0 Methodology

In the previous literature, various methods have been used to collect data on consumer perception and purchase behaviour of organic food. Quantitative as well as qualitative methods have been used.

Person-administered surveys were used by Radman (2005), Stolz et al. (2011), Vega-Zamora et al. (2013), Nikolić et al. (2014) and Baruk and Iwanicka (2016). One major advantage of person-administered surveys is that the interviewer can clarify instructions and questions if the respondent is confused (Hair et al., 2006). Person-administered surveys can also obtain higher quality responses as the interviewer can select respondents who qualify to answer the survey and build rapport so respondents are more comfortable answering the questions (Hair et al., 2006). Personally-administered surveys may also allow the interviewer to increase response rates by informing the potential respondent of the purpose and value of the study (Hair et al., 2003). Potential disadvantages of person-administered surveys include the possibility of the interviewer making recording errors, interaction error due to the presence of the interviewer and the higher cost of using an interviewer (Hair et al., 2006).

Lea and Worsley (2005) and Magnusson et al. (2001) used mail surveys. As self-administered surveys, mail surveys have advantages including a lower cost (as an interviewer is not required), a lack of bias due to an interviewer's presence, allowing respondents to be anonymous (and therefore give more honest responses) and allowing the respondents to respond at their own pace in a place where they are more comfortable (Hair, Bush & Ortinau, 2006). The disadvantages of self-administered questionnaires include high nonresponse rates, the inability to get in-depth data, slower data collection and a high risk of response errors (with no interviewer to clarify questions or instructions) (Hair et al., 2006).

Von Meyer-Höfer et al. (2015) and Dias et al. (2016) used other types of self-administered surveys. Von Meyer Höfer et al. (2015) chose an online survey because of the speed of responses and lower costs. Dias et al. (2016) chose to use an email survey because of the advantage of reaching a wide range of respondents and the lack of a risk of missing data (as the questionnaire required respondents to complete each question before moving to the next one). However, as online survey methods, there are some disadvantages associated with these methods (Hair et al., 2006). Online survey methods require respondents to have access to internet, and there is a risk that not all of the target respondents will have access to it. With email surveys, there is also the risk that the survey will be filtered out as spam so the respondent does not see or open it.

Hill and Lynchehaun (2002), Padel and Foster (2005) Hjelmar (2011) and Wooliscroft et al. (2014) used qualitative methods such as focus groups and in-depth interviews. A major advantage of qualitative research methods is that they generate more comprehensive insights than quantitative approaches, and the perceptions, beliefs and attitudes of the respondents can be explored in-depth (Hair et al., 2006). The major potential disadvantages of qualitative methods are that the results cannot be generalised (because the samples used tend to be small), and skilled interviewers are required in order to get high quality data from the respondents (Hair et al., 2006).

For the current study, a mixed method survey was selected as the most appropriate approach. The study combined a mall-intercept technique and a mail survey. Mall intercept surveys have been used in multiple studies previously, including those by Davies et al. (1995), Nikolić et al. (2014), Thøgersen and Zhou (2012) and Radman (2005). The mall intercept surveys by Davies et al. (1995), Thøgersen and Zhou (2012) and Nikolić et al. (2014) were carried out in front of supermarkets. The key advantages of mall intercepts leading to the selection of this method for the current study include the speed with which data could be collected and the low cost (compared to door-to-door surveys for example, where travel to each respondent would be required instead of intercepting respondents in a central location) (Zikmund, Ward, Lowe & Winzar, 2007). Time constraints of the current study made the timeliness of data collection with mall intercepts ideal. In this situation, time would not have allowed a mail survey to be completed with a sufficient response rate if this was the only method used. Conducting a mall intercept survey also helped to collect data that showed a wider range of consumer perspectives, rather than the producer or influencer perspectives which could be over-represented if an email or online survey were to be used. With a survey distributed by email (depending on how the email addresses are obtained), there could be an over-representation of people who have a high involvement with organic food (such as producers and influencers). This is because such individuals could be more likely to have online profiles and be more accessible by email than regular consumers. The key limitations that needed to be kept in mind with a mall intercept survey were the risk of length-biased data (as people who spend more time at a shopping centre have a higher likelihood of being sampled) (Nowell & Stanley, 1991), the difficulty of getting a representative sample (as a non-probability sample was used, and the different survey

locations had different target markets with differing characteristics) and potentially high refusal rates (if people were busy shopping and did not want to stop to answer a survey) (Zikmund et al., 2007).

The mall intercepts for the current study were carried out in locations around Christchurch on different days and times to gather data from a wide range of consumers. Approval was obtained from the Lincoln University Human Ethics Committee (refer to Appendix 11) before starting data collection. Three locations for data collection were selected with the aim of having locations with different socio-economic profiles represented in the sample. The first location (Location 1) was a large, lower-price supermarket in an urban area of Christchurch. The second location (Location 2) was a smaller supermarket in a more rural area on the periphery of Christchurch, and the third location (Location 3) was a farmers' market in Christchurch. Table 1 (below) shows the details and timing of the surveys. Prior to conducting the research (and as part of the Lincoln University Human Ethics Committee process) the supermarkets and farmers' market were contacted via phone call and email to obtain permission (refer to Appendix 2, Appendix 3 and Appendix 4) and provide information about the research. Approval was granted by the Lincoln University Human Ethics Committee on August 30th 2016.

Data was collected using a mixed method survey. The mall-intercept technique was used, with respondents being offered the option of completing the questionnaire immediately or taking a questionnaire away which they could return using the addressed (postage-paid) envelope provided. For both the mall intercept technique and the mail survey, a systematic sampling approach was used in which every fifth customer was approached as they passed the researchers' desk at the exit of the store. The sampling technique used was effectively systematic random (k^{th}) sampling, which is a probability sampling method where a sample is produced by selecting every k^{th} individual (Research Methodology, 2016). Two researchers were involved at each location and a rehearsed introductory message was used to approach customers. Data collection took place over a period of four weeks, with September 29th 2016 as the final date for the mail surveys to be counted.

The questionnaire was developed from a review of previous literature, with particular reference to questionnaires used in the studies by Lea and Worsley (2005), Magnusson et al. (2001), von Meyer Höfer et al. (2015) and Xie et al. (2015). The principles of organic farming

presented by IFOAM – Organics International (n.d. a) were also referenced, especially for the formation of questions relating to organic food attributes. Likert Scale questions were used, and a copy of the questionnaire can be seen in Appendix 9.

Table 1: Timing and Numbers of Surveys Completed at the Three Locations around Christchurch

| Location | Time of Survey | Questionnaires completed on the day | Mail Surveys Distributed | Mail Survey Responses | Total Responses |
|----------|--|-------------------------------------|--------------------------|-----------------------|-----------------|
| 1 | Wednesday August 21 st 11am-2pm | 25 | 39 | 4 | 29 |
| 2 | Saturday September 10 th 11am-2.30pm | 11 | 26 | 12 | 23 |
| 3 | Sunday September 18 th 9am-11.30am | 36 | 13 | 9 | 45 |
| | | | | | 97 |

5.0 Analysis and Results

The total number of respondents was 97. Data was coded so that it could be entered easily for analysis. Descriptive statistics such as frequencies and averages were used to analyse the data, and one-way ANOVA and Independent Sample T-tests were also used. ANOVA (Analysis of Variance) is used to make multiple comparisons of several populations (About Education, 2015). ANOVA was used for much of the statistical analysis in this study as there were multiple groups to compare. An independent samples t-test allows the average values of two groups to be compared (Statwing, n.d.). Independent samples t-tests were used in this study for comparisons based on gender, where only two groups (male and female) were compared. The data was analysed using IBM SPSS (Version 22) software. Descriptive statistics have also been used in previous studies about organic food (e.g. Magnusson et al., 2001; Xie et al., 2015). One interesting finding shown in Table 1 was that of the two supermarkets (Locations 1 and 2), the urban (Location 1) supermarket (which had a higher customer count) yielded a higher number of questionnaires completed on the day and a

higher number of responses in total. The location with the highest number of responses in total was the farmers' market (Location 3), possibly because customers who visited the farmers' market were more likely to be interested in organic food and visited the Sunday market when they had time to spare.

5.1 Organic food types purchased

Respondents who stated that they purchased organic products were asked to indicate on a scale from 1 to 5 how frequently they purchased different organic food types (with 1 being 'very rarely' and 5 being 'frequently'). The organic food types listed were 'dairy' (P1), 'fruit/vegetables' (P2), 'meat/eggs' (P3) and 'bread/pasta' (P4). (The labels 'P1'-'P4' were part of the data coding used for entering the data into the software.) Means were calculated for these responses (which are included in Appendix 12) and showed that 'fruit/vegetables' was the most frequently purchased organic food type with a mean of 3.90 (s.d. = 1.11), while 'bread/pasta' was the least frequently purchased with a mean of 2.56 (s.d. = 1.55). The categories 'dairy' and 'meat/eggs' were purchased at similar frequencies with means of 3.24 (s.d. = 1.55) and 3.30 (s.d. = 1.46) respectively. A breakdown of these categories by demographics can be found in Appendix 10.

5.2 Benefits perceived from buying organic food products

Respondents who indicated that they purchased organic products were asked to rate the importance of various attributes in motivating them to purchase organic food. The respondents rated the importance of each attribute on a scale of 1-5 with 1 being 'not important' and 5 being 'very important'. Means were calculated for these responses and can be found in Appendix 12. The attributes that were indicated to be the most important were '*health/well-being of current/future generations*' (\bar{x} = 4.49, s.d. = 0.872), '*animal welfare protection*' (\bar{x} = 4.43, s.d. = 0.910), '*no/minimal pesticides*' (\bar{x} = 4.41, s.d. = 1.06), '*no/minimal food additives*' (\bar{x} = 4.38, s.d. = 0.981) and '*good taste*' (\bar{x} = 4.37, s.d. = 0.767). The attributes that were indicated to be the least important were '*longer shelf life*' (\bar{x} = 3.23, s.d. = 1.33), '*consideration to values/needs of stakeholders*' (\bar{x} = 3.56, s.d. = 1.29), '*low energy usage*' (\bar{x} = 3.72, s.d. = 1.17), '*on farm feed production*' (\bar{x} = 3.87, s.d. = 1.24) and '*careful adoption of modern science*' (\bar{x} = 3.90, s.d. = 1.03). A complete list of attributes can be found in Appendix 13.

5.3 Barriers to the purchase of organic food

Respondents were also asked to indicate how likely certain factors (which could be barriers to purchase) were to discourage them from buying organic food. For each factor, respondents were asked to select a number on the scale of 1 to 5, with 1 indicating a factor was less likely to discourage the respondent and 5 indicating that a factor was very likely to discourage the respondent. Means were calculated for these responses and are also included in Appendix 12. For data entry, the potential barriers were coded as B1 (*High price premium*), B2 (*Distrust of organic food*), B3 (*Lack of knowledge about organic food*), B4 (*Lack of availability of organic foods*), B5 (*Limited choice/variety*), B6 (*No difference between organic and non-organic options*) and B7 (*Organic food may be a fad*). The factor that discouraged respondents the most (and therefore appeared to be the biggest barrier to the purchase of organic food) was '*high price premium*' (B1), with a mean of 3.44 (s.d. = 1.50). The next biggest barriers to purchase appeared to be '*lack of availability of organic foods*' (B4) and '*limited choice/variety*' (B5), with means of 2.67 (s.d. = 1.27) and 2.51 (s.d. = 1.36) respectively. The factors that were less likely to discourage respondents were '*no difference between organic and non-organic options*' (B6) (\bar{x} = 1.89, s.d. = 1.28), '*organic food may be a fad*' (B7) (\bar{x} = 1.74, s.d. = 1.26) and '*lack of knowledge about organic food*' (B3) (\bar{x} = 1.72, s.d. = 1.12). The factor '*distrust of organic food*' (B2) was the least likely to discourage respondents with a mean of 1.69 (s.d. = 1.15). A breakdown of the importance of the barriers by demographics can be found in Appendix 14.

5.4 Impact of demographic factors on perception of benefits and purchase behaviour

The demographic information collected from respondents included gender, age, type of household, income and education. Independent samples T-tests were carried out for gender, and one-way ANOVA was used for the other demographic factors. Testing was done at the significance level of 5% (i.e. $p < 0.05$). The demographic data was also coded for entry into the software. For gender the codes were 0 (*Male*), 1 (*Female*), 2 (*Prefer not to state*). For year of birth: 1 (*Before 1950*), 2 (*1950-1964*), 3 (*1965-1980*), 4 (*1981-1995*), 5 (*After 1995*). For household type: 1 (*Live alone*), 2 (*Live with partner*), 3 (*Live with parents*), 4 (*Live with flatmates*), 5 (*Live with children with/without partner*). For gross annual income: 1 (*Less than \$50000*), 2 (*Between \$50000 and \$85000*), 3 (*More than \$85000*), 4 (*Prefer not to*

state). For education level: 1 (*Primary/High School*), 2 (*Trade or tech qualification*), 3 (*Undergraduate degree*), 4 (*Postgraduate degree*), 5 (*Prefer not to state*).

There is a statistically significant difference between male and female respondents regarding the importance placed on the attributes of '*more nutritious*' ($p = 0.019$), '*health benefits*' ($p = 0.031$), '*no/minimal fertilisers*' ($p = 0.037$), '*no/minimal food additives*' ($p = 0.032$) and '*animal welfare protection*' ($p = 0.004$) (Refer to appendix 6 for detailed results). Between the different age groups, there was a statistically significant difference concerning the importance placed on the attributes of '*health benefits*' ($p = 0.030$), '*no/minimal fertilisers*' ($p = 0.007$), '*no/minimal pesticides*' ($p = 0.000$), '*use of local knowledge and experience*' ($p = 0.024$) and '*health/well-being of current/future generations*' ($p = 0.001$). With different household types there was a statistically significant difference for the importance placed on the attributes of '*no/minimal food additives*' ($p = 0.015$), '*no/minimal impact on air quality*' ($p = 0.011$), '*no/minimal impact on water quality*' ($p = 0.009$), '*accountability for environmental and social costs*' ($p = 0.010$), '*sharing of benefits from farmers to consumers*' ($p = 0.021$) and '*avoiding unpredictable technology including GMO*' ($p = 0.006$). Income and education did not have statistically significant differences for as many attributes as the other demographic factors. For different income levels, there was a statistically significant difference regarding the importance placed on the attributes of '*biodiversity protection*' ($p = 0.028$) and '*accountability for environmental and social costs*' ($p = 0.028$). For different education levels, there was a statistically significant difference for the importance placed on the attributes of '*no/minimal pesticides*' ($p = 0.023$) and '*climate protection*' ($p = 0.036$). (Significance testing for the effect of demographic factors other than gender can be seen in Appendix 7.) The only demographic factor with which there was a significant difference for purchase behaviour (purchase/don't purchase) was education level, with a p value of 0.026. Descriptive statistics for the effect of demographic factors on purchase behaviour can be seen in Appendix 5 and significance testing for these can be seen in Appendix 8.

6.0 Discussion

6.1 Benefits Perceived from Buying Organic Products

The most important attribute of organic food to consumers in this study and probably the most notable was the *contribution to the health and well-being of current and future generations*. In a general sense, the importance of this attribute aligns with the findings of previous studies when it is considered as part of broader concepts such as contributing to the common good and participating in socially responsible consumption. Thøgersen and Zhou (2012), for example, found that consumers were largely motivated to buy organic food because they felt it contributed to the common good, and consumers in the study by Nasir and Karakaya (2014) believed socially responsible consumption to be of high importance. Torjusen et al. (2001) noted that a major characteristic of organic consumers was that they placed a high level of importance on attributes that, while not immediately obvious or tangible, could have a wider impact on humans, animals and the environment. The concern for the health and well-being of current and future generations shown by consumers in the current study fits well with the findings of Torjusen et al. (2001). However, something different to note about consumers in the current study could be their focus on the future. While concepts like socially responsible consumption have been discussed in previous studies about organic food, there did not seem to be much of a specific focus on the future. One reason for this could just be that consideration of future consequences was considered as part of socially responsible consumption in previous studies and therefore was deemed unnecessary to be discussed separately. The other potential reason could be that having a future-oriented focus is a particular characteristic of New Zealand consumers, in which case the consideration of the long-term impacts of organic food production would be very important when producing and marketing organic food in New Zealand.

The most important attributes to consumers of organic food as indicated by the calculated means were the *health and well-being of current and future generations, animal welfare protection, no or minimal pesticide use, no or minimal food additives and good taste*.

The findings of the importance of *no or minimal pesticide use* and *taste* to consumers are not controversial. A lack of pesticide use in organic production has been shown to be important to consumers in previous studies, with respondents in the study by von Meyer-

Höfer et al. (2015) expecting organic food to have had no pesticides used. Pesticide use was also raised by consumers in the study by Vega-Zamora et al. (2014), with emphasis placed on the impact it could have on human health. The importance of taste has also been shown in previous studies. Lea and Worsley (2005), Thøgersen and Zhou (2012), Radman (2005) and Vega-Zamora et al. (2014) all found positive consumer perceptions in regards to the taste of organic food. Hill and Lynchehaun (2002) and Hjelmar (2011) found that this attribute was of particular importance to certain groups of consumers, with taste being important to the group of consumers who bought organic for internal reasons in the study by Hill and Lynchehaun (2002), and also the politically/ethically-minded consumers in the study by Hjelmar (2011). Torjusen, Lieblein, Wandel and Francis (2001) conducted a consumer survey in Norway which investigated the importance of various attributes of food (in general, not just organic) and determined that taste would be a very important attribute to consider when trying to attract consumers to organic food, as most respondents believed this attribute to be very important.

The importance to consumers of organic food containing *no or minimal food additives* is also unsurprising when previous studies are considered. Although food additives have not been discussed explicitly in many previous studies about organic food, the attribute of having no or minimal food additives could easily relate to the attribute of organic food being 'natural', which has been commonly mentioned in previous studies. Vega-Zamora et al. (2014), for example, found that consumers commonly perceived organic food to be natural, and von Meyer-Höfer et al. (2015) also found that it was important to consumers for organic food to be 'natural'. Torjusen et al. (2001) did find that minimal use of food additives specifically was an important attribute to consumers for any type of food, whether or not it was organic. The attribute of organic food being 'natural' is one that could easily have different meanings for different people, because it does not have a clear definition and it is not something that can be measured exactly. Considering the use of food additives in organic food could be one way of getting a better measurement of its 'naturalness', as it is a tangible and measurable characteristic. In any case it seems that the use of *no or minimal food additives* in organic food is an important attribute to consider when producing and marketing organic food, for New Zealand consumers at least.

Animal welfare protection was another major attribute of importance to consumers of organic food. This was in agreement with the study by Hjelmar (2011) which found that animal welfare was important, particularly to the politically/ethically-minded consumers of organic food. Animal welfare in the production of any food type (organic or conventional) was also important to many consumers in the study by Torjusen et al. (2001). The importance of animal welfare to New Zealand consumers could be something to take note of, as this was shown to be one of the most important attributes in the current study but it was not discussed as such in many previous studies about organic food. It could be that animal welfare was included in the general concept of ethical consumption in previous studies (with this being the reason why animal welfare wasn't discussed separately), or it could indicate that New Zealand consumers in particular are concerned about animal welfare. In either case, animal welfare (and consumer perceptions of animal welfare) should be carefully considered when producing and marketing organic food, especially in New Zealand.

The least important attributes to consumers were *longer shelf life, consideration to the values/needs of stakeholders, low energy usage and careful adoption of modern science*. Other than for longer shelf life, a possible reason for the low levels of importance placed on these attributes could be a lack of knowledge about what these attributes mean or involve. The low importance of longer shelf life was somewhat contradictory to the findings of Torjusen et al. (2001), who found that shelf life was important for both consumers of organic food and consumers of conventional food. A likely reason for the low level of importance was that many consumers did not believe organic food to have a longer shelf life, which was the case for consumers in the study by Vega-Zamora et al. (2014), who perceived organic food to be more perishable. It is likely that many consumers associated a shorter shelf life with no or minimal use of food additives (which would include preservatives that could extend shelf life), which was one of the most important attributes to the consumers. As such, many consumers may accept a shorter shelf life for organic food because they place a much higher level of importance on the attribute of no or minimal food additive use.

6.2 Barriers to the Purchase of Organic Food

The biggest barrier to the purchase of organic food for consumers in this study was shown to be *high price*. This finding is unsurprising as high prices have been found to be a major barrier to the purchase of organic food in many previous studies (e.g. Buder et al., 2014; Hill and Lynchehaun, 2002; Lea & Worsley, 2005; Magnusson et al., 2001; Padel & Foster, 2005; Thøgersen & Zhou, 2012; Vega-Zamora et al., 2014; Xie et al., 2015). While Radman (2005) and Hjelmar (2011) found that high price was not such a big barrier for some groups of consumers, the fact that price was indicated to be a lot more likely to discourage respondents from buying organic food than limited availability or variety were (which would probably be the bigger barriers for consumers who did not consider high prices to be a big barrier) would suggest that price was important to the large majority of consumers in this study, and that high price was a large barrier for many people. When producing and marketing organic food, especially in New Zealand, it should be taken into account that high price premiums will probably be a big barrier to purchase for many consumers, meaning either that the price premium should be kept to a minimum or that close attention should be paid to the market segments and which consumers can afford to pay the price premium.

The next biggest barriers to the purchase of organic food seemed to be *limited availability and limited choice/variety*. While these barriers were not as big as high price, they were still major barriers. These barriers to the purchase of organic food have also been discussed in previous studies, with lack of availability in particular mentioned in many studies (e.g. Buder et al., 2014; Lea & Worsley, 2005; Thøgersen & Zhou, 2012; Vega-Zamora et al., 2014; Xie et al., 2015). Limited variety was noted as a barrier by Buder et al. (2014) as some consumers indicated that they only bought conventional cheese, for example, because there was not a good enough selection of organic cheese. A previous study by Wooliscroft et al. (2014) has also shown that New Zealand consumers perceive there to be a limited proportion of organic food available, supporting the idea that limited availability is a big barrier to the purchase of organic food for consumers in New Zealand. Although it is possible there is a group of consumers for whom lack of availability or variety is not a big barrier (Nasir & Karakaya, 2014), it does not seem likely that there is a large group of these consumers in New Zealand, given that limited availability and variety were indicated to be major barriers in this study. Since limited availability and variety were indicated to be major barriers to

purchase, it would seem that not many consumers in this study would be willing to put in much effort to find the organic products they desired. This finding would suggest that, when marketing organic food in New Zealand especially, careful consumer analysis should be carried out so the product can be marketed and sold in places where the target consumers are likely to find it easily, as it is unlikely that consumers will put in a lot of effort to find the product if it is not in an obvious or readily accessible location for them.

Lack of knowledge did not seem to be such a big barrier to the purchase of organic food for consumers in the current study. This finding was somewhat different to that of Xie et al. (2015), who believed that lack of knowledge amongst consumers was another barrier to the purchase of organic food. There may be a couple of explanations for lack of knowledge not being recognised as a big barrier in the current study. One explanation could be that consumers see a food labelled as organic and use this as a heuristic cue, making assumptions about the attributes of the product without considering or being concerned by their own lack of knowledge. The role of the term 'organic' has been discussed in depth in previous studies (Vega-Zamora et al., 2013; Vega-Zamora et al., 2014). Another possible explanation for lack of knowledge not being indicated as a big barrier to purchase could be a response bias. Given that a majority of respondents indicated that they did purchase organic products, it could be that there was a response bias towards consumers who already regularly purchased organic food and who possibly were knowledgeable about organic food (which would cause them to not consider a lack of knowledge to be a barrier to purchase). If a response bias is taken into account, it should be considered that many consumers who did not participate in the survey and who do not purchase organic food may have a significant lack of knowledge about organic food, and for these less knowledgeable consumers, it is quite possible that lack of knowledge would be a big barrier to the purchase of organic food. In the case of less knowledgeable consumers, it could be useful to educate these consumers about the possible benefits of organic food.

Distrust of organic food was shown to be the smallest barrier to the purchase of organic food for consumers in the current study. This finding differed somewhat to those of Teng and Wang (2015), who believed consumer trust was more significant in the purchase of organic food than consumer knowledge was. A possible reason for the small role of distrust of organic food as a barrier to purchase for consumers in this study could also be a response

bias. With a majority of respondents indicating that they did purchase organic food, it could be that these respondents were more likely to be trusting and believing of the claims about the benefits of organic food. This finding could also just suggest that New Zealand consumers may be more trusting in the New Zealand organic certification systems, or it could suggest that there are other, much bigger barriers that have a lot more influence on the purchase decisions of consumers.

6.3 Impact of Demographic Factors on Perception of Benefits and Purchase Behaviour

One-way ANOVA results indicated a statistically significant relationship between age and the levels of importance placed on a range of organic attributes. From these results, it would appear that age has an impact on consumer perception of organic food, which would agree with the findings of Davies et al. (1995) and Magnusson et al. (2001).¹

One-way ANOVA results also indicated a statistically significant relationship between household type and the importance placed on a range of attributes. These results would agree with findings by Hjelmar (2011) and Xie et al. (2015) that suggested household type (particularly whether there were children in a household) had an impact on consumer perception and purchase of organic food. However, a situation similar to that of age occurred, with one group having a much smaller number of respondents than the others, causing the significance of these results to be questionable. The only attribute for which there possibly was a significant effect was *no/minimal food additives*, with the means suggesting that the groups of respondents living with parents and with flatmates placed a significantly lower level of importance on this attribute than other groups did.

The significance testing results for the demographic factor of income were probably more representative of the impact of demographic factors than those for age or household type because the sizes of the different income groups were more balanced. The only significant result to take note of for the effect of income would be for the attribute of *biodiversity protection*. The calculated means suggested that biodiversity protection was significantly

¹ However, the impact of age in this study should not be considered as significant because it is likely that the results were largely affected by the small number of respondents in the group born after 1995

less important to respondents who earned more than NZ\$85,000 (gross annual income). A significant result for income level having an impact on consumer perception of organic food would agree with the findings of Nasir and Karakaya (2014), although the impact of income level on perception of specific attributes such as *biodiversity protection* was not discussed.

The results of the one-way ANOVA and the calculated means for the impact of education suggested that the attributes *no/minimal pesticides* and *climate protection* were significantly more important to the group of respondents with undergraduate degrees (so a higher level of education, but not the highest level of education). The finding of education level having a significant impact on consumer perception of organic food would agree with the findings of Nasir and Karakaya (2014), Thøgersen & Zhou (2012) and Xie et al. (2015), who found that purchase behaviour (and therefore probably also consumer perception) was affected by education level.

Gender was the only demographic factor that had a consistent statistically significant impact on the levels of importance placed on organic food attributes. The results of an independent sample T-test indicated a statistically significant relationship between gender and the attributes of *more nutritious*, *health benefits*, *no/minimal fertilisers*, *no/minimal food additives* and *animal welfare protection*. The means for these attributes suggested that they were significantly more important to women than to men. This study's finding that gender appears to be associated with purchase and consumption of food is in line with the findings of Forbes et al. (2016), which showed gender-based differences regarding snack food purchase and consumption. These findings (particularly for *no/minimal fertilisers* and *no/minimal food additives*) related well to those of Lockie, Lyons, Lawrence and Grice (2004), who conducted a consumer survey in Australia and found that the naturalness of food was more important to women than to men. This finding would suggest that, if some marketing campaigns for organic food were to be targeted to women, then it could be useful to emphasise attributes relating to the naturalness of organic food, particularly the minimal use of fertilisers and food additives.

For purchase behaviour, education level was the only demographic factor that was indicated to have a significant effect. The calculated means suggested that people with a high level of education (postgraduate degrees) were the most likely to purchase organic food. This finding was similar to those of Thøgersen and Zhou (2012) and Xie et al. (2015). However,

there did not seem to be a clear relationship between education level and the decision to purchase organic food, as the group of respondents with undergraduate degrees seemed less likely to purchase organic food than the group with trade or tech qualifications (a comparatively lower level of education).

Overall, the findings of the current study do not show a consistent significant (i.e. direct versus inverse relationship) impact of demographic factors on consumer perception of benefits or purchase behaviour of organic food (with the possible exception of gender). These findings support those of Shafie and Rennie (2012) and Squires et al. (2001) who also believed that demographic factors did not play a consistent role in influencing consumer perception and purchase of organic food. Further studies in New Zealand with more respondents may help to better establish if demographic factors impact consumer perception and purchase behaviour of organic food.

7.0 Conclusions

The findings of this study indicate that the most important benefits of organic food perceived by New Zealand consumers are the *health and well-being of current and future generations, animal welfare protection, no/minimal pesticides, no/minimal food additives* and *good taste*. These attributes should be emphasised when marketing organic food to New Zealand consumers. Future research relating to the production of organic food in New Zealand should also focus on these attributes to give credibility to claims made about them by marketers. The biggest barrier to the purchase of organic food for New Zealand consumers was shown to be high price, followed by limited availability of organic food and limited choice/variety of organic food options. Other than gender, demographic factors were not found to have a consistent impact on consumer perception of the benefits of organic food. Gender was the only demographic factor that appeared to have a statistically significant impact on consumer perception of organic attributes, with the attributes of *more nutritious, health benefits, no/minimal fertilisers, no/minimal food additives* and *animal welfare protection* found to be significantly more important to women than men. Demographic factors were also found to be unlikely to have a major impact on purchase behaviour for organic food. Future research with larger sample sizes may help to better establish if demographic factors have a major impact on consumer perception and purchase behaviour for organic food in New Zealand.

There are a few key strategies which could be important for marketers of organic food to consider. Premium pricing may not always be the best strategy, given that *high prices* are a major purchase barrier for many consumers. A lower price that is affordable for more consumers could be beneficial. Intensive distribution of organic food may be necessary to overcome one of the other major purchase barriers which was *limited availability*.

Widespread distribution could be especially important as it seems unlikely that consumers will go out of their way to find organic food products. Promotion of organic food should focus on communicating the scientific benefits in a way that resonates with consumers, most likely by relating them to the attributes that are the most important to consumers (i.e. *health and well-being of current and future generations, animal welfare protection, no/minimal pesticides, no/minimal food additives and good taste*). Communication can focus on customer empowerment, which would help to reduce the impact of *lack of consumer knowledge* as a purchase barrier. With women often having been found in previous studies to have more positive attitudes towards organic food, and placing higher levels of importance on attributes such as *no/minimal fertilisers* and *no/minimal food additives*, it could be beneficial to empower them with more knowledge of the benefits of organic food, and in doing so cause them to become influencers.

One area that was not able to be covered in depth in this study was consumer perception of the different organic food categories. This would be interesting to research further. For example, consumers in this study indicated that the organic food category they purchased least frequently was bread/pasta, and it would be interesting to know why they might choose to buy e.g. organic meat/eggs over bread/pasta. It would also be interesting to investigate perceptions of organic dairy specifically, since this is one category that is of particular interest in New Zealand.

While an effort was made to gather data from a wide range of consumers, this study may not be representative of all New Zealand consumers. Future research in different areas of New Zealand with larger sample sizes could help to give a better picture of the perceptions New Zealand consumers have about organic food. As well as studies with larger sample sizes, studies involving focus groups could also provide useful information about the perception of organic food in New Zealand. Focus groups could be a good way of gathering more in-depth information about what people think of the different organic food categories,

for example. With demographic factors shown to have limited explanatory power in this study, future research could focus on other explanatory factors such as lifestyle and psychographic factors.

Appendix 1: Literature Review Table

| | Author | Country of Focus | Survey Method | Sample size | Statistical Analysis | Independent Variables | Dependent Variables | Key Findings |
|---|--|------------------|--|--|---|--|---|---|
| 1 | Lea and Worsley, 2005 | Australia | Mail survey | 223 | T test, PCA, Regression | Demographic Factors | Beliefs about organic foods | Most people believed organic food was better for the environment, health and taste Expense and low availability were barriers to purchasing organic Positive attitudes towards organic were predicted by the environment/nature/ equality personal value factor Women had a more positive attitude towards the organic than men did |
| 2 | Magnusson, Arvola and Hursti, 2001 | Sweden | Mail survey | 1,154 | Descriptive statistics, two-tailed t-test (unpaired), one-way ANOVA | Demographic factors | Attitudes towards organic foods and purchase of organic foods | Most respondents had positive attitudes towards organic (particularly young respondents and women) Low purchase frequency (attitude-behaviour discrepancy) Premium prices a barrier to purchase In purchasing criteria, "taste" was the most important while "organically produced" was the least important |
| 3 | Aertsens, Verbeke, Mondelaers and Van Huylenbroeck, 2009 | Various | Secondary data sources (the paper is a general review) | NA | NA | Schwartz' values theory, theory of planned behaviour | Organic food consumption decisions, emotions and the role of personal norm in the consumption of organic food | Abstract values (e.g. security, hedonism, benevolence, self-direction) can explain consumption decisions when related to attributes of organic food Perceived behavioural control (people's perceptions of their ability to perform a behaviour) and subjective (perceived social pressure to perform a behaviour) and personal norm (norms someone creates for themselves outside/beyond social norms) also influence consumption of organic food |
| 4 | Hill and Lynchehaun, 2002 | UK | Focus groups, observation and secondary data | 4 focus groups held (2 "users", 2 "non-users") | Qualitative | Consumer motivation and attitudes towards organic milk | Purchase behaviour of organic milk | There were two main target groups identified: "Greenies" (who buy organic milk for external reasons, e.g. environment awareness/concern, maybe following trends) and "Foodies" (internal reasons for buying organic milk, e.g. like the taste or associate it with health) High price was the main reason for not purchasing organic food- the "non-users" didn't understand how the higher price of organic milk was justified |

| | | | | | | | | |
|---|---|--|---|-------|--|--|---|---|
| 5 | Baruk and Iwanicka, 2016 | Poland | Face-to-face questionnaire | 550 | Factor analysis, Kruskal-Wallis independence test | Dairy product packaging, demographic factors | Consumer purchase decisions, the expectations consumers have of dairy product packaging | Demographic characteristics affected the respondents' expectations of dairy product packaging Ecological features of packaging were more important to older respondents |
| 6 | Padel and Foster, 2005 | UK | Focus groups and laddering interviews | 181 | Qualitative | Consumer values | Purchase decisions about organic food | The higher price of organic food is an important barrier to purchase, but not the only barrier In order to make the sacrifice of paying a higher price, consumers need to feel that they are gaining other benefits that justify the price Many consumers don't have much knowledge about certification and labelling, and aren't confident in the claims made about the benefits of organic products There is a large group of occasional organic consumers that might buy more organic products if they were made aware of the benefits and reasons for price premiums |
| 7 | Radman, 2005 | Croatia | Face-to-face survey | 179 | Univariate analysis, chi-square test, ANOVA and correlation analysis | Geographic factor (in Croatia) | Consumer attitudes, purchase frequency and beliefs of organic products | Respondents perceived organic food to be of good quality, to taste good and to be healthy, but also thought it to be expensive and that its appearance was not good Many respondents did not know what the actual definition of organic production was Some consumers had a more positive attitude towards organic products and could be more willing to pay higher prices |
| 8 | Von Meyer-Höfer, Nitzko and Spiller, 2015 | European Union (Germany, UK, Spain and the Czech Republic) | Online consumer survey | 1,180 | Mean value analysis and exploratory factor analysis | "Naturalness" and sustainability aspects of organic food | Consumer expectations | The main expectations were for organic food to have no chemical pesticides or mineral fertilisers used, and for it to be non-GMO There is a risk of dissatisfaction because the attributes held in high importance for organic food ("naturalness", "high quality" and "good taste") don't have clear definitions and could be hard to meet for each customer |
| 9 | Nikolić, Uzunović and Spaho, 2014 | Bosnia and Herzegovina | Consumer survey: face-to-face interview | 800 | Exploratory factor analysis and | Lifestyle pattern framing behaviour | Traditional food product and organic | The lifestyle pattern for both TFP and OF consumers is driven by beliefs about welfare of people, social equality, nature, health and family life |

| | | | | | | | | |
|----|---|------------------|---|--------------------------------------|---|--|--|---|
| | | | | | cluster analysis | | food consumption | Both TFP and OF have symbolic meaning to consumers |
| 10 | Teng and Wang, 2015 | Taiwan | Questionnaire survey (distributed at supermarkets and health food stores) | 693 | Structural equation modelling-confirmatory analysis, then path analysis | Perceived knowledge of organic foods and information revealed on organic food labels | Consumer attitudes towards, trust in and purchase intentions of organic food | Trust was the antecedent to attitudes and it mediated relationships between "perceived knowledge", "revealing information" and organic purchase intentions "Perceived knowledge" did not have a significant effect on attitudes, so it is more important focus on increasing trust rather than perceived knowledge |
| 11 | Buder, Feldmann and Hamm, 2014 | Germany | Computer-aided, personal interviews | 817 | Examination of distribution of responses | Store type, product category | Purchase behaviour of organic and conventional food products | The main barriers to the purchase of organic foods were high price, lack of availability and low quality products For some product categories, consumers purchased conventional products instead of organic because of the lack of available organic options- cheese was included in these categories |
| 12 | Davies, Titterington and Cochrane, 1995 | Northern Ireland | 1: Convenience sample outside supermarkets 2 & 3: Interviews, selection by random route sampling | 150, 1,033, 1,002 | SPSS X with cross tabulations | Demographic factors | Motives of and inhibitions to purchasing organic products | Consumers who bought organic products were more likely to be women who had a higher amount of disposable income Younger consumers may have been more interested in/positive about organic food, but did not have sufficient income to actually purchase it |
| 13 | Dias, Schuster, Talamini and Révillon, 2016 | Brazil | Web-based survey (questionnaire sent by email) | 604 | Analysis of structural equation in AMOS software | Purchase motivations for organic food, where consumers bought groceries | Scale of consumer loyalty to organic food | On the scale, the respondents had a high loyalty mean, indicating them to be "True Organic loyal" Most of the respondents would buy their food from farmer's markets |
| 14 | Xie, Wang, Yang, Wang and Zhang, 2015 | Eastern China | Survey questionnaire, in-depth interviews | Questionnaire: 388 Interviews: 18 | Descriptive statistics, cross-tabulation tables and chi-square test. SPSS | Demographic factors, perceptions and attitudes towards organic food | Purchase behaviour of organic food | Respondents who bought organic believed it to be safer and healthier, and often had high education, high disposable income and had families with children, and were often older than people who didn't buy organic The biggest barriers to purchase were that the consumers did not know much about organic |

| | | | | | | | | |
|----|---|-------------------------|---|-------------------------------------|--------------------------------------|---|---|---|
| | | | | | 17.0 used to run the analysis | | | products and the high price and lack of availability of organic products |
| 15 | Stolz, Stolze, Hamm, Janssen and Ruto, 2011 | Switzerland and Germany | Survey and face-to-face interviews | 293 | Factor analysis, latent class models | Price of the products, specific quality attributes of organic/ conventional-plus/ conventional products | The preferences of occasional consumers of organic food | Consumers of organic were less sensitive to price. More price-sensitive consumers bought conventional-plus products The benefits of organic products over conventional-plus products are related to production and processing, which aren't obvious qualities in the product that the consumer can see |
| 16 | Squires, Juric and Cornwell, 2001 | NZ and Denmark | Questionnaires were given to consumers of organic products at supermarkets and health food shops, with return envelopes | 144 responses in Denmark, 154 in NZ | Logistic regressions | Psychographic (beliefs about diet/health/environment), demographic factors and level of market development (Denmark was a mature organic market and NZ was a novice organic market) | Organic food consumption intensity (what proportion of food consumed was organic) | Demographic factors were not found to be a reliable predictor of the intensity of organic consumption A more consistent predictor (relating to concerns about the environment) of organic consumption was "green self-perception" in Denmark and "personal eco-identity" in NZ- more about the ideal of being a green consumer than about specific environmental concerns NZ consumers had a bigger focus on health concerns (as well as the environment), whereas Danish consumers had a much bigger focus on environmental concerns In mature markets (Denmark), environment related concerns/beliefs are the biggest reason for organic consumption |
| 17 | Shafie and Rennie, 2012 | Various | Review of literature | NA | NA | Demographic factors, psychographic factors (attitudes towards environment and lifestyle) | Level of organic food consumption | There have been conflicting findings as to whether demographic factors play a big role in the level of organic consumption- it could be more likely that attitudes/beliefs about environment and health play a bigger role For consumers to be willing to pay the premium for organic products, it is important to communicate to them the environmental and health benefits of organically produced foods (and this information needs to be credible) |
| 18 | Hjelmar, 2011 | Denmark | Interviews (exploratory) | 16 interviews (22 | Qualitative | Demographic factors, pragmatic/conv enience- | Patterns of organic food purchase/con sumption | For consumers who are pragmatic, convenience is important: organic foods need to be easily available and many consumers are more likely to buy organic if they do not have to |

| | | | | | | | | |
|----|--|-------------|---|-----------------------------|---|--|-------------------------------------|--|
| | | | | respondents in total) | | oriented vs. politically/ethically-oriented | | go out of their way to get it. Buying organic food needs to fit into the consumers' busy lifestyles and prices significantly higher than those for conventional foods are not desirable. Politically/ethically-oriented consumers had reflexive shopping behaviours, generally shaped by life events like having children or by big stories in the media. To these consumers, a variety of things such as health, taste, environment and animal welfare were important. Price was less important to these consumers. |
| 19 | Wooliscroft, Ganglmair-Wooliscroft and Noone, 2014 | New Zealand | Stage 1: Semi-structured interviews Stage 2: survey. A "Hierarchy of Ethical Consumption Behaviour" (HECB) was developed | Stage 1: 10 Stage 2: 403 | Stage 1: Qualitative Stage 2: Rasch modeling | Behaviours that consumers carry out which they believe to be ethical | Level of ethical consumption, HECB | In NZ, having a completely organic diet and purchasing almost or all of their groceries from organic supermarkets were the second most extreme behaviours on the continuum, being some of the most difficult ethical behaviours. Buying some organic products was less difficult but was still in the upper-middle part of the continuum. The HECB and the behaviours that consumers consider to be ethical are influenced by cultural and environmental factors. Behaviours relating to the consumption of organic food may be perceived as being more difficult by New Zealanders due to the limited proportion of organic foods available compared to many other countries. |
| 20 | Vega-Zamora et al., 2013 | Spain | Personal interviews | 800 | Confirmatory factor analysis. Robust Maximum Likelihood, Satorra-Bentler's chi-sq value | Use of the term "organic" | Consumer perception of organic food | Consumers were not knowledgeable about organic products and had a low level of interest in them but still believed that products labelled 'organic' were of higher quality. Consumers chose to believe that 'organic' means better quality (taste, safety, health). Since the consumers were not actually knowledgeable about organic products, the term "organic" was found to be a heuristic cue. |
| 21 | Vega-Zamora et al., 2014 | Spain | Focus groups | 32 | Qualitative | Use of the term 'organic' | Consumer perception of organic food | 'organic' was used as a heuristic cue especially for trustworthiness and authenticity. Organic foods were considered to be natural and healthy. Main reasons for purchasing organic were flavour and health benefits |

| | | | | | | | | |
|----|--------------------------|--------|-----------------------|-----|--|---|--|--|
| | | | | | | | | price was a major barrier to purchase of organic food respondents believed organic food to be of better quality even though they couldn't necessarily perceive a difference between organic and conventional |
| 22 | Thøgersen and Zhou, 2012 | China | Mall intercept survey | 529 | Confirmatory factor analysis and structural equation modelling | 'Universalism values', consumer beliefs, social norms | Adoption of organic food | consumers had positive attitudes towards organic linked to health, taste and environmental benefits positive perceptions of organic food were present before the decision to buy organic food, but not all consumers who had positive perceptions would take the last step and actually buy organic food Chinese early adopters of organic food had the same motivations as people in other countries (especially for the common good) → suggested that the drivers for buying organic food are similar across cultures limited availability and high prices were key purchase barriers higher income and education levels were associated with early adoption of organic food |
| 23 | Nasir and Karakaya, 2014 | Europe | Consumer survey | 316 | ANOVA | Consumer profiles | Attitudes towards organic food consumption | three main segments of organic consumers: favourable attitudes, neutral attitudes, unfavourable attitudes consumers in the favourable attitude segment cared a lot about health and social responsibility consumers in the neutral attitude cared the most about the environment respondents in the favourable attitude segment mostly had low or middle incomes, probably because many of them were young |

Appendix 2: Permission to Conduct a Survey at Location 1

29th August 2016

Hannah Chamberlain – Organics Customer Survey Wednesday 31st August 2016 10am – 2pm

Dear Hannah

As discussed, this letter is confirmation that we have agreed to allow you to conduct your Organics Customer Survey around the exit of our store under the following stipulations:

- No specific product / brand will be discussed with customers
- That customers are aware this is an independent survey and not conducted by
- That the area designated does not become congested during high traffic times to delay our customers

We are happy for this survey to take place between 10am and 2pm.

If you let me know when you arrive I will show you the designated area for your survey.

We would be very interested in some feedback regarding your survey findings when you have compiled customer feed back.

See you on Wednesday 😊

Regards



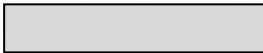
Appendix 3: Permission to Conduct a Survey at Location 2



8/09/2016

TO WHOM IT MAY CONCERN

Hannah Chamberlain has been grant permission to conduct a survey instore at



Office/IT Manager

Appendix 4: Permission to Conduct a Survey at Location 3

Organic food survey



Reply all

Sat 17/09, 10:43 a.m.

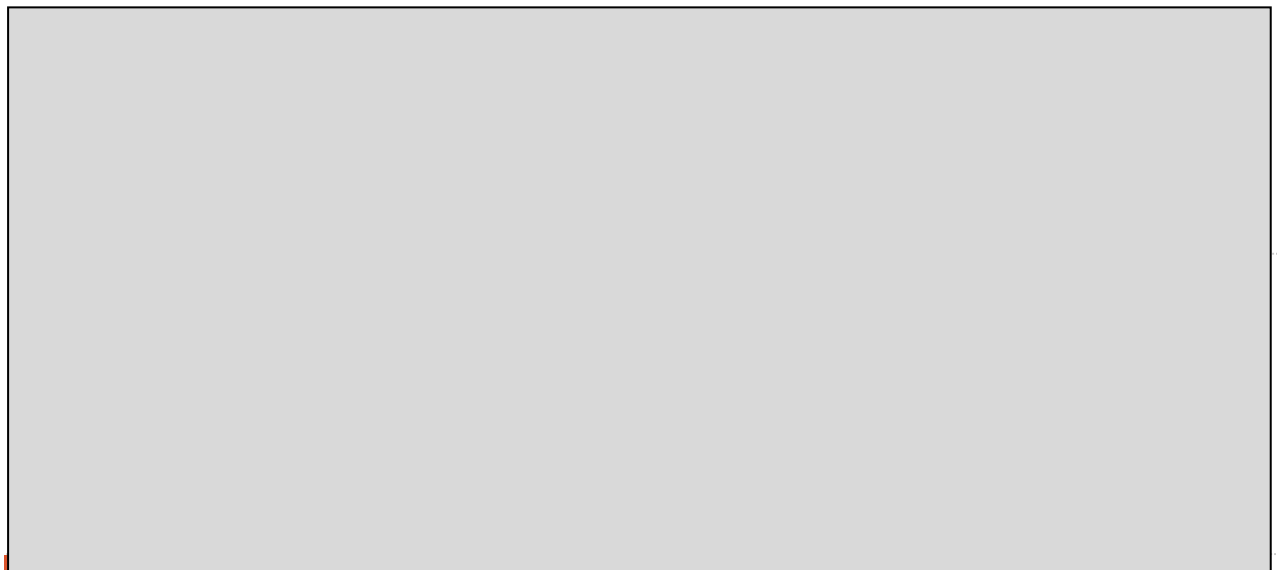
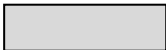
Chamberlain, Hannah

Action Items

Hi Hannah

That seems fine to go ahead.

Regards



CH

Chamberlain, Hannah

Hi

As promised on the phone earlier today I have attached some information about the organic food survey for Sunday. I have attached a copy of the questionnaire, a profile of the project and a copy of our approval from the Lincoln University Human Ethics Committee for you.

Would it be possible to get a typed letter from you (either via email or I could pick it up on Sunday) with permission for us to do the survey on Sunday please? There is no rush for this, it is just for our records in case we get an audit from the Ethics Committee.

Thank you very much!

Kind regards,

Hannah

Appendix 5 PURCHASE BEHAVIOUR (PURCHASE-1/DON'T PURCHASE-0)

Descriptive Statistics (97 respondents total) – SPSS

Gender → Purchase

| Purchase | | | |
|----------|-------|----|---------|
| Gender | Mean | N | Std.Dev |
| 0 | 0.813 | 32 | 0.397 |
| 1 | 0.742 | 62 | 0.441 |
| 2 | 1.000 | 2 | 0.000 |
| Total | 0.771 | 96 | 0.423 |

Age → Purchase

| Purchase | | | |
|----------|-------|----|---------|
| Age | Mean | N | Std.Dev |
| 1 | 0.684 | 19 | 0.478 |
| 2 | 0.826 | 23 | 0.388 |
| 3 | 0.741 | 27 | 0.447 |
| 4 | 0.783 | 23 | 0.422 |
| 5 | 1.000 | 4 | 0.000 |
| Total | 0.771 | 96 | 0.423 |

Household → Purchase

| Purchase | | | |
|-----------|-------|----|---------|
| Household | Mean | N | Std.Dev |
| 1 | 0.875 | 16 | 0.342 |
| 2 | 0.711 | 38 | 0.460 |
| 3 | 1.000 | 3 | 0.000 |
| 4 | 0.800 | 10 | 0.422 |
| 5 | 0.750 | 28 | 0.441 |
| Total | 0.768 | 95 | 0.424 |

Income → Purchase

| Purchase | | | | |
|----------|---|-------|----|---------|
| Income | | Mean | N | Std.Dev |
| | 1 | 0.711 | 38 | 0.460 |
| | 2 | 0.767 | 30 | 0.430 |
| | 3 | 0.778 | 18 | 0.428 |
| | 4 | 1.000 | 10 | 0.000 |
| Total | | 0.771 | 96 | 0.423 |

Education → Purchase

| Purchase | | | | |
|-----------|---|-------|----|---------|
| Education | | Mean | N | Std.Dev |
| | 1 | 0.550 | 20 | 0.510 |
| | 2 | 0.824 | 34 | 0.387 |
| | 3 | 0.667 | 15 | 0.488 |
| | 4 | 0.909 | 22 | 0.294 |
| | 5 | 1.000 | 5 | 0.000 |
| Total | | 0.771 | 96 | 0.423 |

Appendix 6: IMPACT OF DEMOGRAPHIC FACTORS (GENDER) ON PERCEPTION OF BENEFITS (ATTRIBUTES)

Significance testing (97 respondents total) – SPSS

Gender → Attributes

Independent Samples T-Test

| | | Independent Samples Test | | | | | | | |
|------------------|-----------------------------|---|------|------------------------------|--------|-----------------|-----------------|-----------------------|---|
| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |
| | | | | | | | | | Lower Upper |
| Quality | Equal variances assumed | .081 | .777 | -1.453 | 70 | .151 | -.343 | .236 | -.813 .128 |
| | Equal variances not assumed | | | -1.403 | 46.785 | .167 | -.343 | .244 | -.834 .149 |
| Nutrition | Equal variances assumed | 5.950 | .017 | -2.719 | 70 | .008 | -.567 | .208 | -.983 -.151 |
| | Equal variances not assumed | | | -2.455 | 38.527 | .019 | -.567 | .231 | -1.034 -.100 |
| Health | Equal variances assumed | 2.325 | .132 | -2.458 | 70 | .016 | -.589 | .239 | -1.066 -.111 |
| | Equal variances not assumed | | | -2.232 | 39.141 | .031 | -.589 | .264 | -1.122 -.055 |
| Taste | Equal variances assumed | .060 | .807 | .078 | 70 | .938 | .015 | .192 | -.368 .398 |
| | Equal variances not assumed | | | .080 | 54.674 | .937 | .015 | .189 | -.363 .393 |
| Shelf | Equal variances assumed | 1.441 | .234 | -1.563 | 69 | .123 | -.511 | .327 | -1.164 .141 |
| | Equal variances not assumed | | | -1.589 | 51.810 | .118 | -.511 | .322 | -1.157 .134 |

| | | | | | | | | | | |
|---------------------|-----------------------------|--------|------|--------|--------|------|-------|------|--------|-------|
| Fertiliser | Equal variances assumed | 11.304 | .001 | -2.541 | 69 | .013 | -.697 | .274 | -1.243 | -.150 |
| | Equal variances not assumed | | | -2.173 | 32.515 | .037 | -.697 | .321 | -1.349 | -.044 |
| Pesticide | Equal variances assumed | 8.284 | .005 | -1.842 | 69 | .070 | -.467 | .253 | -.973 | .039 |
| | Equal variances not assumed | | | -1.578 | 32.667 | .124 | -.467 | .296 | -1.069 | .135 |
| Additives | Equal variances assumed | 21.007 | .000 | -2.741 | 68 | .008 | -.630 | .230 | -1.089 | -.172 |
| | Equal variances not assumed | | | -2.259 | 29.182 | .032 | -.630 | .279 | -1.201 | -.060 |
| Feed | Equal variances assumed | 3.494 | .066 | -.864 | 65 | .391 | -.272 | .315 | -.902 | .358 |
| | Equal variances not assumed | | | -.812 | 41.518 | .421 | -.272 | .335 | -.950 | .405 |
| Climate | Equal variances assumed | 4.415 | .039 | -2.013 | 67 | .048 | -.639 | .317 | -1.272 | -.005 |
| | Equal variances not assumed | | | -1.856 | 37.676 | .071 | -.639 | .344 | -1.336 | .058 |
| Habitat | Equal variances assumed | .312 | .578 | -.209 | 69 | .835 | -.058 | .278 | -.613 | .496 |
| | Equal variances not assumed | | | -.195 | 42.528 | .846 | -.058 | .297 | -.658 | .542 |
| Air | Equal variances assumed | .036 | .850 | -.847 | 67 | .400 | -.211 | .249 | -.708 | .286 |
| | Equal variances not assumed | | | -.811 | 43.915 | .422 | -.211 | .260 | -.735 | .313 |
| Water | Equal variances assumed | 1.152 | .287 | -.952 | 68 | .345 | -.236 | .248 | -.729 | .258 |
| | Equal variances not assumed | | | -.894 | 41.419 | .376 | -.236 | .263 | -.767 | .296 |
| Energy | Equal variances assumed | 1.287 | .261 | -.341 | 66 | .734 | -.102 | .300 | -.702 | .497 |
| | Equal variances not assumed | | | -.328 | 42.563 | .744 | -.102 | .312 | -.731 | .526 |
| Biodiversity | Equal variances assumed | .738 | .393 | -.836 | 67 | .406 | -.221 | .264 | -.748 | .306 |
| | Equal variances not assumed | | | -.787 | 41.629 | .436 | -.221 | .281 | -.788 | .346 |

| | | | | | | | | | | |
|-----------------------|-----------------------------|--------|------|--------|--------|------|-------|------|--------|-------|
| Welfare | Equal variances assumed | 11.570 | .001 | -3.594 | 65 | .001 | -.770 | .214 | -1.199 | -.342 |
| | Equal variances not assumed | | | -3.100 | 32.008 | .004 | -.770 | .249 | -1.277 | -.264 |
| Accountability | Equal variances assumed | .014 | .907 | -.483 | 67 | .631 | -.125 | .258 | -.639 | .390 |
| | Equal variances not assumed | | | -.473 | 47.051 | .638 | -.125 | .263 | -.654 | .405 |
| Availability | Equal variances assumed | .967 | .329 | -1.019 | 67 | .312 | -.250 | .245 | -.740 | .240 |
| | Equal variances not assumed | | | -1.050 | 54.515 | .298 | -.250 | .238 | -.727 | .227 |
| Benefits | Equal variances assumed | .064 | .801 | -.275 | 67 | .784 | -.073 | .265 | -.601 | .455 |
| | Equal variances not assumed | | | -.268 | 46.285 | .790 | -.073 | .271 | -.619 | .473 |
| Pricing | Equal variances assumed | .005 | .944 | .131 | 70 | .896 | .025 | .192 | -.358 | .408 |
| | Equal variances not assumed | | | .130 | 51.508 | .897 | .025 | .193 | -.362 | .412 |
| Science | Equal variances assumed | .846 | .361 | -.095 | 68 | .925 | -.024 | .259 | -.540 | .491 |
| | Equal variances not assumed | | | -.090 | 44.512 | .929 | -.024 | .273 | -.574 | .525 |
| Knowledge | Equal variances assumed | .001 | .981 | .470 | 68 | .640 | .102 | .217 | -.331 | .536 |
| | Equal variances not assumed | | | .477 | 51.889 | .635 | .102 | .214 | -.328 | .532 |
| Stakeholders | Equal variances assumed | .867 | .355 | -1.937 | 68 | .057 | -.618 | .319 | -1.254 | .019 |
| | Equal variances not assumed | | | -1.873 | 44.989 | .068 | -.618 | .330 | -1.282 | .047 |
| Future | Equal variances assumed | 4.514 | .037 | -1.643 | 67 | .105 | -.316 | .193 | -.701 | .068 |
| | Equal variances not assumed | | | -1.486 | 37.145 | .146 | -.316 | .213 | -.748 | .115 |
| GMO | Equal variances assumed | 4.277 | .042 | -1.307 | 69 | .195 | -.394 | .301 | -.995 | .207 |
| | Equal variances not assumed | | | -1.205 | 40.771 | .235 | -.394 | .327 | -1.054 | .266 |

**Appendix 7: IMPACT OF DEMOGRAPHIC FACTORS ON PERCEPTION OF BENEFITS
(ATTRIBUTES)**

Significance testing: One-way ANOVA (97 respondents total) – SPSS

Age → Attributes

| | | ANOVA | | | | |
|-----------------------|----------------|----------------|----|-------------|-------|------|
| | | Sum of Squares | df | Mean Square | F | Sig. |
| Quality | Between Groups | 4.356 | 4 | 1.089 | 1.168 | .333 |
| | Within Groups | 64.360 | 69 | .933 | | |
| | Total | 68.716 | 73 | | | |
| Nutrition | Between Groups | 4.101 | 4 | 1.025 | 1.364 | .255 |
| | Within Groups | 51.859 | 69 | .752 | | |
| | Total | 55.959 | 73 | | | |
| Health | Between Groups | 11.088 | 4 | 2.772 | 2.860 | .030 |
| | Within Groups | 66.872 | 69 | .969 | | |
| | Total | 77.959 | 73 | | | |
| Taste | Between Groups | 2.527 | 4 | .632 | 1.066 | .380 |
| | Within Groups | 40.879 | 69 | .592 | | |
| | Total | 43.405 | 73 | | | |
| Shelf | Between Groups | 8.141 | 4 | 2.035 | 1.159 | .337 |
| | Within Groups | 119.421 | 68 | 1.756 | | |
| | Total | 127.562 | 72 | | | |
| Fertiliser | Between Groups | 17.849 | 4 | 4.462 | 3.818 | .007 |
| | Within Groups | 79.466 | 68 | 1.169 | | |
| | Total | 97.315 | 72 | | | |
| Pesticide | Between Groups | 20.793 | 4 | 5.198 | 5.825 | .000 |
| | Within Groups | 60.687 | 68 | .892 | | |
| | Total | 81.479 | 72 | | | |
| Additives | Between Groups | 21.191 | 4 | 5.298 | 7.407 | .000 |
| | Within Groups | 47.920 | 67 | .715 | | |
| | Total | 69.111 | 71 | | | |
| Feed | Between Groups | 3.817 | 4 | .954 | .611 | .656 |
| | Within Groups | 100.009 | 64 | 1.563 | | |
| | Total | 103.826 | 68 | | | |
| Climate | Between Groups | 10.636 | 4 | 2.659 | 1.715 | .157 |
| | Within Groups | 102.350 | 66 | 1.551 | | |
| | Total | 112.986 | 70 | | | |
| Habitat | Between Groups | 11.492 | 4 | 2.873 | 2.487 | .051 |
| | Within Groups | 78.563 | 68 | 1.155 | | |
| | Total | 90.055 | 72 | | | |
| Air | Between Groups | 7.408 | 4 | 1.852 | 1.892 | .122 |
| | Within Groups | 64.592 | 66 | .979 | | |
| | Total | 72.000 | 70 | | | |
| Water | Between Groups | 6.841 | 4 | 1.710 | 1.815 | .136 |
| | Within Groups | 63.145 | 67 | .942 | | |
| | Total | 69.986 | 71 | | | |
| Energy | Between Groups | 12.350 | 4 | 3.087 | 2.437 | .056 |
| | Within Groups | 82.350 | 65 | 1.267 | | |
| | Total | 94.700 | 69 | | | |
| Biodiversity | Between Groups | 2.329 | 4 | .582 | .522 | .720 |
| | Within Groups | 73.587 | 66 | 1.115 | | |
| | Total | 75.915 | 70 | | | |
| Welfare | Between Groups | .751 | 4 | .188 | .214 | .930 |
| | Within Groups | 56.060 | 64 | .876 | | |
| | Total | 56.812 | 68 | | | |
| Accountability | Between Groups | 8.823 | 4 | 2.206 | 2.258 | .072 |
| | Within Groups | 64.473 | 66 | .977 | | |
| | Total | 73.296 | 70 | | | |

| | | | | | | |
|---------------------|----------------|---------|----|-------|-------|------|
| Availability | Between Groups | 6.161 | 4 | 1.540 | 1.578 | .191 |
| | Within Groups | 64.430 | 66 | .976 | | |
| | Total | 70.592 | 70 | | | |
| Benefits | Between Groups | 3.918 | 4 | .979 | .904 | .467 |
| | Within Groups | 71.519 | 66 | 1.084 | | |
| | Total | 75.437 | 70 | | | |
| Pricing | Between Groups | 5.010 | 4 | 1.252 | 1.760 | .147 |
| | Within Groups | 49.112 | 69 | .712 | | |
| | Total | 54.122 | 73 | | | |
| Science | Between Groups | 7.827 | 4 | 1.957 | 1.914 | .118 |
| | Within Groups | 68.493 | 67 | 1.022 | | |
| | Total | 76.319 | 71 | | | |
| Knowledge | Between Groups | 8.726 | 4 | 2.182 | 3.011 | .024 |
| | Within Groups | 48.551 | 67 | .725 | | |
| | Total | 57.278 | 71 | | | |
| Stakeholders | Between Groups | 12.286 | 4 | 3.072 | 1.949 | .112 |
| | Within Groups | 105.589 | 67 | 1.576 | | |
| | Total | 117.875 | 71 | | | |
| Future | Between Groups | 12.783 | 4 | 3.196 | 5.152 | .001 |
| | Within Groups | 40.935 | 66 | .620 | | |
| | Total | 53.718 | 70 | | | |
| GMO | Between Groups | 9.292 | 4 | 2.323 | 1.616 | .180 |
| | Within Groups | 97.750 | 68 | 1.437 | | |
| | Total | 107.041 | 72 | | | |

Household → Attributes

| ANOVA | | | | | | |
|-------------------|----------------|----------------|----|-------------|-------|------|
| | | Sum of Squares | df | Mean Square | F | Sig. |
| Quality | Between Groups | 2.605 | 4 | .651 | .677 | .610 |
| | Within Groups | 65.423 | 68 | .962 | | |
| | Total | 68.027 | 72 | | | |
| Nutrition | Between Groups | 1.913 | 4 | .478 | .602 | .662 |
| | Within Groups | 54.005 | 68 | .794 | | |
| | Total | 55.918 | 72 | | | |
| Health | Between Groups | 5.463 | 4 | 1.366 | 1.282 | .286 |
| | Within Groups | 72.455 | 68 | 1.066 | | |
| | Total | 77.918 | 72 | | | |
| Taste | Between Groups | 3.453 | 4 | .863 | 1.544 | .199 |
| | Within Groups | 38.026 | 68 | .559 | | |
| | Total | 41.479 | 72 | | | |
| Shelf | Between Groups | 14.509 | 4 | 3.627 | 2.180 | .081 |
| | Within Groups | 111.477 | 67 | 1.664 | | |
| | Total | 125.986 | 71 | | | |
| Fertiliser | Between Groups | 7.680 | 4 | 1.920 | 1.446 | .229 |
| | Within Groups | 88.973 | 67 | 1.328 | | |
| | Total | 96.653 | 71 | | | |
| Pesticide | Between Groups | 7.989 | 4 | 1.997 | 1.830 | .133 |
| | Within Groups | 73.122 | 67 | 1.091 | | |

| | | | | | | |
|-----------------------|----------------|---------|----|-------|-------|------|
| | Total | 81.111 | 71 | | | |
| Additives | Between Groups | 11.517 | 4 | 2.879 | 3.321 | .015 |
| | Within Groups | 57.216 | 66 | .867 | | |
| | Total | 68.732 | 70 | | | |
| Feed | Between Groups | 1.463 | 4 | .366 | .228 | .922 |
| | Within Groups | 101.066 | 63 | 1.604 | | |
| | Total | 102.529 | 67 | | | |
| Climate | Between Groups | 9.258 | 4 | 2.315 | 1.465 | .223 |
| | Within Groups | 102.685 | 65 | 1.580 | | |
| | Total | 111.943 | 69 | | | |
| Habitat | Between Groups | 5.013 | 4 | 1.253 | .988 | .420 |
| | Within Groups | 84.973 | 67 | 1.268 | | |
| | Total | 89.986 | 71 | | | |
| Air | Between Groups | 12.933 | 4 | 3.233 | 3.558 | .011 |
| | Within Groups | 59.067 | 65 | .909 | | |
| | Total | 72.000 | 69 | | | |
| Water | Between Groups | 12.780 | 4 | 3.195 | 3.691 | .009 |
| | Within Groups | 57.136 | 66 | .866 | | |
| | Total | 69.915 | 70 | | | |
| Energy | Between Groups | 9.296 | 4 | 2.324 | 1.752 | .150 |
| | Within Groups | 84.907 | 64 | 1.327 | | |
| | Total | 94.203 | 68 | | | |
| Biodiversity | Between Groups | 5.669 | 4 | 1.417 | 1.322 | .271 |
| | Within Groups | 69.702 | 65 | 1.072 | | |
| | Total | 75.371 | 69 | | | |
| Welfare | Between Groups | 3.699 | 4 | .925 | 1.114 | .358 |
| | Within Groups | 53.113 | 64 | .830 | | |
| | Total | 56.812 | 68 | | | |
| Accountability | Between Groups | 13.386 | 4 | 3.346 | 3.632 | .010 |
| | Within Groups | 59.886 | 65 | .921 | | |
| | Total | 73.271 | 69 | | | |
| Availability | Between Groups | 3.626 | 4 | .906 | .893 | .473 |
| | Within Groups | 66.966 | 66 | 1.015 | | |
| | Total | 70.592 | 70 | | | |
| Benefits | Between Groups | 12.003 | 4 | 3.001 | 3.122 | .021 |
| | Within Groups | 63.433 | 66 | .961 | | |
| | Total | 75.437 | 70 | | | |
| Pricing | Between Groups | 4.960 | 4 | 1.240 | 1.717 | .156 |
| | Within Groups | 49.095 | 68 | .722 | | |
| | Total | 54.055 | 72 | | | |

| | | | | | | |
|---------------------|----------------|---------|----|-------|-------|------|
| Science | Between Groups | 4.336 | 4 | 1.084 | .994 | .417 |
| | Within Groups | 71.974 | 66 | 1.091 | | |
| | Total | 76.310 | 70 | | | |
| Knowledge | Between Groups | 4.761 | 4 | 1.190 | 1.497 | .213 |
| | Within Groups | 52.478 | 66 | .795 | | |
| | Total | 57.239 | 70 | | | |
| Stakeholders | Between Groups | 9.897 | 4 | 2.474 | 1.515 | .208 |
| | Within Groups | 107.765 | 66 | 1.633 | | |
| | Total | 117.662 | 70 | | | |
| Future | Between Groups | 4.777 | 4 | 1.194 | 1.611 | .182 |
| | Within Groups | 48.941 | 66 | .742 | | |
| | Total | 53.718 | 70 | | | |
| GMO | Between Groups | 20.349 | 4 | 5.087 | 3.959 | .006 |
| | Within Groups | 86.095 | 67 | 1.285 | | |
| | Total | 106.444 | 71 | | | |

Income → Attributes

| ANOVA | | | | | | |
|-------------------|----------------|----------------|----|-------------|-------|------|
| | | Sum of Squares | df | Mean Square | F | Sig. |
| Quality | Between Groups | 2.825 | 3 | .942 | 1.000 | .398 |
| | Within Groups | 65.891 | 70 | .941 | | |
| | Total | 68.716 | 73 | | | |
| Nutrition | Between Groups | .231 | 3 | .077 | .097 | .962 |
| | Within Groups | 55.728 | 70 | .796 | | |
| | Total | 55.959 | 73 | | | |
| Health | Between Groups | 1.372 | 3 | .457 | .418 | .741 |
| | Within Groups | 76.587 | 70 | 1.094 | | |
| | Total | 77.959 | 73 | | | |
| Taste | Between Groups | .990 | 3 | .330 | .545 | .653 |
| | Within Groups | 42.415 | 70 | .606 | | |
| | Total | 43.405 | 73 | | | |
| Shelf | Between Groups | .987 | 3 | .329 | .179 | .910 |
| | Within Groups | 126.574 | 69 | 1.834 | | |
| | Total | 127.562 | 72 | | | |
| Fertiliser | Between Groups | .487 | 3 | .162 | .116 | .951 |
| | Within Groups | 96.829 | 69 | 1.403 | | |
| | Total | 97.315 | 72 | | | |
| Pesticide | Between Groups | .634 | 3 | .211 | .180 | .909 |
| | Within Groups | 80.846 | 69 | 1.172 | | |
| | Total | 81.479 | 72 | | | |
| Additives | Between Groups | 1.486 | 3 | .495 | .498 | .685 |
| | Within Groups | 67.625 | 68 | .994 | | |
| | Total | 69.111 | 71 | | | |
| Feed | Between Groups | 8.437 | 3 | 2.812 | 1.916 | .136 |
| | Within Groups | 95.389 | 65 | 1.468 | | |

| | | | | | | |
|-----------------------|----------------|---------|----|-------|-------|------|
| | Total | 103.826 | 68 | | | |
| Climate | Between Groups | 2.124 | 3 | .708 | .428 | .734 |
| | Within Groups | 110.862 | 67 | 1.655 | | |
| | Total | 112.986 | 70 | | | |
| Habitat | Between Groups | 6.509 | 3 | 2.170 | 1.792 | .157 |
| | Within Groups | 83.546 | 69 | 1.211 | | |
| | Total | 90.055 | 72 | | | |
| Air | Between Groups | 2.499 | 3 | .833 | .803 | .497 |
| | Within Groups | 69.501 | 67 | 1.037 | | |
| | Total | 72.000 | 70 | | | |
| Water | Between Groups | 4.807 | 3 | 1.602 | 1.672 | .181 |
| | Within Groups | 65.179 | 68 | .959 | | |
| | Total | 69.986 | 71 | | | |
| Energy | Between Groups | 4.089 | 3 | 1.363 | .993 | .402 |
| | Within Groups | 90.611 | 66 | 1.373 | | |
| | Total | 94.700 | 69 | | | |
| Biodiversity | Between Groups | 9.610 | 3 | 3.203 | 3.237 | .028 |
| | Within Groups | 66.305 | 67 | .990 | | |
| | Total | 75.915 | 70 | | | |
| Welfare | Between Groups | 2.760 | 3 | .920 | 1.107 | .353 |
| | Within Groups | 54.051 | 65 | .832 | | |
| | Total | 56.812 | 68 | | | |
| Accountability | Between Groups | 9.229 | 3 | 3.076 | 3.217 | .028 |
| | Within Groups | 64.067 | 67 | .956 | | |
| | Total | 73.296 | 70 | | | |
| Availability | Between Groups | 7.042 | 3 | 2.347 | 2.475 | .069 |
| | Within Groups | 63.549 | 67 | .948 | | |
| | Total | 70.592 | 70 | | | |
| Benefits | Between Groups | 1.832 | 3 | .611 | .556 | .646 |
| | Within Groups | 73.605 | 67 | 1.099 | | |
| | Total | 75.437 | 70 | | | |
| Pricing | Between Groups | 1.647 | 3 | .549 | .732 | .536 |
| | Within Groups | 52.475 | 70 | .750 | | |
| | Total | 54.122 | 73 | | | |
| Science | Between Groups | .117 | 3 | .039 | .035 | .991 |
| | Within Groups | 76.203 | 68 | 1.121 | | |
| | Total | 76.319 | 71 | | | |
| Knowledge | Between Groups | .705 | 3 | .235 | .282 | .838 |
| | Within Groups | 56.573 | 68 | .832 | | |
| | Total | 57.278 | 71 | | | |
| Stakeholders | Between Groups | 1.683 | 3 | .561 | .328 | .805 |
| | Within Groups | 116.192 | 68 | 1.709 | | |
| | Total | 117.875 | 71 | | | |
| Future | Between Groups | 4.080 | 3 | 1.360 | 1.836 | .149 |
| | Within Groups | 49.638 | 67 | .741 | | |
| | Total | 53.718 | 70 | | | |
| GMO | Between Groups | 10.460 | 3 | 3.487 | 2.491 | .067 |
| | Within Groups | 96.582 | 69 | 1.400 | | |
| | Total | 107.041 | 72 | | | |

Education → Attributes

| ANOVA | | | | | | |
|---------------------|----------------|----------------|----|-------------|-------|------|
| | | Sum of Squares | df | Mean Square | F | Sig. |
| Quality | Between Groups | 5.227 | 4 | 1.307 | 1.420 | .236 |
| | Within Groups | 63.489 | 69 | .920 | | |
| | Total | 68.716 | 73 | | | |
| Nutrition | Between Groups | 1.095 | 4 | .274 | .344 | .847 |
| | Within Groups | 54.864 | 69 | .795 | | |
| | Total | 55.959 | 73 | | | |
| Health | Between Groups | 2.409 | 4 | .602 | .550 | .700 |
| | Within Groups | 75.551 | 69 | 1.095 | | |
| | Total | 77.959 | 73 | | | |
| Taste | Between Groups | .812 | 4 | .203 | .329 | .858 |
| | Within Groups | 42.594 | 69 | .617 | | |
| | Total | 43.405 | 73 | | | |
| Shelf | Between Groups | 7.318 | 4 | 1.829 | 1.035 | .396 |
| | Within Groups | 120.244 | 68 | 1.768 | | |
| | Total | 127.562 | 72 | | | |
| Fertiliser | Between Groups | 8.971 | 4 | 2.243 | 1.726 | .154 |
| | Within Groups | 88.344 | 68 | 1.299 | | |
| | Total | 97.315 | 72 | | | |
| Pesticide | Between Groups | 12.330 | 4 | 3.083 | 3.031 | .023 |
| | Within Groups | 69.149 | 68 | 1.017 | | |
| | Total | 81.479 | 72 | | | |
| Additives | Between Groups | 4.875 | 4 | 1.219 | 1.271 | .290 |
| | Within Groups | 64.236 | 67 | .959 | | |
| | Total | 69.111 | 71 | | | |
| Feed | Between Groups | 2.126 | 4 | .532 | .334 | .854 |
| | Within Groups | 101.700 | 64 | 1.589 | | |
| | Total | 103.826 | 68 | | | |
| Climate | Between Groups | 16.119 | 4 | 4.030 | 2.746 | .036 |
| | Within Groups | 96.867 | 66 | 1.468 | | |
| | Total | 112.986 | 70 | | | |
| Habitat | Between Groups | .388 | 4 | .097 | .074 | .990 |
| | Within Groups | 89.667 | 68 | 1.319 | | |
| | Total | 90.055 | 72 | | | |
| Air | Between Groups | 1.486 | 4 | .371 | .348 | .845 |
| | Within Groups | 70.514 | 66 | 1.068 | | |
| | Total | 72.000 | 70 | | | |
| Water | Between Groups | 1.319 | 4 | .330 | .322 | .862 |
| | Within Groups | 68.667 | 67 | 1.025 | | |
| | Total | 69.986 | 71 | | | |
| Energy | Between Groups | 2.144 | 4 | .536 | .376 | .825 |
| | Within Groups | 92.556 | 65 | 1.424 | | |
| | Total | 94.700 | 69 | | | |
| Biodiversity | Between Groups | 1.944 | 4 | .486 | .434 | .784 |
| | Within Groups | 73.972 | 66 | 1.121 | | |
| | Total | 75.915 | 70 | | | |
| Welfare | Between Groups | 2.113 | 4 | .528 | .618 | .651 |
| | Within Groups | 54.698 | 64 | .855 | | |

| | | | | | | |
|-----------------------|----------------|---------|----|-------|-------|------|
| | Total | 56.812 | 68 | | | |
| Accountability | Between Groups | 6.376 | 4 | 1.594 | 1.572 | .192 |
| | Within Groups | 66.919 | 66 | 1.014 | | |
| | Total | 73.296 | 70 | | | |
| Availability | Between Groups | 2.915 | 4 | .729 | .711 | .587 |
| | Within Groups | 67.676 | 66 | 1.025 | | |
| | Total | 70.592 | 70 | | | |
| Benefits | Between Groups | 3.077 | 4 | .769 | .702 | .594 |
| | Within Groups | 72.360 | 66 | 1.096 | | |
| | Total | 75.437 | 70 | | | |
| Pricing | Between Groups | 1.907 | 4 | .477 | .630 | .643 |
| | Within Groups | 52.215 | 69 | .757 | | |
| | Total | 54.122 | 73 | | | |
| Science | Between Groups | 4.662 | 4 | 1.166 | 1.090 | .369 |
| | Within Groups | 71.657 | 67 | 1.070 | | |
| | Total | 76.319 | 71 | | | |
| Knowledge | Between Groups | .715 | 4 | .179 | .212 | .931 |
| | Within Groups | 56.563 | 67 | .844 | | |
| | Total | 57.278 | 71 | | | |
| Stakeholders | Between Groups | 5.788 | 4 | 1.447 | .865 | .490 |
| | Within Groups | 112.087 | 67 | 1.673 | | |
| | Total | 117.875 | 71 | | | |
| Future | Between Groups | 2.354 | 4 | .589 | .756 | .557 |
| | Within Groups | 51.364 | 66 | .778 | | |
| | Total | 53.718 | 70 | | | |
| GMO | Between Groups | 4.301 | 4 | 1.075 | .712 | .587 |
| | Within Groups | 102.740 | 68 | 1.511 | | |
| | Total | 107.041 | 72 | | | |

Appendix 8: IMPACT OF DEMOGRAPHIC FACTORS ON PURCHASE BEHAVIOUR
(PURCHASE/DON'T PURCHASE)

Significance testing: One-way ANOVA (97 respondents total) – SPSS

Gender → Purchase

| Purchase | | | | | |
|-----------------|----------------|----|-------------|------|------|
| | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | .212 | 2 | .106 | .590 | .557 |
| Within Groups | 16.746 | 93 | .180 | | |
| Total | 16.958 | 95 | | | |

Age → Purchase

| Purchase | | | | | |
|-----------------|----------------|----|-------------|------|------|
| | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | .450 | 4 | .113 | .621 | .649 |
| Within Groups | 16.508 | 91 | .181 | | |
| Total | 16.958 | 95 | | | |

Household → Purchase

| Purchase | | | | | |
|-----------------|----------------|----|-------------|------|------|
| | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | .489 | 4 | .122 | .671 | .614 |
| Within Groups | 16.416 | 90 | .182 | | |
| Total | 16.905 | 94 | | | |

Income → Purchase

| Purchase | | | | | |
|-----------------|----------------|----|-------------|-------|------|
| | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | .665 | 3 | .222 | 1.251 | .296 |
| Within Groups | 16.294 | 92 | .177 | | |
| Total | 16.958 | 95 | | | |

Education → Purchase

| Purchase | | | | | |
|-----------------|----------------|----|-------------|-------|------|
| | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 1.916 | 4 | .479 | 2.897 | .026 |
| Within Groups | 15.043 | 91 | .165 | | |
| Total | 16.958 | 95 | | | |

Appendix 9: SURVEY-CONSUMER PERCEPTIONS OF ORGANIC PRODUCTS

The aim of this study is to gain a better understanding of the views that New Zealand shoppers have about organic food and the factors that affect whether people buy organic food. You are invited to participate in the study by completing this questionnaire, which will take about eight minutes. Participation in this research is voluntary and there is no obligation to take part. If you complete and return the questionnaire, it will be understood that you are at least 18 years of age and have consented to participate in the survey and consent to publication of the results of this research.


1. Do you buy organic products?

- ☐ No
☐ Yes

If you answer "Yes", proceed to question 2: If "No", proceed to question 4

2. *How often do you buy these types of organic products?* *Very rarely* *Occasionally* *Frequently*

| <i>(Please circle one number each for a-d)</i> | | | | | | |
|--|---|---|---|---|---|---|
| <i>a</i> | Dairy (milk, cheese, cream, and yogurt) | 1 | 2 | 3 | 4 | 5 |
| <i>b</i> | Fruit/Vegetables | 1 | 2 | 3 | 4 | 5 |
| <i>c</i> | Meat/Eggs | 1 | 2 | 3 | 4 | 5 |
| <i>d</i> | Bread/pasta | 1 | 2 | 3 | 4 | 5 |

3. How important are the following attributes in motivating you to purchase organic products? Not Important  Very Important

| <i>(Please circle one number each for a-y)</i> | | | | | | |
|--|---|---|---|---|---|---|
| <i>a</i> | High quality | 1 | 2 | 3 | 4 | 5 |
| <i>b</i> | More nutritious | 1 | 2 | 3 | 4 | 5 |
| <i>c</i> | Health benefits | 1 | 2 | 3 | 4 | 5 |
| <i>d</i> | Good taste | 1 | 2 | 3 | 4 | 5 |
| <i>e</i> | Longer shelf life | 1 | 2 | 3 | 4 | 5 |
| <i>f</i> | No/Minimal fertilisers | 1 | 2 | 3 | 4 | 5 |
| <i>g</i> | No/Minimal pesticides | 1 | 2 | 3 | 4 | 5 |
| <i>h</i> | No/Minimal food additives | 1 | 2 | 3 | 4 | 5 |
| <i>i</i> | On farm feed production | 1 | 2 | 3 | 4 | 5 |
| <i>j</i> | Climate protection | 1 | 2 | 3 | 4 | 5 |
| <i>k</i> | Habitat protection and preservation | 1 | 2 | 3 | 4 | 5 |
| <i>l</i> | No/Minimal impact on air quality | 1 | 2 | 3 | 4 | 5 |
| <i>m</i> | No/Minimal impact on water quality | 1 | 2 | 3 | 4 | 5 |
| <i>n</i> | Low energy usage | 1 | 2 | 3 | 4 | 5 |
| <i>o</i> | Biodiversity protection | 1 | 2 | 3 | 4 | 5 |
| <i>p</i> | Animal welfare protection | 1 | 2 | 3 | 4 | 5 |
| <i>q</i> | Accountability for environmental and social costs | 1 | 2 | 3 | 4 | 5 |
| <i>r</i> | Availability and accessibility of organic food | 1 | 2 | 3 | 4 | 5 |
| <i>s</i> | Sharing of benefits from farmers to consumers | 1 | 2 | 3 | 4 | 5 |
| <i>t</i> | Fair pricing of products | 1 | 2 | 3 | 4 | 5 |
| <i>u</i> | Careful adoption of modern science | 1 | 2 | 3 | 4 | 5 |
| <i>v</i> | Use of local knowledge and experience | 1 | 2 | 3 | 4 | 5 |
| <i>w</i> | Consideration to values/needs of stakeholders | 1 | 2 | 3 | 4 | 5 |
| <i>x</i> | Health/well-being of current/future generations | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| y | Avoiding unpredictable technology including GMO | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|

4. What factors discourage you from buying organic products? Probably Likely Definitely

(Please circle one number each for a-g)

| | | | | | | |
|---|---|---|---|---|---|---|
| a | High price premium | 1 | 2 | 3 | 4 | 5 |
| b | Distrust of organic food | 1 | 2 | 3 | 4 | 5 |
| c | Lack of knowledge about organic food | 1 | 2 | 3 | 4 | 5 |
| d | Lack of availability of organic foods | 1 | 2 | 3 | 4 | 5 |
| e | Limited choice/variety | 1 | 2 | 3 | 4 | 5 |
| f | No difference between organic and non-organic options | 1 | 2 | 3 | 4 | 5 |
| g | Organic food may be a fad | 1 | 2 | 3 | 4 | 5 |

Demographic Data

(Please tick one option each for questions 5-9)

5. Gender

- ☐ Male
☐ Female
☐ Prefer not to state

6. When were you born?

- ☐ Before 1950 ☐ 1981-1995
☐ 1950-1964 ☐ After 1995
☐ 1965-1980

7. In what type of household do you live?

- ☐ Live alone ☐ Live with flatmates
☐ Live with partner ☐ Live with children (with/without partner)
☐ Live with parents

8. What is the annual gross income for your household?

- ☐ Less than \$50000
☐ Between 50000 and \$85000
☐ More than \$85000
☐ Prefer not to state

9. Indicate your highest level of education

- ☐ Primary/High School
☐ Trade or tech qualification
☐ Undergraduate degree
☐ Postgraduate degree
☐ Prefer not to state

Thank You for completing this survey

Appendix 10: PRODUCT TYPE (P1-P4)

Descriptive Statistics (97 respondents total) – SPSS

Gender → Product Type

| Gender | | P1 | P2 | P3 | P4 |
|---------------|----------|-----------|-----------|-----------|-----------|
| 0 | Mean | 2.920 | 3.840 | 3.154 | 2.280 |
| | N | 25 | 25 | 26 | 25 |
| | Std.Dev. | 1.441 | 0.898 | 1.223 | 1.429 |
| 1 | Mean | 3.395 | 3.889 | 3.455 | 2.591 |
| | N | 43 | 45 | 44 | 44 |
| | Std.Dev. | 1.561 | 1.229 | 1.532 | 1.575 |
| 2 | Mean | 5.000 | 4.500 | 3.000 | 5.000 |
| | N | 2 | 2 | 2 | 2 |
| | Std.Dev. | 0.000 | 0.707 | 2.828 | 0.000 |
| Total | Mean | 3.271 | 3.889 | 3.333 | 2.549 |
| | N | 70 | 72 | 72 | 71 |
| | Std.Dev | 1.532 | 1.108 | 1.444 | 1.556 |

Age → Product type

| Age | | P1 | P2 | P3 | P4 |
|--------------|---------|-------|-------|-------|-------|
| 1 | Mean | 3.500 | 4.000 | 3.083 | 2.833 |
| | N | 12 | 13 | 12 | 12 |
| | Std.Dev | 1.446 | 1.225 | 1.782 | 1.642 |
| 2 | Mean | 3.444 | 3.790 | 3.842 | 2.632 |
| | N | 18 | 19 | 19 | 19 |
| | Std.Dev | 1.338 | 1.084 | 0.898 | 1.535 |
| 3 | Mean | 3.500 | 4.111 | 3.700 | 2.833 |
| | N | 18 | 18 | 20 | 18 |
| | Std.Dev | 1.618 | 1.023 | 1.490 | 1.654 |
| 4 | Mean | 2.611 | 3.889 | 2.588 | 1.889 |
| | N | 18 | 18 | 17 | 18 |
| | Std.Dev | 1.685 | 1.183 | 1.372 | 1.323 |
| 5 | Mean | 3.750 | 3.000 | 3.000 | 3.000 |
| | N | 4 | 4 | 4 | 4 |
| | Std.Dev | 1.258 | 0.817 | 1.633 | 1.826 |
| Total | Mean | 3.271 | 3.889 | 3.333 | 2.549 |
| | N | 70 | 72 | 72 | 71 |
| | Std.Dev | 1.532 | 1.108 | 1.444 | 1.556 |

Household → Product Type

| Household | | P1 | P2 | P3 | P4 |
|--------------|---------|-------|-------|-------|-------|
| 1 | Mean | 3.385 | 4.071 | 3.385 | 2.769 |
| | N | 13 | 14 | 13 | 13 |
| | Std.Dev | 1.446 | 1.207 | 1.609 | 1.481 |
| 2 | Mean | 3.560 | 3.889 | 3.482 | 2.667 |
| | N | 25 | 27 | 27 | 27 |
| | Std.Dev | 1.446 | 0.974 | 1.122 | 1.569 |
| 3 | Mean | 4.000 | 3.000 | 3.000 | 3.333 |
| | N | 3 | 3 | 3 | 3 |
| | Std.Dev | 1.000 | 2.000 | 2.000 | 2.082 |
| 4 | Mean | 2.000 | 3.625 | 3.125 | 1.750 |
| | N | 8 | 8 | 8 | 8 |
| | Std.Dev | 1.604 | 1.302 | 1.458 | 1.389 |
| 5 | Mean | 3.250 | 4.000 | 3.350 | 2.526 |
| | N | 20 | 19 | 20 | 19 |
| | Std.Dev | 1.618 | 1.054 | 1.694 | 1.611 |
| Total | Mean | 3.275 | 3.887 | 3.366 | 2.571 |
| | N | 69 | 71 | 71 | 70 |
| | Std.Dev | 1.542 | 1.115 | 1.427 | 1.556 |

Income → Product type

| Income | | P1 | P2 | P3 | P4 |
|--------------|---------|-------|-------|-------|-------|
| 1 | Mean | 3.520 | 3.885 | 3.000 | 2.440 |
| | N | 25 | 26 | 25 | 25 |
| | Std.Dev | 1.388 | 1.211 | 1.607 | 1.734 |
| 2 | Mean | 3.476 | 3.909 | 3.913 | 3.091 |
| | N | 21 | 22 | 23 | 22 |
| | Std.Dev | 1.632 | 1.109 | 1.125 | 1.477 |
| 3 | Mean | 2.929 | 3.857 | 3.286 | 2.357 |
| | N | 14 | 14 | 14 | 14 |
| | Std.Dev | 1.592 | 1.099 | 1.490 | 1.447 |
| 4 | Mean | 2.700 | 3.900 | 2.900 | 1.900 |
| | N | 10 | 10 | 10 | 10 |
| | Std.Dev | 1.567 | 0.994 | 1.370 | 1.197 |
| Total | Mean | 3.271 | 3.889 | 3.333 | 2.549 |
| | N | 70 | 72 | 72 | 71 |
| | Std.Dev | 1.532 | 1.108 | 1.444 | 1.556 |

Education → Product Type

| Education | | P1 | P2 | P3 | P4 |
|--------------|---------|-------|-------|-------|-------|
| 1 | Mean | 2.546 | 3.364 | 2.600 | 1.909 |
| | N | 11 | 11 | 10 | 11 |
| | Std.Dev | 1.440 | 1.120 | 1.265 | 1.221 |
| 2 | Mean | 3.400 | 3.808 | 3.643 | 2.731 |
| | N | 25 | 26 | 28 | 26 |
| | Std.Dev | 1.472 | 1.132 | 1.283 | 1.485 |
| 3 | Mean | 3.444 | 4.200 | 3.667 | 3.111 |
| | N | 9 | 10 | 9 | 9 |
| | Std.Dev | 1.878 | 0.919 | 1.803 | 1.764 |
| 4 | Mean | 3.400 | 4.050 | 3.050 | 2.400 |
| | N | 20 | 20 | 20 | 20 |
| | Std.Dev | 1.603 | 1.191 | 1.468 | 1.667 |
| 5 | Mean | 3.400 | 4.200 | 3.600 | 2.600 |
| | N | 5 | 5 | 5 | 5 |
| | Std.Dev | 1.140 | 0.837 | 1.673 | 1.817 |
| Total | Mean | 3.271 | 3.889 | 3.333 | 2.549 |
| | N | 70 | 72 | 72 | 71 |
| | Std.Dev | 1.532 | 1.108 | 1.444 | 1.556 |

Appendix 11: Ethical Approval

Research and Innovation

T 64 3 423 0817

PO Box 85084, Lincoln University

Lincoln 7647, Christchurch

New Zealand

30 August 2016

Application No: 2016- 47

Title: Organics in NZ: Consumer perception and purchase behaviour of organic food.

Applicant: H Chamberlain

The Lincoln University Human Ethics Committee has reviewed the above noted application.
Thank you for your response to the questions which were forwarded to you on the Committee's behalf.

I am satisfied on the Committee's behalf that the issues of concern have been satisfactorily addressed. I am pleased to give final approval to your project.

Please note that this approval is valid for three years from today's date at which time you will need to reapply for renewal.

Once your field work has finished can you please advise the Human Ethics Secretary, Alison Hind, and confirm that you have complied with the terms of the ethical approval.

May I, on behalf of the Committee, wish you success in your research.

Yours sincerely



Grant Tavinor

Chair, Human Ethics Committee

Appendix 12: MEANS (Product Type; Attributes; Barriers)

Descriptive Statistics- 97 Respondents Total (SPSS)

Means: Product type (P1-P4)

| | N | Mean | Std. Deviation | Skewness | |
|-------------------------------|-----------|-------------|-----------------------|-----------------|------------|
| | Statistic | Statistic | Statistic | Statistic | Std. Error |
| P1 | 71 | 3.239 | 1.544 | -0.319 | 0.285 |
| P2 | 73 | 3.904 | 1.108 | -0.815 | 0.281 |
| P3 | 73 | 3.301 | 1.460 | -0.352 | 0.281 |
| P4 | 72 | 2.556 | 1.546 | 0.504 | 0.283 |
| Valid N (listwise) | 69 | | | | |

Means: Attributes (Quality-GMO)

| | N | Mean | Std. Deviation | Skewness | |
|--------------------|-----------|-----------|----------------|-----------|------------|
| | Statistic | Statistic | Statistic | Statistic | Std. Error |
| Quality | 75 | 4.187 | 0.968 | -0.846 | 0.277 |
| Nutrition | 75 | 4.213 | 0.874 | -0.809 | 0.277 |
| Health | 75 | 4.213 | 1.031 | -1.358 | 0.277 |
| Taste | 75 | 4.373 | 0.767 | -0.943 | 0.277 |
| Shelf | 74 | 3.230 | 1.330 | -0.041 | 0.279 |
| Fertiliser | 74 | 4.203 | 1.158 | -1.442 | 0.279 |
| Pesticide | 74 | 4.405 | 1.059 | -1.880 | 0.279 |
| Additives | 73 | 4.384 | 0.981 | -1.571 | 0.281 |
| Feed | 69 | 3.870 | 1.236 | -0.949 | 0.289 |
| Climate | 72 | 4.014 | 1.261 | -0.979 | 0.283 |
| Habitat | 74 | 4.270 | 1.114 | -1.598 | 0.279 |
| Air | 72 | 4.014 | 1.014 | -0.779 | 0.283 |
| Water | 73 | 4.274 | 0.990 | -1.200 | 0.281 |
| Energy | 71 | 3.718 | 1.173 | -0.573 | 0.285 |
| Biodiversity | 72 | 4.278 | 1.038 | -1.520 | 0.283 |
| Welfare | 70 | 4.429 | 0.910 | -1.682 | 0.287 |
| Accountability | 72 | 4.167 | 1.021 | -0.835 | 0.283 |
| Availability | 72 | 4.153 | 1.002 | -0.920 | 0.283 |
| Benefits | 72 | 4.264 | 1.035 | -1.341 | 0.283 |
| Pricing | 75 | 4.267 | 0.860 | -1.075 | 0.277 |
| Science | 73 | 3.904 | 1.030 | -0.667 | 0.281 |
| Knowledge | 73 | 4.192 | 0.892 | -1.116 | 0.281 |
| Stakeholders | 73 | 3.562 | 1.291 | -0.518 | 0.281 |
| Future | 72 | 4.486 | 0.872 | -1.923 | 0.283 |
| GMO | 74 | 4.243 | 1.214 | -1.476 | 0.279 |
| Valid N (listwise) | 58 | | | | |

Means: Barriers (B1-B7)

| | N | Mean | Std. Deviation | Skewness | |
|-------------------------------|-----------|-------------|---------------------------|-----------------|------------|
| | Statistic | Statistic | Statistic | Statistic | Std. Error |
| B1 | 93 | 3.441 | 1.500 | -0.516 | 0.250 |
| B2 | 83 | 1.687 | 1.147 | 1.689 | 0.264 |
| B3 | 86 | 1.721 | 1.124 | 1.492 | 0.260 |
| B4 | 85 | 2.671 | 1.267 | 0.109 | 0.261 |
| B5 | 85 | 2.506 | 1.359 | 0.468 | 0.261 |
| B6 | 85 | 1.894 | 1.282 | 1.279 | 0.261 |
| B7 | 85 | 1.741 | 1.255 | 1.654 | 0.261 |
| Valid N (listwise) | 76 | | | | |

Appendix 13: ATTRIBUTES (Quality-GMO)

Descriptive Statistics (97 respondents total) - SPSS

Gender → Attributes

(Part 1/2)

| Gender | | Quality | Nutrition | Health | Taste | Shelf | Fertiliser | Pesticide | Additives | Feed | Climate | Habitat | Air | Water |
|--------------|---------|---------|-----------|---------|---------|---------|------------|-----------|-----------|---------|---------|---------|---------|---------|
| 0 | Mean | 3.962 | 3.846 | 3.846 | 4.385 | 2.880 | 3.760 | 4.120 | 4.000 | 3.680 | 3.583 | 4.231 | 3.880 | 4.120 |
| | N | 26 | 26 | 26 | 26 | 25 | 25 | 25 | 24 | 25 | 24 | 26 | 25 | 25 |
| | Std.Dev | 1.038 | 1.047 | 1.190 | 0.752 | 1.269 | 1.480 | 1.364 | 1.285 | 1.435 | 1.472 | 1.306 | 1.092 | 1.130 |
| 1 | Mean | 4.304 | 4.413 | 4.435 | 4.370 | 3.391 | 4.457 | 4.587 | 4.630 | 3.952 | 4.222 | 4.289 | 4.091 | 4.356 |
| | N | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 42 | 45 | 45 | 44 | 45 |
| | Std.Dev | 0.91578 | 0.71728 | 0.83406 | 0.79885 | 1.34128 | 0.8355 | 0.77678 | 0.64494 | 1.12515 | 1.12591 | 1.01404 | 0.93556 | 0.90843 |
| 2 | Mean | 4.000 | 4.000 | 3.500 | 4.500 | 4.500 | 3.500 | 3.500 | 3.500 | 4.500 | 4.500 | 4.000 | 3.500 | 4.000 |
| | N | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Std.Dev | 1.414 | 0.000 | 2.121 | 0.707 | 0.707 | 2.121 | 2.121 | 2.121 | 0.707 | 0.707 | 1.414 | 2.121 | 1.414 |
| Total | Mean | 4.176 | 4.203 | 4.203 | 4.378 | 3.247 | 4.192 | 4.397 | 4.389 | 3.870 | 4.014 | 4.260 | 4.000 | 4.264 |
| | N | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 69 | 71 | 73 | 71 | 72 |
| | Std.Dev | 0.970 | 0.876 | 1.033 | 0.771 | 1.331 | 1.163 | 1.064 | 0.987 | 1.236 | 1.270 | 1.118 | 1.014 | 0.993 |

(Part 2/2)

| Gender | | Energy | Biodiversity | Welfare | Accountability | Availability | Benefits | Pricing | Science | Knowledge | Stakeholders | Future | GMO |
|--------|----------|---------|--------------|---------|----------------|--------------|----------|---------|---------|-----------|--------------|--------|-------|
| 0 | Mean | 3.625 | 4.120 | 3.920 | 4.080 | 4.000 | 4.200 | 4.308 | 3.885 | 4.280 | 3.160 | 4.320 | 3.962 |
| | N | 24 | 25 | 25 | 25 | 25 | 25 | 26 | 26 | 25 | 25 | 25 | 26 |
| | Std. Dev | 1.279 | 1.201 | 1.152 | 1.077 | 0.913 | 1.118 | 0.788 | 1.177 | 0.843 | 1.375 | 0.945 | 1.455 |
| 1 | Mean | 3.7273 | 4.341 | 4.691 | 4.205 | 4.250 | 4.273 | 4.283 | 3.909 | 4.178 | 3.778 | 4.636 | 4.356 |
| | N | 44 | 44 | 42 | 44 | 44 | 44 | 46 | 44 | 45 | 45 | 44 | 45 |
| | Std. Dev | 1.12815 | 0.963 | 0.604 | 1.002 | 1.014 | 1.020 | 0.779 | 0.960 | 0.886 | 1.223 | 0.650 | 1.069 |
| 2 | Mean | 4 | 4.500 | 5.000 | 4.000 | 3.500 | 4.500 | 3.000 | 4.000 | 3.500 | 3.000 | 3.000 | 5.000 |
| | N | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Std. Dev | 1.41421 | 0.707 | 0.000 | 1.414 | 2.121 | 0.707 | 2.828 | 1.414 | 2.121 | 0.000 | 2.828 | 0.000 |
| Total | Mean | 3.7 | 4.268 | 4.420 | 4.155 | 4.141 | 4.254 | 4.257 | 3.903 | 4.194 | 3.542 | 4.479 | 4.233 |
| | N | 70 | 71 | 69 | 71 | 71 | 71 | 74 | 72 | 72 | 72 | 71 | 73 |
| | Std. Dev | 1.17152 | 1.041 | 0.914 | 1.023 | 1.004 | 1.038 | 0.861 | 1.037 | 0.898 | 1.288 | 0.876 | 1.219 |

Age → Attributes

(Part 1/2)

| Age | | Quality | Nutrition | Health | Taste | Shelf | Fertiliser | Pesticide | Additives | Feed | Climate | Habitat | Air | Water |
|--------------|---------|---------|-----------|--------|-------|-------|------------|-----------|-----------|-------|---------|---------|-------|-------|
| 1 | Mean | 4.231 | 4.077 | 4.077 | 4.308 | 3.917 | 4.333 | 4.500 | 4.455 | 4.200 | 4.700 | 4.769 | 4.333 | 4.667 |
| | N | 13 | 13 | 13 | 13 | 12 | 12 | 12 | 11 | 10 | 10 | 13 | 12 | 12 |
| | Std.Dev | 1.092 | 1.115 | 1.038 | 0.630 | 1.165 | 0.492 | 0.674 | 1.036 | 1.033 | 0.675 | 0.599 | 0.651 | 0.651 |
| 2 | Mean | 4.211 | 4.211 | 4.368 | 4.421 | 3.158 | 4.316 | 4.526 | 4.579 | 4.056 | 4.000 | 4.556 | 4.278 | 4.526 |
| | N | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 18 | 19 | 18 | 18 | 19 |
| | Std.Dev | 0.918 | 0.787 | 0.597 | 0.692 | 1.214 | 1.003 | 0.905 | 0.692 | 1.110 | 1.247 | 0.856 | 0.895 | 0.905 |
| 3 | Mean | 4.450 | 4.500 | 4.500 | 4.550 | 3.200 | 4.500 | 4.700 | 4.700 | 3.550 | 3.750 | 3.800 | 3.850 | 4.100 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| | Std.Dev | 0.826 | 0.827 | 1.051 | 0.686 | 1.542 | 1.147 | 0.923 | 0.571 | 1.504 | 1.333 | 1.322 | 0.988 | 0.968 |
| 4 | Mean | 3.944 | 4.111 | 4.111 | 4.111 | 2.889 | 4.056 | 4.333 | 4.278 | 3.882 | 4.167 | 4.278 | 3.882 | 4.059 |
| | N | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 17 | 18 | 18 | 17 | 17 |
| | Std.Dev | 1.056 | 0.676 | 1.079 | 1.023 | 1.367 | 1.349 | 1.138 | 1.127 | 1.166 | 1.249 | 1.018 | 1.166 | 1.197 |
| 5 | Mean | 3.500 | 3.500 | 2.750 | 4.750 | 3.500 | 2.250 | 2.250 | 2.250 | 3.750 | 3.000 | 3.500 | 3.000 | 3.500 |
| | N | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Std.Dev | 1.000 | 1.291 | 1.500 | 0.500 | 0.577 | 0.957 | 0.957 | 0.500 | 1.258 | 1.826 | 1.915 | 1.414 | 1.000 |
| Total | Mean | 4.176 | 4.203 | 4.203 | 4.378 | 3.247 | 4.192 | 4.397 | 4.389 | 3.870 | 4.014 | 4.260 | 4.000 | 4.264 |
| | N | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 69 | 71 | 73 | 71 | 72 |
| | Std.Dev | 0.970 | 0.876 | 1.033 | 0.771 | 1.331 | 1.163 | 1.064 | 0.987 | 1.236 | 1.270 | 1.118 | 1.014 | 0.993 |

(Part 2/2)

| Age | | Energy | Biodiversity | Welfare | Accountability | Availability | Benefits | Pricing | Science | Knowledge | Stakeholders | Future | GMO |
|--------------|---------|--------|--------------|---------|----------------|--------------|----------|---------|---------|-----------|--------------|--------|-------|
| 1 | Mean | 4.600 | 4.583 | 4.636 | 4.455 | 4.417 | 4.500 | 4.462 | 4.539 | 4.583 | 4.000 | 4.615 | 4.615 |
| | N | 10 | 12 | 11 | 11 | 12 | 12 | 13 | 13 | 12 | 12 | 13 | 13 |
| | Std.Dev | 0.516 | 0.669 | 0.674 | 0.688 | 0.793 | 0.905 | 0.877 | 0.660 | 0.515 | 0.953 | 0.650 | 0.961 |
| 2 | Mean | 3.833 | 4.222 | 4.421 | 4.474 | 4.158 | 4.421 | 4.526 | 3.944 | 4.316 | 3.947 | 4.895 | 4.211 |
| | N | 18 | 18 | 19 | 19 | 19 | 19 | 19 | 18 | 19 | 19 | 19 | 19 |
| | Std.Dev | 1.150 | 1.114 | 0.961 | 0.905 | 1.167 | 1.071 | 0.697 | 1.110 | 1.003 | 1.353 | 0.315 | 1.134 |
| 3 | Mean | 3.450 | 4.250 | 4.350 | 4.200 | 4.150 | 4.300 | 4.200 | 3.800 | 4.000 | 3.450 | 4.421 | 4.500 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 19 | 20 |
| | Std.Dev | 1.191 | 1.118 | 0.875 | 1.005 | 0.988 | 0.979 | 0.894 | 0.894 | 0.918 | 1.395 | 0.838 | 1.000 |
| 4 | Mean | 3.500 | 4.235 | 4.333 | 3.765 | 4.188 | 3.938 | 4.056 | 3.588 | 4.294 | 3.059 | 4.313 | 3.882 |
| | N | 18 | 17 | 15 | 17 | 16 | 16 | 18 | 17 | 17 | 17 | 16 | 17 |
| | Std.Dev | 1.200 | 1.091 | 1.113 | 1.147 | 0.911 | 1.237 | 0.639 | 1.228 | 0.772 | 1.249 | 0.873 | 1.495 |
| 5 | Mean | 3.000 | 3.750 | 4.500 | 3.250 | 3.000 | 3.750 | 3.500 | 3.500 | 3.000 | 2.750 | 3.000 | 3.250 |
| | N | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Std.Dev | 1.414 | 1.258 | 1.000 | 1.258 | 0.817 | 0.500 | 1.732 | 1.000 | 0.817 | 0.500 | 1.826 | 1.708 |
| Total | Mean | 3.700 | 4.268 | 4.420 | 4.155 | 4.141 | 4.254 | 4.257 | 3.903 | 4.194 | 3.542 | 4.479 | 4.233 |
| | N | 70 | 71 | 69 | 71 | 71 | 71 | 74 | 72 | 72 | 72 | 71 | 73 |
| | Std.Dev | 1.172 | 1.041 | 0.914 | 1.023 | 1.004 | 1.038 | 0.861 | 1.037 | 0.898 | 1.288 | 0.876 | 1.219 |

Household → Attributes

(Part 1/2)

| Household | | Quality | Nutrition | Health | Taste | Shelf | Fertiliser | Pesticide | Additives | Feed | Climate | Habitat | Air | Water |
|-----------|---------|---------|-----------|--------|-------|-------|------------|-----------|-----------|-------|---------|---------|-------|-------|
| 1 | Mean | 4.357 | 4.357 | 4.429 | 4.500 | 3.857 | 4.643 | 4.643 | 4.857 | 4.077 | 4.539 | 4.643 | 4.539 | 4.846 |
| | N | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 13 | 14 | 13 | 13 |
| | Std.Dev | 0.929 | 0.929 | 0.938 | 0.650 | 1.406 | 0.497 | 0.497 | 0.363 | 1.320 | 0.967 | 1.082 | 0.660 | 0.555 |
| 2 | Mean | 4.000 | 4.037 | 4.185 | 4.185 | 3.370 | 4.222 | 4.482 | 4.346 | 3.792 | 4.040 | 4.222 | 3.840 | 4.308 |
| | N | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 26 | 24 | 25 | 27 | 25 | 26 |
| | Std.Dev | 1.144 | 0.940 | 0.879 | 0.834 | 1.079 | 1.013 | 0.975 | 0.977 | 1.021 | 1.207 | 0.974 | 1.028 | 1.011 |
| 3 | Mean | 3.667 | 4.000 | 4.000 | 5.000 | 3.333 | 3.333 | 3.333 | 3.667 | 3.500 | 2.667 | 3.333 | 2.333 | 2.667 |
| | N | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| | Std.Dev | 1.155 | 1.000 | 1.000 | 0.000 | 1.528 | 2.082 | 2.082 | 1.528 | 2.121 | 2.082 | 2.082 | 0.577 | 0.577 |
| 4 | Mean | 4.125 | 4.125 | 3.500 | 4.750 | 3.500 | 3.625 | 3.750 | 3.500 | 3.625 | 3.875 | 4.375 | 4.000 | 4.000 |
| | N | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Std.Dev | 0.835 | 0.991 | 1.512 | 0.707 | 1.309 | 1.408 | 1.488 | 1.512 | 1.506 | 1.642 | 1.408 | 1.414 | 1.414 |
| 5 | Mean | 4.333 | 4.381 | 4.381 | 4.381 | 2.600 | 4.150 | 4.500 | 4.550 | 3.905 | 3.952 | 4.150 | 4.095 | 4.191 |
| | N | 21 | 21 | 21 | 21 | 20 | 20 | 20 | 20 | 21 | 21 | 20 | 21 | 21 |
| | Std.Dev | 0.796 | 0.740 | 1.071 | 0.740 | 1.429 | 1.387 | 1.051 | 0.759 | 1.338 | 1.203 | 1.089 | 0.831 | 0.814 |
| Total | Mean | 4.164 | 4.206 | 4.206 | 4.397 | 3.264 | 4.181 | 4.389 | 4.380 | 3.853 | 4.029 | 4.264 | 4.000 | 4.268 |
| | N | 73 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 68 | 70 | 72 | 70 | 71 |
| | Std.Dev | 0.972 | 0.881 | 1.040 | 0.759 | 1.332 | 1.167 | 1.069 | 0.991 | 1.237 | 1.274 | 1.126 | 1.022 | 0.999 |

(Part 2/2)

| Household | | Energy | Biodiversity | Welfare | Accountability | Availability | Benefits | Pricing | Science | Knowledge | Stakeholders | Future | GMO |
|--------------|---------|--------|--------------|---------|----------------|--------------|----------|---------|---------|-----------|--------------|--------|-------|
| 1 | Mean | 3.833 | 4.750 | 4.692 | 4.692 | 4.539 | 4.929 | 4.786 | 4.286 | 4.615 | 4.231 | 4.923 | 4.714 |
| | N | 12 | 12 | 13 | 13 | 13 | 14 | 14 | 14 | 13 | 13 | 13 | 14 |
| | Std.Dev | 1.267 | 0.452 | 0.855 | 0.480 | 0.660 | 0.267 | 0.426 | 0.825 | 0.650 | 1.166 | 0.277 | 0.726 |
| 2 | Mean | 3.769 | 4.333 | 4.407 | 4.111 | 4.148 | 4.296 | 4.111 | 3.778 | 4.185 | 3.296 | 4.333 | 4.333 |
| | N | 26 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 |
| | Std.Dev | 1.032 | 0.877 | 0.797 | 1.050 | 1.027 | 0.869 | 1.013 | 1.086 | 0.834 | 1.382 | 0.961 | 0.961 |
| 3 | Mean | 2.000 | 3.500 | 3.000 | 2.000 | 3.500 | 3.000 | 4.000 | 3.000 | 3.500 | 3.000 | 4.000 | 1.500 |
| | N | 3 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |
| | Std.Dev | 0.000 | 0.707 | | 0.000 | 0.707 | 1.414 | 0.000 | 0.000 | 0.707 | 0.000 | 0.000 | 0.707 |
| 4 | Mean | 3.875 | 4.000 | 4.125 | 4.250 | 4.125 | 3.875 | 4.250 | 3.750 | 4.375 | 3.125 | 4.125 | 3.750 |
| | N | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Std.Dev | 1.553 | 1.604 | 1.458 | 1.165 | 0.835 | 1.356 | 0.707 | 1.581 | 0.744 | 1.246 | 1.356 | 1.581 |
| 5 | Mean | 3.750 | 4.048 | 4.450 | 4.050 | 3.952 | 4.000 | 4.143 | 3.950 | 3.952 | 3.619 | 4.571 | 4.191 |
| | N | 20 | 21 | 20 | 20 | 21 | 20 | 21 | 20 | 21 | 21 | 21 | 21 |
| | Std.Dev | 1.118 | 1.203 | 0.826 | 0.999 | 1.203 | 1.214 | 0.910 | 0.887 | 1.117 | 1.244 | 0.746 | 1.365 |
| Total | Mean | 3.710 | 4.257 | 4.420 | 4.157 | 4.141 | 4.254 | 4.260 | 3.901 | 4.197 | 3.535 | 4.479 | 4.222 |
| | N | 69 | 70 | 69 | 70 | 71 | 71 | 73 | 71 | 71 | 71 | 71 | 72 |
| | Std.Dev | 1.177 | 1.045 | 0.914 | 1.030 | 1.004 | 1.038 | 0.866 | 1.044 | 0.904 | 1.296 | 0.876 | 1.224 |

Income → Attributes

(Part 1/2)

| Income | | Quality | Nutrition | Health | Taste | Shelf | Fertiliser | Pesticide | Additives | Feed | Climate | Habitat | Air | Water |
|--------------|---------|---------|-----------|--------|-------|-------|------------|-----------|-----------|-------|---------|---------|-------|-------|
| 1 | Mean | 4.296 | 4.222 | 4.074 | 4.519 | 3.370 | 4.111 | 4.296 | 4.296 | 4.304 | 4.231 | 4.593 | 4.080 | 4.346 |
| | N | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 23 | 26 | 27 | 25 | 26 |
| | Std.Dev | 0.993 | 0.934 | 1.238 | 0.700 | 1.363 | 1.251 | 1.103 | 1.171 | 1.105 | 1.306 | 0.931 | 1.222 | 1.093 |
| 2 | Mean | 4.174 | 4.174 | 4.391 | 4.348 | 3.130 | 4.304 | 4.522 | 4.591 | 3.636 | 3.955 | 4.261 | 4.174 | 4.522 |
| | N | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 22 | 22 | 22 | 23 | 23 | 23 |
| | Std.Dev | 0.937 | 0.887 | 0.656 | 0.832 | 1.325 | 1.259 | 1.201 | 0.796 | 1.364 | 1.362 | 1.214 | 0.834 | 0.730 |
| 3 | Mean | 4.286 | 4.286 | 4.214 | 4.286 | 3.308 | 4.154 | 4.385 | 4.385 | 3.429 | 3.846 | 3.846 | 3.786 | 4.000 |
| | N | 14 | 14 | 14 | 14 | 13 | 13 | 13 | 13 | 14 | 13 | 13 | 14 | 14 |
| | Std.Dev | 0.825 | 0.726 | 1.188 | 0.726 | 1.437 | 1.144 | 0.961 | 0.870 | 1.342 | 1.345 | 1.345 | 1.051 | 1.177 |
| 4 | Mean | 3.700 | 4.100 | 4.100 | 4.200 | 3.100 | 4.200 | 4.400 | 4.200 | 4.000 | 3.800 | 3.900 | 3.667 | 3.778 |
| | N | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 9 |
| | Std.Dev | 1.160 | 0.994 | 0.994 | 0.919 | 1.287 | 0.789 | 0.843 | 1.033 | 0.817 | 0.919 | 0.876 | 0.707 | 0.833 |
| Total | Mean | 4.176 | 4.203 | 4.203 | 4.378 | 3.247 | 4.192 | 4.397 | 4.389 | 3.870 | 4.014 | 4.260 | 4.000 | 4.264 |
| | N | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 69 | 71 | 73 | 71 | 72 |
| | Std.Dev | 0.970 | 0.876 | 1.033 | 0.771 | 1.331 | 1.163 | 1.064 | 0.987 | 1.236 | 1.270 | 1.118 | 1.014 | 0.993 |

(Part 2/2)

| Income | | Energy | Biodiversity | Welfare | Accountability | Availability | Benefits | Pricing | Science | Knowledge | Stakeholders | Future | GMO |
|--------------|---------|--------|--------------|---------|----------------|--------------|----------|---------|---------|-----------|--------------|--------|-------|
| 1 | Mean | 3.920 | 4.400 | 4.583 | 4.346 | 4.280 | 4.385 | 4.333 | 3.885 | 4.320 | 3.680 | 4.423 | 4.577 |
| | N | 25 | 25 | 24 | 26 | 25 | 26 | 27 | 26 | 25 | 25 | 26 | 26 |
| | Std.Dev | 1.187 | 1.041 | 1.060 | 0.977 | 0.891 | 1.098 | 0.961 | 1.275 | 0.852 | 1.282 | 1.137 | 0.945 |
| 2 | Mean | 3.727 | 4.636 | 4.522 | 4.435 | 4.435 | 4.304 | 4.348 | 3.957 | 4.174 | 3.565 | 4.773 | 4.391 |
| | N | 22 | 22 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 22 | 23 |
| | Std.Dev | 1.162 | 0.581 | 0.846 | 0.992 | 0.896 | 0.926 | 0.714 | 0.976 | 0.887 | 1.409 | 0.528 | 1.234 |
| 3 | Mean | 3.231 | 3.643 | 4.077 | 3.769 | 3.714 | 4.154 | 4.214 | 3.846 | 4.071 | 3.500 | 4.429 | 3.786 |
| | N | 13 | 14 | 13 | 13 | 14 | 13 | 14 | 13 | 14 | 14 | 14 | 14 |
| | Std.Dev | 1.235 | 1.447 | 0.862 | 1.013 | 1.267 | 1.214 | 0.893 | 0.899 | 1.141 | 1.286 | 0.646 | 1.477 |
| 4 | Mean | 3.700 | 4.000 | 4.222 | 3.444 | 3.667 | 3.889 | 3.900 | 3.900 | 4.100 | 3.200 | 4.000 | 3.600 |
| | N | 10 | 10 | 9 | 9 | 9 | 9 | 10 | 10 | 10 | 10 | 9 | 10 |
| | Std.Dev | 1.059 | 0.817 | 0.667 | 0.882 | 0.866 | 0.928 | 0.876 | 0.738 | 0.738 | 1.135 | 0.866 | 1.174 |
| Total | Mean | 3.700 | 4.268 | 4.420 | 4.155 | 4.141 | 4.254 | 4.257 | 3.903 | 4.194 | 3.542 | 4.479 | 4.233 |
| | N | 70 | 71 | 69 | 71 | 71 | 71 | 74 | 72 | 72 | 72 | 71 | 73 |
| | Std.Dev | 1.172 | 1.041 | 0.914 | 1.023 | 1.004 | 1.038 | 0.861 | 1.037 | 0.898 | 1.288 | 0.876 | 1.219 |

Education → Attributes

(Part 1/2)

| Education | | Quality | Nutrition | Health | Taste | Shelf | Fertiliser | Pesticide | Additives | Feed | Climate | Habitat | Air | Water |
|--------------|---------|---------|-----------|--------|-------|-------|------------|-----------|-----------|-------|---------|---------|-------|-------|
| 1 | Mean | 3.727 | 4.000 | 3.818 | 4.182 | 3.182 | 4.182 | 4.182 | 4.273 | 3.900 | 4.300 | 4.273 | 4.000 | 4.000 |
| | N | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 10 | 11 | 10 | 10 |
| | Std.Dev | 1.009 | 1.000 | 1.079 | 0.603 | 1.079 | 0.751 | 0.874 | 0.905 | 0.994 | 0.823 | 0.786 | 0.817 | 0.943 |
| 2 | Mean | 4.071 | 4.214 | 4.214 | 4.429 | 3.148 | 3.852 | 3.963 | 4.115 | 4.000 | 3.556 | 4.259 | 3.889 | 4.222 |
| | N | 28 | 28 | 28 | 28 | 27 | 27 | 27 | 26 | 27 | 27 | 27 | 27 | 27 |
| | Std.Dev | 0.940 | 0.876 | 0.995 | 0.742 | 1.379 | 1.350 | 1.372 | 1.243 | 1.240 | 1.450 | 1.196 | 1.121 | 1.050 |
| 3 | Mean | 4.300 | 4.200 | 4.200 | 4.500 | 4.000 | 4.900 | 5.000 | 4.800 | 3.667 | 4.800 | 4.100 | 4.300 | 4.400 |
| | N | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 10 | 10 | 10 |
| | Std.Dev | 0.949 | 0.789 | 0.919 | 0.707 | 1.155 | 0.316 | 0.000 | 0.632 | 1.500 | 0.422 | 1.370 | 0.823 | 0.699 |
| 4 | Mean | 4.350 | 4.350 | 4.400 | 4.400 | 3.000 | 4.200 | 4.650 | 4.500 | 3.667 | 4.250 | 4.300 | 4.053 | 4.400 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 18 | 20 | 20 | 19 | 20 |
| | Std.Dev | 1.040 | 0.933 | 1.188 | 0.940 | 1.414 | 1.281 | 0.813 | 0.827 | 1.372 | 1.251 | 1.174 | 1.079 | 1.046 |
| 5 | Mean | 4.800 | 4.000 | 4.200 | 4.200 | 3.400 | 4.600 | 5.000 | 4.800 | 4.200 | 3.250 | 4.400 | 3.800 | 4.200 |
| | N | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 |
| | Std.Dev | 0.447 | 0.707 | 0.837 | 0.837 | 1.517 | 0.894 | 0.000 | 0.447 | 0.837 | 1.258 | 0.894 | 1.095 | 1.304 |
| Total | Mean | 4.176 | 4.203 | 4.203 | 4.378 | 3.247 | 4.192 | 4.397 | 4.389 | 3.870 | 4.014 | 4.260 | 4.000 | 4.264 |
| | N | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 69 | 71 | 73 | 71 | 72 |
| | Std.Dev | 0.970 | 0.876 | 1.033 | 0.771 | 1.331 | 1.163 | 1.064 | 0.987 | 1.236 | 1.270 | 1.118 | 1.014 | 0.993 |

(Part 2/2)

| Education | | Energy | Biodiversity | Welfare | Accountability | Availability | Benefits | Pricing | Science | Knowledge | Stakeholders | Future | GMO |
|-----------|---------|--------|--------------|---------|----------------|--------------|----------|---------|---------|-----------|--------------|--------|-------|
| 1 | Mean | 3.900 | 4.000 | 4.400 | 4.000 | 4.000 | 4.091 | 4.182 | 4.182 | 4.100 | 3.900 | 4.455 | 3.818 |
| | N | 10 | 10 | 10 | 11 | 10 | 11 | 11 | 11 | 10 | 10 | 11 | 11 |
| | Std.Dev | 0.994 | 0.817 | 0.843 | 1.000 | 0.817 | 1.044 | 0.751 | 0.751 | 0.738 | 0.738 | 0.688 | 1.250 |
| 2 | Mean | 3.556 | 4.222 | 4.222 | 4.039 | 4.000 | 4.111 | 4.393 | 4.000 | 4.107 | 3.250 | 4.333 | 4.286 |
| | N | 27 | 27 | 27 | 26 | 28 | 27 | 28 | 27 | 28 | 28 | 27 | 28 |
| | Std.Dev | 1.311 | 1.220 | 1.155 | 1.113 | 1.054 | 1.281 | 0.956 | 1.109 | 1.100 | 1.404 | 1.109 | 1.301 |
| 3 | Mean | 3.667 | 4.600 | 4.667 | 4.800 | 4.400 | 4.700 | 4.100 | 3.600 | 4.300 | 4.000 | 4.900 | 4.600 |
| | N | 9 | 10 | 9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Std.Dev | 1.225 | 0.699 | 0.707 | 0.422 | 1.075 | 0.483 | 0.876 | 1.075 | 0.823 | 1.333 | 0.316 | 1.265 |
| 4 | Mean | 3.895 | 4.316 | 4.579 | 4.211 | 4.158 | 4.263 | 4.100 | 3.632 | 4.263 | 3.526 | 4.474 | 4.105 |
| | N | 19 | 19 | 19 | 19 | 19 | 19 | 20 | 19 | 19 | 19 | 19 | 19 |
| | Std.Dev | 1.100 | 1.003 | 0.607 | 1.032 | 1.068 | 0.933 | 0.852 | 1.116 | 0.806 | 1.349 | 0.841 | 1.150 |
| 5 | Mean | 3.400 | 4.200 | 4.500 | 3.600 | 4.750 | 4.500 | 4.600 | 4.400 | 4.400 | 3.600 | 4.500 | 4.600 |
| | N | 5 | 5 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 5 |
| | Std.Dev | 1.140 | 1.304 | 1.000 | 1.140 | 0.500 | 0.577 | 0.548 | 0.548 | 0.548 | 1.140 | 0.577 | 0.894 |
| Total | Mean | 3.700 | 4.268 | 4.420 | 4.155 | 4.141 | 4.254 | 4.257 | 3.903 | 4.194 | 3.542 | 4.479 | 4.233 |
| | N | 70 | 71 | 69 | 71 | 71 | 71 | 74 | 72 | 72 | 72 | 71 | 73 |
| | Std.Dev | 1.172 | 1.041 | 0.914 | 1.023 | 1.004 | 1.038 | 0.861 | 1.037 | 0.898 | 1.288 | 0.876 | 1.219 |

Appendix 14: BARRIERS (B1-B7)

Descriptive Statistics (97 respondents total) - SPSS

Gender → Barriers

| Gender | | | B1 | B2 | B3 | B4 | B5 | B6 | B7 |
|---------------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 0 | Mean | | 3.645 | 1.655 | 1.897 | 2.926 | 2.759 | 2.286 | 1.679 |
| | N | | 31 | 29 | 29 | 27 | 29 | 28 | 28 |
| | Std.Dev | | 1.380 | 1.111 | 1.113 | 1.035 | 1.300 | 1.512 | 1.156 |
| 1 | Mean | | 3.333 | 1.692 | 1.655 | 2.482 | 2.278 | 1.709 | 1.764 |
| | N | | 60 | 52 | 55 | 56 | 54 | 55 | 55 |
| | Std.Dev | | 1.559 | 1.181 | 1.142 | 1.321 | 1.309 | 1.133 | 1.319 |
| 2 | Mean | | 3.500 | 2.000 | 1.000 | 4.500 | 5.000 | 1.500 | 2.000 |
| | N | | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Std.Dev | | 2.121 | 1.414 | 0.000 | 0.707 | 0.000 | 0.707 | 1.414 |
| Total | | Mean | 3.441 | 1.687 | 1.721 | 2.671 | 2.506 | 1.894 | 1.741 |
| | | N | 93 | 83 | 86 | 85 | 85 | 85 | 85 |
| | | Std.Dev | 1.500 | 1.147 | 1.124 | 1.267 | 1.359 | 1.282 | 1.255 |

Age → Barriers

| Age | | B1 | B2 | B3 | B4 | B5 | B6 | B7 |
|--------------|---------|-------|-------|-------|-------|-------|-------|-------|
| 1 | Mean | 3.389 | 1.800 | 2.000 | 2.462 | 2.400 | 2.308 | 2.071 |
| | N | 18 | 15 | 15 | 13 | 15 | 13 | 14 |
| | Std.Dev | 1.720 | 1.146 | 1.309 | 1.198 | 1.298 | 1.548 | 1.685 |
| 2 | Mean | 3.348 | 1.684 | 1.550 | 2.714 | 2.632 | 1.600 | 1.579 |
| | N | 23 | 19 | 20 | 21 | 19 | 20 | 19 |
| | Std.Dev | 1.402 | 1.250 | 0.945 | 1.384 | 1.300 | 0.995 | 1.017 |
| 3 | Mean | 3.520 | 1.708 | 1.654 | 2.320 | 2.040 | 1.800 | 1.480 |
| | N | 25 | 24 | 26 | 25 | 25 | 25 | 25 |
| | Std.Dev | 1.636 | 1.268 | 1.056 | 1.180 | 1.172 | 1.190 | 0.963 |
| 4 | Mean | 3.478 | 1.571 | 1.714 | 3.046 | 2.682 | 1.913 | 1.913 |
| | N | 23 | 21 | 21 | 22 | 22 | 23 | 23 |
| | Std.Dev | 1.410 | 1.028 | 1.271 | 1.290 | 1.492 | 1.443 | 1.474 |
| 5 | Mean | 3.500 | 1.750 | 2.000 | 3.250 | 4.250 | 2.500 | 2.000 |
| | N | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Std.Dev | 1.291 | 0.957 | 1.155 | 0.957 | 0.957 | 1.291 | 0.817 |
| Total | Mean | 3.441 | 1.687 | 1.721 | 2.671 | 2.506 | 1.894 | 1.741 |
| | N | 93 | 83 | 86 | 85 | 85 | 85 | 85 |
| | Std.Dev | 1.500 | 1.147 | 1.124 | 1.267 | 1.359 | 1.282 | 1.255 |

Household → Barriers

| Household | | B1 | B2 | B3 | B4 | B5 | B6 | B7 |
|--------------|---------|-------|-------|-------|-------|-------|-------|-------|
| 1 | Mean | 3.214 | 1.333 | 1.800 | 2.462 | 2.357 | 2.000 | 1.462 |
| | N | 14 | 12 | 15 | 13 | 14 | 14 | 13 |
| | Std.Dev | 1.424 | 0.888 | 1.082 | 1.127 | 1.277 | 1.414 | 0.967 |
| 2 | Mean | 3.658 | 2.029 | 1.849 | 2.941 | 2.667 | 1.906 | 2.030 |
| | N | 38 | 34 | 33 | 34 | 33 | 32 | 33 |
| | Std.Dev | 1.400 | 1.267 | 1.176 | 1.229 | 1.362 | 1.329 | 1.489 |
| 3 | Mean | 2.000 | 2.000 | 3.000 | 3.500 | 3.000 | 2.667 | 3.000 |
| | N | 3 | 1 | 1 | 2 | 2 | 3 | 3 |
| | Std.Dev | 1.000 | . | . | 0.707 | 1.414 | 2.082 | 1.000 |
| 4 | Mean | 3.400 | 1.000 | 1.222 | 2.778 | 2.625 | 1.778 | 1.111 |
| | N | 10 | 9 | 9 | 9 | 8 | 9 | 9 |
| | Std.Dev | 1.713 | 0.000 | 0.667 | 1.481 | 1.685 | 1.093 | 0.333 |
| 5 | Mean | 3.519 | 1.654 | 1.667 | 2.385 | 2.370 | 1.808 | 1.615 |
| | N | 27 | 26 | 27 | 26 | 27 | 26 | 26 |
| | Std.Dev | 1.578 | 1.198 | 1.209 | 1.299 | 1.363 | 1.201 | 1.169 |
| Total | Mean | 3.467 | 1.695 | 1.729 | 2.691 | 2.524 | 1.905 | 1.750 |
| | N | 92 | 82 | 85 | 84 | 84 | 84 | 84 |
| | Std.Dev | 1.486 | 1.151 | 1.127 | 1.261 | 1.358 | 1.286 | 1.260 |

Income → Barriers

| Income | | B1 | B2 | B3 | B4 | B5 | B6 | B7 |
|--------------|---------|-------|-------|-------|-------|-------|-------|-------|
| 1 | Mean | 3.250 | 1.800 | 1.645 | 2.733 | 2.800 | 1.750 | 1.742 |
| | N | 36 | 30 | 31 | 30 | 30 | 32 | 31 |
| | Std.Dev | 1.645 | 1.349 | 1.112 | 1.363 | 1.495 | 1.414 | 1.341 |
| 2 | Mean | 3.867 | 1.778 | 1.931 | 2.900 | 2.586 | 2.143 | 1.828 |
| | N | 30 | 27 | 29 | 30 | 29 | 28 | 29 |
| | Std.Dev | 1.332 | 1.188 | 1.252 | 1.242 | 1.402 | 1.353 | 1.365 |
| 3 | Mean | 3.294 | 1.500 | 1.625 | 2.533 | 2.188 | 1.800 | 1.867 |
| | N | 17 | 16 | 16 | 15 | 16 | 15 | 15 |
| | Std.Dev | 1.532 | 0.894 | 1.147 | 1.302 | 1.223 | 1.082 | 1.246 |
| 4 | Mean | 3.100 | 1.400 | 1.500 | 2.000 | 1.900 | 1.800 | 1.300 |
| | N | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Std.Dev | 1.287 | 0.699 | 0.707 | 0.817 | 0.738 | 0.919 | 0.483 |
| Total | Mean | 3.441 | 1.687 | 1.721 | 2.671 | 2.506 | 1.894 | 1.741 |
| | N | 93 | 83 | 86 | 85 | 85 | 85 | 85 |
| | Std.Dev | 1.500 | 1.147 | 1.124 | 1.267 | 1.359 | 1.282 | 1.255 |

Education → Barriers

| Education | | B1 | B2 | B3 | B4 | B5 | B6 | B7 |
|-----------|---------|-------|-------|-------|-------|-------|-------|-------|
| 1 | Mean | 3.263 | 1.857 | 2.067 | 2.429 | 2.429 | 2.533 | 2.333 |
| | N | 19 | 14 | 15 | 14 | 14 | 15 | 15 |
| | Std.Dev | 1.593 | 1.027 | 1.033 | 1.016 | 1.284 | 1.506 | 1.633 |
| 2 | Mean | 3.697 | 1.710 | 1.906 | 2.938 | 2.807 | 1.833 | 1.516 |
| | N | 33 | 31 | 32 | 32 | 31 | 30 | 31 |
| | Std.Dev | 1.311 | 1.296 | 1.254 | 1.294 | 1.400 | 1.147 | 0.851 |
| 3 | Mean | 3.733 | 1.429 | 1.400 | 2.667 | 2.400 | 1.733 | 1.733 |
| | N | 15 | 14 | 15 | 15 | 15 | 15 | 15 |
| | Std.Dev | 1.387 | 0.852 | 1.056 | 1.047 | 1.298 | 1.280 | 1.438 |
| 4 | Mean | 3.143 | 1.750 | 1.500 | 2.450 | 2.095 | 1.667 | 1.750 |
| | N | 21 | 20 | 20 | 20 | 21 | 21 | 20 |
| | Std.Dev | 1.711 | 1.251 | 1.051 | 1.468 | 1.338 | 1.238 | 1.372 |
| 5 | Mean | 2.800 | 1.500 | 1.250 | 2.500 | 3.000 | 1.750 | 1.250 |
| | N | 5 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Std.Dev | 1.789 | 1.000 | 0.500 | 1.732 | 1.633 | 1.500 | 0.500 |
| Total | Mean | 3.441 | 1.687 | 1.721 | 2.671 | 2.506 | 1.894 | 1.741 |
| | N | 93 | 83 | 86 | 85 | 85 | 85 | 85 |
| | Std.Dev | 1.500 | 1.147 | 1.124 | 1.267 | 1.359 | 1.282 | 1.255 |

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