

# **The Effect of Sustainable Packaging on Household Shopper Purchase Intent.**

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## Abstract

Packaging was introduced to consumers as a way to protect goods, as well as to help ease handling and clearly communicate the contents of items being purchased (Lindh et al., 2016). However today, one of the most common forms of packaging, plastic, has become a threat to environmental health by contributing greatly to waste (Ellen MacArthur Foundation, 2019; World Commission on Environment and Development (WCED), 1987; WasteMINZ, 2020). Some consumers are turning to reduced-packaging options such as package-free shampoo bars, and are stating a preference for sustainable packaging (Business Wire, 2019). But are consumers concerned enough about the consequences of plastic packaging to change their grocery shopping habits? This research sought to understand the effect of information about disclosing the macro environmental impact of packaging on individual household shopper purchasing behaviour. In this quantitative research, an experiment compared the purchase intent of household shoppers after they viewed labelling options which revealed the sustainability (or not) of packaging of common grocery store items.

This study was conducted using an online panel of New Zealanders, recruiting 204 participants aged 20-plus years. Respondents were randomly assigned one of three groups that saw labels as a tech overlay on an e-commerce site: (1) control with no label, (2) the Packaging Star label, and (3) the Australasian Recycling label. The stimuli for the study was a replica of an online shopping page from a well-known New Zealand supermarket chain. Two high volume food grocery categories were chosen, peanut butter and milk. Within each category, shoppers were presented with six product options mocked up from the supermarket site, complete with product visual, product description and price. For the control group, no additional information was added. However, for the two sustainable packaging options, a brief description and symbol was added to show how each product's packaging was or was not recyclable (Australasian Recycling Label) or how sustainably produced and recyclable (Packaging Star label) the items' packaging was. All three groups of participants were then asked questions about which product they would buy, their level of sustainable knowledge, their attitudes to sustainable packaging and some general demographic questions.

Statistical analysis using ANVOA and regression analysis was then conducted to analyse the findings. Does disclosing packaging sustainability impact consumer choice? The overall result was that there was no significant relationship found between the introduction of sustainable packaging information labels and the corresponding selection of the product with the most sustainable packaging. Yet, tests via Hayes' PROCESS moderation show that a shopper's level of sustainable knowledge is a moderating factor that increased purchase for more (vs. less) sustainably packaged peanut butter. There was no moderating effect for the sustainable attitudes consumers held, though a majority of respondents indicated holding strong sustainable attitudes. Another clear moderator emerged, showing

that those who value aesthetics in packaging design were more likely to choose products with more (vs. less) sustainable packaging. However, packaging design might not be a factor that consumers generally use to make final purchase selections. Overall, packaging design features was ranked the least important overall factor in product choice by respondents, with price, taste and quality as higher rated attributes.

Disappointingly for the practice of sustainable consumption and planetary effects, this study shows that the mere presence of sustainable packaging information on an e-commerce grocery shopping site did not impact household shoppers' purchase decision.

The study contributes to the current body of knowledge in that it reinforces the literature around the existence of an attitude behaviour gap in sustainable consumption (Dilkes-Hoffman et al., 2019; Joshi & Rahman, 2015; Nguyen et al., 2020; Rokka & Uusitalo, 2008; Thøgersen et al., 2010; White et al., 2019). However it does shed light on the role that sustainable knowledge, which was reflected in the literature, has in closing that gap, where people who have understanding versus feeling about the effects of the environmental issues such as plastic pollution and climate change are more likely to show preference for sustainable packaged products. (Dekhili & Achabou, 2014; Rokka & Uusitalo, 2008; Taufique et al, 2015; Thøgersen et al., 2010). The study also found that where a person resides may have a moderating affect, in that those who live in metropolitan cities are more likely to purchase sustainable products. The study looked at online shopping environment which offers household shoppers an environment where they possibly have more time to consider purchases. To the knowledge of this researcher this context has not previously been researched.

Therefore, the answer to encouraging household shoppers to select products with sustainable packaging is more complex than just informing them or relying on their sustainable attitudes. Based on these findings, the first key to household grocery consumer change might be to increase and promote overall knowledge of sustainable cause-and-effects. Even broader still is a macro marketing approach of combining government initiatives such as a ban on plastic bags along with manufacturer efforts, such as Coca-Cola's recent investment in 100% recycled plastic bottles, to create meaningful sustainable packaging choice change.

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## **Attestation of Authorship**

I, Penelope Munro, hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Student's Signature: \_\_\_\_\_

24<sup>th</sup> August 2020

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## **Ethics Approval**

Ethics approval was granted on 7 April 2020 by the Auckland University of Technology Ethics Committee (AUTEC) until 7 April 2023 as seen in Appendix A. The AUTEC application number is 20/101.

# Chapter One: Introduction

As individuals, we have many roles, as parents, workers, careers, friends, lovers. One of those key roles is as consumers - what do we spend our money on, and what purchase decisions do we make in our everyday lives? Another role is as inhabitants of this planet, what level of concern do we have about its environmental health? These concerns about the state and the future of our planet are being expressed more and more strongly from young activists led by Greta Thunberg, to eminent scientists such as Sir David Attenborough. Many of the practices of 21st century consumerism, such as the use of plastic, have not transitioned well into the current day. The convenient plastic-covered consumer purchases that make our lives easier are now of being shown to have detrimental effects on the surrounding environment (Ellen MacArthur Foundation, 2019; WasteMINZ, 2020). It may be that the two roles, one of being a consumer and the other being a concerned citizen acting for society at large, are possibly in conflict. Can people fulfilling the role of concerned supporters of a sustainable future make choices to protect the planet as they buy everything from motor vehicles and clothes to household groceries?

To date, consumer behaviour researchers who have studied the attitude-behaviour gap in sustainable consumption, have determined that people have trouble making sustainable purchases. The attitude-behaviour gap occurs when sustainable green attitudes of consumers do not translate into the purchase of sustainable products (White et al., 2019). White et al. (2019) highlight that the core principles of sustainability are long term and based on societal needs, which are at odds with the individual, immediate effects of consumerism. Sustainability is defined by the World Commission on Environment and Development as the ability of the world to meet the needs of the current generation without encroaching on the next generation (WCED, 1987). Given the core attributes of plastic packaging, it is an understatement to say that plastic packaging is not sustainable, yet it continues to be produced at increasing growth rates (WWF, 2019).

Organisations within New Zealand have identified the issue of sustainability, and the role packaging labels can play. Rob Langford, the Independent Chair of The Packaging Forum, in the winter issue of its industry newsletter writes that “Labelling is a crucial part of addressing packaging waste” (The Packaging Forum, 2020). Crunch and Flourish, a New Zealand based startup organisation, have developed an online shopping platform that rates how environmentally sustainable a product’s packaging is using a five star rating system (Slade, 2019). There is clear industry interest, therefore, in the sustainability of packaging. The question is, will consumers buy products with sustainable packaging?

The overlap of sustainability and packaging aligns with much of the attitude-behaviour gap literature. Consumers face individual benefits from products that are well packaged, yet the packaging itself can

damage the planet. The function of packaging is to protect goods, ease handling, and communicate the packages' contents (Lindh et al., 2016). The introduction of plastic enables the manufacturer to achieve the gold standard of packaging functionality. Its robust, indestructible nature means that the life of a product can be protected and extended. Yet plastic has an inability to rapidly decompose once produced, which has led to an ecological and environmental threat. In 2016, the world produced the equivalent of 53kg of plastic per person per year, 40% of which was single use (WWF, 2019). This is a problem in a consumer society in which most things purchased or delivered for individual use come bundled in careful layers of packaging. How much do consumers think about the planet when they do their weekly grocery shopping?

On average, New Zealanders' weekly spend at the supermarket is \$174.64 (Roy Morgan Single Source New Zealand, 2019). Online grocery shopping continues to grow in New Zealand, as household shoppers enjoy the benefits of the convenience it brings. The products they purchase are essentially a consumer vote, which encourages or supports how products are manufactured and packaged. This collective action, however, sees the continued use of plastic in the packaging of their purchases.

This interesting dilemma of micro consumer individual action versus macro social involvement is addressed by White et al. (2019) in their SHIFT framework. The framework proposes that social influence, along with habit formation, individual self needs, feelings and cognition, and tangibility of actions, can drive the uptake of consumer behaviours related to sustainability.

When discussing consumer choice of sustainable packaging, four key components emerge from the literature: (1) the knowledge the consumer has about sustainability, (2) consumer attitudes towards sustainability, (3) individual demographic differences of the consumer, and (4) the presence or absence of other competing product attributes that determine purchase.

The first identified driver is knowledge. Consumers who have a good "green" environmental knowledge tend to be more likely to use eco labels, i.e. packaging labels that communicate information about how sustainable/recyclable a product is (Rokka & Uusitalo, 2008; Thøgersen et al., 2010).

The second driver identified is sustainable attitudes, which differs from knowledge, in that it is an evaluation based on how the consumer feels about sustainability, and it may or may not be based on any knowledge gained. According to several studies, a positive attitude towards green packaging will influence a sustainable packaging purchase (Martinho et al., 2015; Smith & Brower, 2012). Although as many researchers show via the attitude-behaviour gap in sustainable consumer research, sustainable attitudes do not always influence the choice of more sustainable products or services (i.e., White et al., 2019).

The third driver drawn from the literature involves particular demographic profiles for those who purchase sustainable products. The main purchasers of sustainable alternatives tend to be female, higher levels of education and income may also be key indicators (Mitchell et al., 2018; Rees et al., 2019; Smith & Brower, 2012; Thøgersen et al., 2010).

Importantly, other product attributes such as price, taste, and convenience compete for the attention of consumers in considering their product choice. Research has found differing priority listing, and although it does seem in general to be considered important, sustainable packaging is usually less important than convenience and price in determining purchase (Rees et al., 2019). However, once highlighted by researchers in study designs, many consumers claim that they are willing to pay a premium for sustainable packaging (Martinho et al., 2015; Lindh et al., 2016).

It is therefore apparent that a consumer's choice of packaging could be influenced by environmental knowledge and concerns, however, there is no clear direction as to the level of importance this factor plays in the purchase decision. It would appear that four factors are in play, from the level of environmental knowledge held, the attitude held towards sustainability, the importance placed on the other packaging features, and a demographic slant to female, high income and education levels. In this dissertation, these factors help lead an inquiry into how disclosing packaging sustainability might drive product choice.

## **1.2 Statement of Problem**

Packaging is an important part of any product offering, as it is essentially the carrier of the contents for which a purchase is made and therefore is generally not the reason why a product is purchased. Plastic is one of the most common containers. It also one of the key reasons why the planet is facing environmental chaos, in that it still around long after its contents have disappeared. In 2016 the world produced the equivalent of 53kg per person. The United Nations has now identified plastic as a core environmental issue (WWF, 2019).

This global predicament, whilst acknowledged by most people, has not translated into action to curb the use and production of plastic. This sustainable attitude behaviour gap is well established in the literature (Dilkes-Hoffman et al., 2019; Joshi & Rahman, 2015; Nguyen et al., 2020; Rokka & Uusitalo, 2008; Thøgersen et al., 2010; White et al., 2019). The problem arises as to how to translate the known information about the global environmental issue to create a change in everyday household shopping baskets. Another way is to ask how to lessen the gap between attitudes and action.

### 1.3 The Research Objective

Based on the literature review, a gap exists in the knowledge leading to a better understanding of the importance (or not) of the link between macro sustainability issues such as plastic pollution in the ocean and the packaging decisions of shoppers' immediate purchase and use. Another way would be to ask, is the consumer prepared to dispense with other features of packaging, such as convenience, for the greater good? And what factors might help them choose more sustainable packaging when they are next in the store?

This research seeks to understand the effect of information about the macro environmental impact of packaging on individual household shopper purchasing behaviour at the point of sale. Does knowing if an everyday product comes in more (vs. less) sustainable packaging influence consumers to buy?

### 1.4 The Research Questions

Based on the research objectives, the following research questions were developed:

**RQ1:** Can household shoppers be nudged to purchase items with more (vs. less) sustainable packaging?

**RQ2:** Do household shoppers with high (vs. low) levels of knowledgeable and or high (vs. low) attitudes about sustainability purchase items with more (vs. less) sustainable packaging?

### 1.5 Methodology

One of the major types of consumer behaviour research examines how consumers will respond under different conditions or scenarios. When the goal of research is to understand the relationship between two variables, the researcher looks to quantitative research, as opposed to qualitative techniques that are generally used to discover the nature of the variable (Myers et al., 2010). Experimental research enables the researcher to compare the dependent variable, or measure of performance (in this case purchase intent) with a number of independent variable options (in this case, information about sustainable packaging). The independent variables in this study include a control group, which enables the researcher to statistically compare the means of the groups subjected to the manipulated scenario with "usual" consumer behaviour and to draw conclusions as to the size of the effect of the manipulation (Peterson & Umesh, 2018).

This study used an online panel consisting of New Zealanders aged 20+ years. Participants were randomly assigned to one of three experimental groups; the first was a control group, the second were exposed to a recycling label, and the third were exposed to a logo that shows recyclability of the packaging and sustainability of the product's production process. Each group was presented with a news article to read about a "new" development for the online shopping site. The control group read information about a new grocery home delivery or pick up service, and the other two groups read about the eco-label symbols they would encounter on grocery products. The groups were then shown two grocery categories of peanut butter and milk, either typically presented (control) or shown with packaging sustainability labels (Recycling label or Packaging Star label). For the dependent variable, the participants were asked which product they preferred to purchase. All participants were then asked a series of questions to determine how much sustainability knowledge they had, measured by multiple choice questions and answers, their attitudes to sustainable packaging, measured on a Likert scale, and finally general demographic questions. Key to determining the impact of the sustainability packaging condition, a series of analysis of variance tests and Hayes' process models were used to compare the choice of more (vs. less) sustainably packaged grocery items. Results will be discussed in depth in chapter four.

## **1.6 Organization of this Dissertation**

This dissertation is divided into six chapters. The first is the present chapter, an introduction discussing the topic and setting the scene. Chapter two is the literature review, which gives the theoretical background on how this the gap in the current scholarly knowledge is determined. Chapter three outlines the research methodology, while chapter four details the results of the study. Chapter five discusses the results, the limitations of the research, its implications and possible directions for future study and finally chapter six offers concluding remarks.



## Chapter Two: The Literature Review

Plastic was a key driver of twentieth century consumerism but has now been identified as a significant ecological and environmental threat. In 2016 the world produced 396 million tonnes of plastic, the equivalent of 53kg per person on the planet, and 40% of that was single-use (WWF, 2019). The oceans are filling up with it, resulting in detrimental effects to the life within. A 2018 study of 1,000 adults in Britain reported that 77% said ocean plastic pollution was recognised as the main environmental problem facing the world (Mitchell et al., 2018). And in Australia, a study of 2,518 consumers found that 84% said that plastics was a serious environmental issue (Dilkes-Hoffman et al., 2019).

Internationally, plastic has been identified as a core environmental sustainability issue. This can be seen with such global initiatives as The Ellen MacArthur Foundation, which, in conjunction with the United Nations, has created the New Plastic Economy initiative designed to share a common 2025 vision of a circular economy where plastic never becomes waste. This commitment has been signed by 350 organisations worldwide including Unilever, Nestle, The Coca-Cola Company and, here in New Zealand, by Foodstuffs NZ, Frucor Suntory and the New Zealand Government (Ministry for the Environment, 2018). In response to household consumer demand for change, retail initiatives such as The Warehouse's introduction of a plastic bag surcharge in 2009 and Countdown's check-out plastic bag ban in October 2018, which led the New Zealand Government to introduce a ban on single-use plastic bags in July 2019 (Countdown, 2020; Ministry for the Environment, 2018; Winter, 2018).

It could be argued that at the front line of successful waste reduction and recycling initiatives is the household shopper. They are the ones charged with making the weekly living requirement decisions for their households. The battleground therefore is the supermarket. In New Zealand alone, household shoppers spent a collective \$20,864,000 in the year to September 2019 (Stats New Zealand, 2020), and are estimated to use 1.76 billion plastic containers per year (WasteMINZ, 2020). These are the household decision makers who determine which products are bought. They make decisions based on many factors from the household wants and needs, the price, the specials, the in-store incentives, how the product/brand looks, including the attractiveness of the packaging and the label. In a way, they, as a collective, with their shopping vote, play a crucial role in deciding the success of sustainable packaging alternatives (Shaw et al., 2006).

This research seeks to understand how information about sustainability at point-of-sale affects the behaviour of the household shopper. This literature review will consider the changing ecological environment for the household shopper, in terms of the macro environmental issues facing the packaging of household goods, the influence of sustainability information provided to household

decision makers, and how the changing shopping channels such as online shopping are influencing their purchase behaviours.

## **2.1 Sustainability**

Open any newspaper or news app and there will be at least one article, sometimes an entire section, about the environment and the impact human beings are having on the planet, both good and bad. The earth's environment is under increasing pressure to survive because of the burden of its inhabitants and their actions. Sustainability is the pressing need for the earth's survival in the face of climate change and the other environmental challenges. The most commonly used definition of sustainability comes from the World Commission on Environment and Development (WCED, 1987), which states that sustainability is the ability to meet the needs of the present generation in such a way that the needs of future generations are not compromised.

Sustainability concerns and actions are becoming mainstream issues and part of everyday life (Mitchell et al., 2018). This is being witnessed in many sectors of society, from the world of finance as seen when in January 2020, BlackRock, the worldwide investment company with an estimated \$US 7 trillion in assets, announced that climate change will affect investment portfolio decision making (BBC, 2020), to the New Zealand Government announcing, in the same month, the introduction of climate change as a subject into the school curriculum (Stuff, 2020).

However, as Grunert et al. (2014) and Steenis et al. (2017), highlight sustainability is an abstract concept and may have different meaning to different consumers. Luchs et al. (2010)'s study also showed different types of products have different sustainable and environmental consumer standing, in that gentler products like skincare enjoyed a higher eco-friendly position versus such items as tyres and detergents. Yet a product with sustainable features is often seen as less effective and of lower quality than a similar, less sustainable product (Luchs et al., 2010).

## **2.2 Attitudes and Behaviours**

Some researchers in this area have based their studies in the Theory of Planned Behaviour (Ajzen, 1985), as a framework for explaining consumer behaviour (Martinho et al., 2015; Orzan et al., 2018; Prakash & Pathak, 2017; Steenis et al., 2017). This theory proposes that consumers will regularly act in agreement their set of beliefs or attitudes, a logical one plus one equals two equation. In the study of Indian consumers, Prakash and Pathak (2017) found that consumers with strong environmental views were a strong predictor of purchase intent. Whilst Martinho et al. (2015) found that a positive

green attitude was an important predictor of purchase intention, the picture muddled when other product attributes such as price were added.

Many other authors consider there to be an attitude-behaviour gap where there is a broad acceptance of the science of climate change and the need for sustainable practices, however, the consumer does not follow through and purchase the sustainable product. There is a gap between the macro understanding of the issue and the individual everyday consumer's behaviour at the micro level. In short, the claimed environmental concern is not being translated into consumer buying patterns (Dilkes-Hoffman et al., 2019; Joshi & Rahman, 2015; Nguyen et al., 2020; Rokka & Uusitalo, 2008; Thøgersen et al., 2010; White et al., 2019).

An interesting study by Shim et al. (2018) of 1,533 South Koreans, showed that the gap may be related to specific products. Here gaps existed in both everyday eco-friendly detergents and with electric cars, but the gap was smaller for the car. The conclusion the authors drew was that the level of involvement by the consumer was an important determinant in the decision making process and in reducing the gap.

Concerned with this attitude-behaviour gap in sustainable consumption, White et al. (2019), after reviewing 320 academic articles in top marketing journals, created the SHIFT (social influence, habit formation, individual self, feelings and cognition and tangibility) framework to help marketers nudge consumers towards sustainable purchasing. At the centre of the framework is the definition of the target consumer, with sustainable consumer behaviour as “actions that result in decreases in adverse environmental impacts as well as decreased utilization of natural resources across the lifecycle of the product, behaviour, or service,” (White et al., 2019, p 24). The model differs from twentieth century consumerism in the following ways. Firstly, the emphasis is placed on the collective ‘we,’ being part of something bigger than the individual, and as a result an idea of the ‘greater good.’ Secondly, the time horizon is long term, possibly intergenerational, not focused on immediate gratification. To change ingrained consumer behaviour that has developed over a century is a tall task and possibly one of the significant underlining reasons for the presence of the attitude-behaviour gap. As the SHIFT framework shows, the challenge therefore requires a mind shift from all players at all stages in the product life cycle.

The ‘we’ part is encompassed by both the “S”(social), “I”(individual) and the “F” (feelings and cognition) parts of SHIFT, and feeds into how an individual sees them self and how they fit into and need to be part of something, i.e. society. A possible approach is to flip social signalling on its head, to exhibit observed sustainable behaviour such as Griskevicius et al. (2010)’s “green to be seen” study, where they found that the purchase of a more expensive “green” Toyota Prius added to the perceived status of an individual, with an increased sense of self and one’s place in society. This is as true for the purchase of eco-friendly fast moving consumer goods, as it is for the more expensive

electric vehicle. This can be seen in a study by Kennedy et al. (2016) where in an average New Zealand supermarket, a hand wash that is eco-friendly, chemical-free, and sold in recycled plastic pump bottles costs twice as much as traditional hand wash.

The abstract concept of sustainable consumption is reflected in the “T” (tangibility), where most sustainable consumer behaviour is not about the here and now, and an immediate consumer effect, but usually some intangible future payoff. And the final piece of the framework, the “H,” (habit) requires habits to change and consumer encouragement via incentives such as discounts, or processes that make it easy or penalties, possibly governmental, and feedback such as usage monitors. White et al. (2019) conclude that these drivers could be interpreted as barriers to consumer change and that there may be more than one driver that contributes to consumer resistance to change. They give the example of a not for profit organisation called Our Horizon in the United States, which sought to reduce petrol consumption by encouraging less driving of cars. The strategy they developed targeted two SHIFT drivers, via (1) social, it is normative to drive, and (2) tangibility, consumer’s uncertainty that their individual effort will make a difference. Our Horizon then encouraged local government to place ‘climate change warnings’ on petrol pumps.

The key to unlocking the SHIFT framework is knowledge, based on information and learning. Information can take many forms from the network news, to the eco label on packaged goods. Knowledge leads to understanding, that is, understanding of the environmental issues, understanding of where I, as a consumer, sit within this changing environment and society, understanding of the options presented to the consumer, and understanding of how I as a consumer can change my behaviour.

The question is can the consumer materialism and egoistic values of the twentieth century can be replaced by a type of “societalism” where consumer satisfaction is derived from the greater good and altruistic values versus individual? Or as social signalling theory shows (Griskevicius et al., 2010), it is possible that self-benefit such as status can be fulfilled by products and actions that benefit altruistic, social values as well. In a quantitative study of 677 Australian household shoppers, research shows that the purchase motivation of “local” foods, was found to be a combination of “what’s good for me” and “what is good for we,” (Birch et al., 2018). This is in line with the SHIFT framework, identifying the individual’s motivations against the bigger “we” for a sustainable global society. There are interesting parallels with the twentieth century, the age of both individual consumerism and the creation and hyper use of plastic versus twenty first century onus being placed on the global planet and what is good for all of us.

This brings in the concepts of public and private good and the location of where a product is bought or consumed (Graeff, 1996). The theory is that consumer behaviour carried out within the view of others, i.e., purchased or carried or displayed in public, may differ from the privacy of one’s home. By

this, private consumption tends to occur where there is no feedback, verbal or nonverbal in the home, with the exception of the consumer's conscience (Griskevicius et al., 2010). This intriguing aspect may challenge marketers' ability to use the SHIFT framework to encourage the purchase of more sustainable goods when a consumer is either consuming privately or buying privately (i.e., via online or digital shopping carts vs. physical, where goods can be observed being placed in a consumer's basket in a brick and mortar store). How does the uptick in digital shopping alter what was once public or more observable behaviour such as choosing an item in the grocery store? Does shopping from the comfort and relative privacy at home impact the ability of social signalling to push a shift toward more sustainable behaviour and purchase? This chapter will attempt to address such questions in a later section on online shopping.

Yet how well these concepts of egoistic values versus altruist values and public, status-granting choices versus private choices in the home, play out depends on the information made available to household shoppers in the marketplace. Clues to determining and understanding whether or not a product is sustainable begin with the information that is communicated by the manufacturer on a label, box or package.

## **2.3 Packaging**

The primary function of packaging is to create a container which protects a product. Plastic has been very good at this and has enabled products to travel vast distances, exist on a shelf for extended periods by arriving in and maintaining a good sellable condition. Moreover, packaging over time has become a crucial marketing tool to create a unique identity or brand, as consumers continually interact with the product, well after it has been purchased (Kotler & Armstrong, 2017).

The label on that packaging could be described as being at the core of an organisation's communication marketing campaign. At its most basic, it tells the consumer what it is, how to use it, and legal requirements such as weight, ingredients, and who has created it. In terms of the marketing of the product/brand, it is an essential first ingredient in creating an image and a brand positioning (Ampuero & Vila, 2006).

Orzan et al. (2018) show that packaging is now coming under intense scrutiny to be environmentally friendly in terms of the circular economy. This encourages manufacturers to plan the product's life cycle after purchase in terms of recycling and reuse. This compares with the planned obsolescence, or linear life cycle operating in the last century (Kravchenko et al., 2019), in which consumer goods and their packaging were designed to be disposed of. This lends new importance to the communication potential of packaging that is sustainable and designed either to limit waste in its creation or to limit

waste in its disposal, or both. In an era of ethical consumption, sustainable packaging is becoming desirable. Sustainable packaging, in term of the core functions of packaging, handles fast-moving consumer goods, protects the goods inside while protecting the planet, and communicates and signals a brand's pro-environmental stance from the packaging alone (i.e., Lindh et al., 2016).

The most recognised definition of sustainable packaging is given by the Sustainable Packaging Coalition (2011):

“Sustainable packaging is beneficial, safe and healthy for individuals and communities throughout its life cycle; meets market criteria for performance and cost; is sourced, manufactured, transported, and recycled using renewable energy; maximises the use of renewable or recycled source materials; is manufactured using clean production technologies and best practices; is made from materials healthy in all probable end of life scenarios; is physically designed to optimise materials and energy; and is effectively recovered and utilised in biological and/or industrial cradle-to-cradle cycles.” (Sustainable Packaging Coalition, 2011).

The above definition incorporates the entire life cycle of a product. Life cycle assessment (Boesen et al., 2019) encompasses the whole life of a product from creation to disposal. An example is an electric car which is seen as a good consumer environmental choice. However, there are questions over the battery in terms of mining the minerals such as lithium in developing countries such as Bolivia (Draper, 2019), to the inability to fully recycle the battery at the end its life (Warren, 2020).

Consumers seem confused as to what basis to make environmental decisions – based on the product and packaging on the shelf, on how they will use the product, how they will dispose or recycle the product, where the product has come from, or on how it was manufactured? The majority of consumers seem to make decisions based on material only, i.e. what the packaging is made of (glass, plastics, paper, etc.) and not the whole life cycle. This can mean that a product that is more sustainable such as reusable laminated cardboard may not be seen as an environmental packaging option when it is based on life cycle criteria (Boesen et al., 2019; Lindh et al., 2016; Orzan et al., 2018; Steenis et al., 2017).

## **2.4 Consumer Choice Variables**

When discussing consumer choice of sustainable (or not) packaging, five key components emerge from the literature that are important to consider. These include (1) knowledge of the consumer (2) attitudes of the consumer (3) individual differences (4) consumer confusion and (5) other competing product requirements that push packaging sustainability to the backseat in a consumer's mind.

### **2.41 Knowledge**

Knowledge and expertise are key to understanding and learning what is and is not sustainable packaging. The consumer learns through engaging in activities that assist their understanding (White et al., 2019; Joshi & Rahman, 2015). Knowledge is a key driver of “pick up” or acceptance of the necessity of sustainable packaging. Those consumers who are aware of sustainable packaging alternatives are more likely to seek them out (Thøgersen et al., 2010). Taufique et al. (2015) also find that general environmental knowledge plays a fundamental role in influencing consumer sustainable behaviour.

In order for consumers to learn about sustainable packaging, different organisations have introduced labels in an attempt to direct consumers to products with more sustainable attributes and packaging. There are a number of studies that demonstrate that when eco labels show images of nature and the colour green, they help the consumer to identify environmentally friendly products/packaging. The introduction of the label has assisted in building sustainable knowledge and trust about a product/package (Amos et al., 2014; Cho & Taylor, 2019; Sharma & Kushwaha, 2019; Zeng & Durif, 2019).

Consumers who have a good “green” environmental knowledge tend to be more likely to buy products that have eco labels, i.e. packaging labels that communicate information about how sustainable/recyclable a product is (Dekhili & Achabou, 2014; Rokka & Uusitalo, 2008; Thøgersen et al., 2010).

### **2.42 Attitudes**

The Oxford Dictionary definition of attitude is “the way that you think and feel about someone or something”. This is contrasted with the definition for knowledge of “the information, understanding and skills that you gain through education or experience” (Oxford English Dictionary, 2018).

Attitudes differ from knowledge in that an attitude is how you feel, your belief, about something versus what you know about the same thing. Therefore, you can have an opinion or attitude about something that you may have little knowledge about.

Both studies by Martinho et al. (2015) in their study of 215 Portuguese consumers and Prakash and Pathak (2017) in their study of 204 Indian consumers found that having a positive green environmental attitude was a predictor of sustainable packaging purchase intent. Grunert et al. (2014) in their online European study of 4,408 respondents found the motivation to use sustainable labels was linked to the level of concern about sustainability. Yang and Zhao (2019)’s study of 286 Taiwanese consumers talked about a concept of “green trust” where consumers are willing to pay more for environmental products, with the green packaging design being an important component of communicating the product’s green credentials.

Also noted in the literature is motivation, this is where consumers might have knowledge about sustainable packaging, but rate their concern as low, or they do not see the environment as an issue and as such they will not seek out sustainable packaging (Magnier & Schoormans, 2015; Wei et al., 2018).

In an exploratory study, Zeng and Durif (2019) identified three segments of consumers. Eco-conscious consumers are those highly concerned about environmental packaging who actively look to reduce and recycle. Utilitarian-minded shoppers make a judgment not just on the environment, but on price, value for money, and product quality. And finally, sceptical consumers put the functional protection of the product first and worry about hygiene and food safety compromises. Taken together, these individual differences show that motivation will form a key component in shoppers' likelihood of engaging with any sustainable packaging labels in the marketplace.

### **2.43 Individual differences**

Interestingly, demographics form another key individual difference in the uptake of sustainable packaging. Women are shown in to be more in tune with sustainability than men. Higher levels of education and income may also be key indicators of sustainable packaging purchase intent (Grunert et al., 2014; Martinho et al., 2015; Mitchell et al., 2018; Rees et al. 2019; Thøgersen et al., 2010). Orzan et al. (2018) found that age did not influence environmental choice, whereas income did have an influence. However Rokka and Uusitalo (2008) in their study, found that demographics did not have any effect on the consumer decision to purchase environmental products.

### **2.44 Confusion**

The literature documents that being exposed to a large number of different sustainable messages and labelling can be confusing to consumers (Orzan et al., 2018; Nguyen et al., 2020; Sharma & Kushwaha., 2019). In New Zealand, this can be seen in WasteMINZ's audit of 867 households, where it was found that one of the key reasons why plastic recyclables ended up in landfill was due to confusion of plastic ID coding (WasteMINZ, 2020). Mitchell et al. (2018) found the majority of British consumers found eco labels confusing. However, those who understood the recycling labels followed those instructions (Thøgersen, 1999).

A consumer's assessment of the life cycle of a product also plays a part in the confusion. Here the confusion arises from what stage in the product's life cycle should the consumer base their sustainable evaluation. For instance, should they make a purchase based on whether a package can be recycled, or if a package is made of recyclable materials, or the sustainable credentials of the manufacturer or just the product on the shelf and during its immediate use (Lindh et al., 2016; Nguyen et al., 2020; Zeng & Durif, 2019)?

Also, not all claims are equal. Greenwashing, the identified marketing technique where organisations claim "green" credentials without appropriate practice to substantiate their marketing communications



(including packaging and in-store promotions) can also add to the consumer's confusion (Chen & Chang, 2013; Delmas & Burbano, 2011; Schmuck et al., 2018).

This can lead to issues of lack of self-confidence and insecurity of not fully understanding what the label or logo on the product is communicating (Boesen et al., 2019; Magnier & Cri , 2015; Steenis et al., 2017). This indicates that cognitive engagement, motivation, ability, and opportunity are necessary to fully comprehend any information presented in the marketplace or at point-of-sale. The balance of too much or not enough information, and too many ecolabels to describe the same thing are all creating confusion in the mind of a consumer trying to purchase sustainably.

Yet even if consumers do have knowledge, ability, and interest as individual differences to encourage the purchase of sustainable packaging, and even if they have previously read about and understood and thus feel less confused when they encounter a sustainable package in the supermarket, there is possibly one more key barrier (or facilitator) that which may hold sway over decision making.

#### **2.45 Competing consumer requirements**

An interesting aspect of sustainable packaging is also where it sits on the list of desirable consumer attributes of a product. Research has found differing priority listings of what consumers desire, and although it does seem in general to be considered important, sustainable packaging is usually found lower on the household shoppers' priority lists behind product quality, convenience and price (Mitchell et al., 2018; Steenis et al., 2017). However, once highlighted by researchers, many consumers claim that they are willing to pay a premium for sustainable packaging (Lindh et al., 2016; Martinho et al., 2015; Prakash & Pathak, 2017). In a study of Swedish consumers, 60% claimed that environmental packaging plays at least a medium role in their purchase decision making, whereas convenience is the most important consideration (Lindh et al., 2016).

Price is a key consideration in making grocery purchases and therefore if sustainable packaging pushes up the price, this can become an impediment to purchase (Joshi & Rahman, 2015; Magnier & Crie, 2015; Orzan et al., 2018). A study of Vietnamese consumers showed that they would choose environmental packaging if it is priced equal to or less than the competition (Nguyen et al., 2020). In Zeng and Durif's (2019) study, 89% of consumers perceived the cost of eco packaging to be higher than "normal" products, representing a key barrier to purchase intention. Another study by Isa and Yao (2013) of 180 consumers purchasing packaged convenience foods in Malaysia found that price was the most important factor in product choice, followed by convenience and taste, and "green packaging" had no effect. However, van Birgelen et al. (2009) found the German consumers are willing to choose sustainable packaging as long as the attributes of taste and price are met. Steenis et al. (2017) found similar in that sustainable packaging was subordinate to taste and quality.

This means that sustainable packaging is a motive for some consumers to make a purchase, though not for all. Thus, where, when and why consumers would consider purchasing a fast moving

consumer good in sustainable (versus non-sustainable) packaging remains an open and pressing question for consumer behaviour researchers.

## **2.5 Household Shopping Changing Habits: Online Shopping**

The traditional weekly shop is being assisted by technology and many household shoppers now make their purchase decisions in front of a screen, away from the physical location of a store. Online shopping is growing significantly. New Zealand's Countdown supermarket chain reports that in the first quarter of the 2020 financial year, sales revenue from online purchases increased 38% on the same quarter a year ago. It is reported that New Zealanders spent \$4.2 billion online last year, the equivalent of 8.9% of all retail sales (Shaw, 2019). Nielsen Research predicted that 70% of U.S. consumers will be doing their grocery shopping online by 2024 (Nielsen, 2018).

Trust is an ongoing theme in online shopping with both regular and infrequent users. Mortimer et al. (2016), in their Australian-based study of online grocery shoppers, found that perceived risk is mediated by the trust that the shoppers have of the retailer's site. The more frequently they use or shop the site, the more trust is built and the perceived risk is reduced, but not eliminated. This means that once a consumer habitually uses a website or app for shopping, they are more likely than new or infrequent users to trust recommendations from that digital store interface.

When it comes to online grocery habits, some research shows that online is merely a replica of in-store habits with habitual shopping choices dictating the purchases (Anesbury et al., 2015; Melis et al., 2015). Singh (2019) describes this as a frictionless consumer experience. Consumers fill online grocery baskets category-by-category in much the same way as they fill in-store baskets, aisle-by-aisle.

Ilyuk (2018) found that because there are perceived lower levels of purchase effort and therefore, less psychological attachment, there is a higher level of waste in online shopping. This research result is interesting in that it links online grocery purchases that possibly fuel increasing plastic purchasing as opposed to lessening it. This could be related to the conspicuous consumption of being viewed in store versus at home. This links with the work done by Griskevicius et al. (2010) where they found that being seen to be green was the new "keeping up with the Jones" versus what you do in your own home away from public scrutiny.

The other interesting finding is that online shoppers were less price sensitive (Harris, 2019), meaning they tended to spend more when making a choice to fill their virtual basket online compared to their physical basket in-store.

People have a longer time to make decisions when online shopping, as they can return to and revisit a shopping session. In experimental research on nutritional labelling using traffic like signalling approach, similar to the New Zealand Heart Foundation tick system, researchers found that whilst the “green” labelling helped healthy choices, an additional explanation added significant influence (Marette et al., 2019).

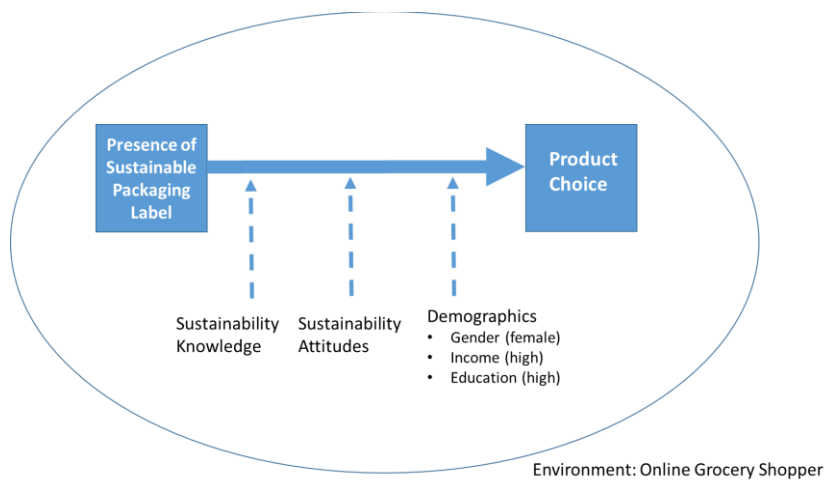
Online grocery shopping is becoming more popular with busy lives and ongoing technological advancements with fridge/pantry and shopping being digitally related. The online environment offers a private setting from which to shop, and time in which to compare product choices and their “back stories” such as life cycle assessment and environmental qualifications. This could have important consequences for the ways in which shoppers make choices in the online grocery context.

## **2.6 Conclusion**

The literature review leads to the conclusion that the consumer’s choice of packaging is influenced by environmental concerns, however, there is no clear direction as to the level of importance of this concern on the purchase decision. There is wide understanding and acceptance of the science of climate change and sustainability at a macro level among consumers, but the evidence suggests that this is not filtering down to an individual micro level of consumer action. It would appear that there are three main factors are in play, from (1) the level of environmental knowledge held by a consumer, (2) the sustainability/environmental attitudes held by the consumer, and (3) the demographic profile of sustainable shopper who is more likely to be to female, and have higher income and education levels. There is also an overlay of a landscape of possible shopper confusion caused by the differing sustainability labelling/communication techniques and the importance consumers place on other competing product attributes such as price, taste and convenience. This can be shown pictorially in the following model shown in Figure 1.

**Figure: 1**

*Proposed Model: The Effect of Sustainable Packaging on Grocery Purchase Intent.*



Therefore, a gap exists in scholarship on better understanding the importance (or not) of the link, for household shoppers, between macro sustainability issues such as plastic in the ocean and the packaging decisions of their immediate purchase and use. Household shoppers know the big environmental picture, but they don't necessarily take that information and act on it in their micro-level weekly grocery shopping trips. Are consumers (household shoppers) prepared to dispense with other features of products, such as convenience, for the greater good? Household shoppers are embracing the online world, as shown by the ever increasing numbers who are shopping online. This forum enables consumers to customise their grocery shopping experience in their own private space (Reilly, 2020). They can spend as little or as much time on the weekly household shopping experience. Some will reorder the same basket of goods every week, and others will contemplate each product choice. Given the information at their "fingertips," when and why are household shoppers likely to choose a more sustainable option?

Looking at online household shoppers' packaging decisions through the SHIFT framework (White et al., 2019) suggests that if making sustainable purchase decisions made are easy (Habit), information is provided/communicated about sustainable outcomes (Tangibility) and that knowledge gained helps to instil a sense of pride of doing their part for the greater good (Feeling, Social and Individual), then household shoppers are more likely to choose sustainable packaging option. However, it would appear that there needs to be a baseline of environmental /sustainability understanding of the issues, and an acceptance of the science to ensure prerequisite knowledge levels.

This leads to four formal predictions that this dissertation seeks to test. Formally,

**H1:** Shoppers are more likely (less likely) to choose items with more sustainable (vs. less sustainable) packaging labels.

**H2a:** Shoppers with a higher (vs. lower) level of sustainable knowledge are more willing to purchase items with more sustainable packaging.

**H2b:** Shoppers with higher (vs. lower) sustainability attitudes are more willing to purchase items with more sustainable packaging.

**H2c:** Those shoppers who are female, have a high household income, and a higher level of education are more likely to consider purchasing products with sustainable packaging.

To conclude, it is crucial to understand the process of the decisions that household shoppers make as to what products make their way into the country's pantries and fridges. Household shopper demand plays a pivotal role in changing how products are packaged. Therefore consumer acceptance of any change towards sustainable practices, even on a small individual basis, when pooled together with their neighbour and their community, can make a huge difference to the war on waste.

## Chapter Three: Research Design

Research design is the method used to construct a framework for answering questions posed by the review of the current academic literature. Its function is to illuminate or shine a light on the path of navigating new knowledge ahead.

Academic researchers have a number of different courses they can follow on the journey of knowledge discovery. It is generally agreed these options fall into a continuum of approaches, where at one end, the researcher begins with a blank sheet of paper and studies the phenomenon they wish to understand. This approach is called interpretivist, and the researcher has no set agenda and wishes to immerse themselves in the subject (Cresswell & Poth, 2018). At the opposite end of the continuum, sits the positivist. Here the researcher approaches the phenomenon from a more scientific viewpoint and seeks to understand by testing the interactions of the observed behaviour (Myers et al., 2010).

Qualitative methods of discovering variables, such as ethnography, tend to be in the armoury of the interpretivist as they tend to concentrate on the “why” of an issue, whereas quantitative methods, such as experiments, are more likely to be used by positivists. Quantitative methods are best applied when more narrow and specific results are sought in relation to the variables identified. This deductive nature of quantitative research involves by beginning developing hypothesis or theory and then collecting and analysing data to test those hypotheses (Grant & Giddings, 2002; Hair et al., 2014).

Experimental design is common practise in understanding consumer behaviour because it specifically focuses on causal relationships and involves manipulating a scenario (Morales et al., 2017). This design is best suited when the problem definition is overall clear and in question are the relationship between variables to determine or isolate causality. Peterson and Umesh (2018) went as far as to call experimental research, the “sine qua non” of consumer behaviour research. In utilising the quantitative experimental design approach, this research can achieve the objective of determining the relationship between independent and dependent variables to test the hypotheses generated.

### 3.1 Research Question and Hypotheses

This dissertation seeks to examine the following research questions:

**RQ1:** Can household shoppers be nudged to purchase items with more (vs. less) sustainable packaging?

**RQ2:** Do household shoppers with high (vs. low) levels of knowledgeable and or high (vs. low) attitudes about sustainability purchase items with more (vs. less) sustainable packaging?

To guide the research design, these motivating research questions and the literature review in Chapter 2 helped generate the following testable hypotheses.

**H1:** Shoppers are more likely (less likely) to choose items with more sustainable (vs. less sustainable) packaging labels.

**H2a:** Shoppers with a higher (vs. lower) level of sustainable knowledge are more willing to purchase items with more sustainable packaging.

**H2b:** Shoppers with higher (vs. lower) sustainability attitudes are more willing to purchase items with more sustainable packaging.

**H2c:** Those shoppers who are female, have a high household income, and a higher level of education are more likely to consider purchasing products with sustainable packaging.

A quantitative research design will be used in this project to determine if the inclusion of sustainable packaging cues (in the form of digital labels) on a supermarket website will encourage buyers to choose a more sustainable packaged product alternative within a display of six product alternatives.

This form of research enables the testing of hypotheses that have been developed and formulated in the investigation stage of the literature review section.

### **3.2 Research Methodology**

This research follows an experimental design with randomised anonymous responses. Respondents were randomly assigned to three conditions. Where each individual has the same chance of being allocated to a condition, therefore no one participant has an advantage over another, i.e. randomisation provides protection against bias (Hair et al., 2014). The first is a control group that contains no sustainable packaging information and the second two groups have one of two sustainable packaging label information given. The first of these is the Australasian Recycling label, and the second is the Packaging Star label. The use of a control group enables the researcher to compare and contrast the respondents' responses to determine if the two sustainable packaging label groups have an effect and to measure that effect (Kirk, 2013).

Each group was presented with a scenario to read about a developing trend in supermarket shopping. The control group was given a short passage, "News Post," to read to learn about online shopping and delivery or pick up options. The two sustainable packaging groups were instead presented with a short explanation about what is either what the Australasian Recycling or Packaging Star symbols are and the information they convey. See Appendix B for each of the three news posts used as part of the manipulations. This is a technique known as priming, which is common in consumer behaviour

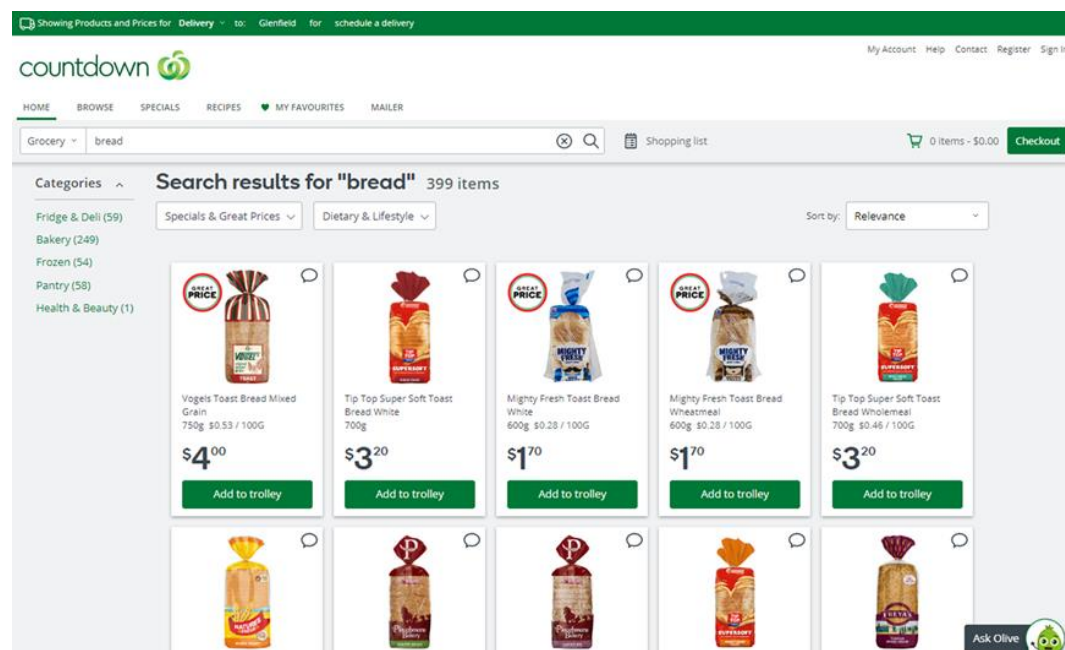
research and is defined as where knowledge is activated or increased and that knowledge is used to influence a response in the participant (Minton et al., 2017).

Respondents were then asked to choose a product that they would buy from a display of six products in two everyday grocery categories, peanut butter and milk. Both food categories are commonly purchased and, in general, are lower cost items. Nielsen reports to the year ended 29 December 2019, that 9.7 million units of peanut butter and 11.5 million units of milk were purchased in New Zealand (Nielsen Research Ltd, 2020). Peanut butter was chosen because of the clear packaging differences of plastic and glass. Milk was selected because of packaging differences in plastic, Tetra Pak and glass.

To create a “real life” scenario, a visual presented was similar to a leading supermarket online shopping site in New Zealand (Morales & Ostrom, 2017). Figure 2 shows an example of an online New Zealand supermarket shopping page.

**Figure 2**

*A Typical Online New Zealand Supermarket Shopping Page*



*Note.* (<https://shop.countdown.co.nz/shop/searchproducts?search=bread>) In the public domain.

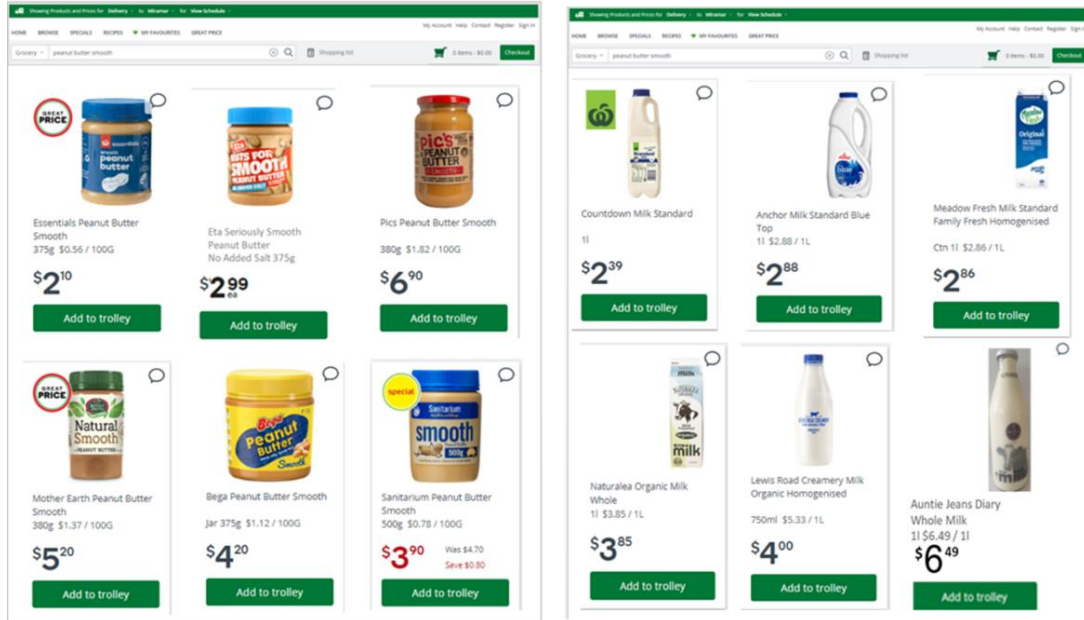
The visuals for the research varied by condition: Food items were shown either in the control condition (no sustainable packaging information), in the Australasian Recycling condition (with Recycling Label symbols shown) or in the Packaging Star condition (with Packaging Star label symbols shown). Figures 3 shows what respondents viewed in each condition.



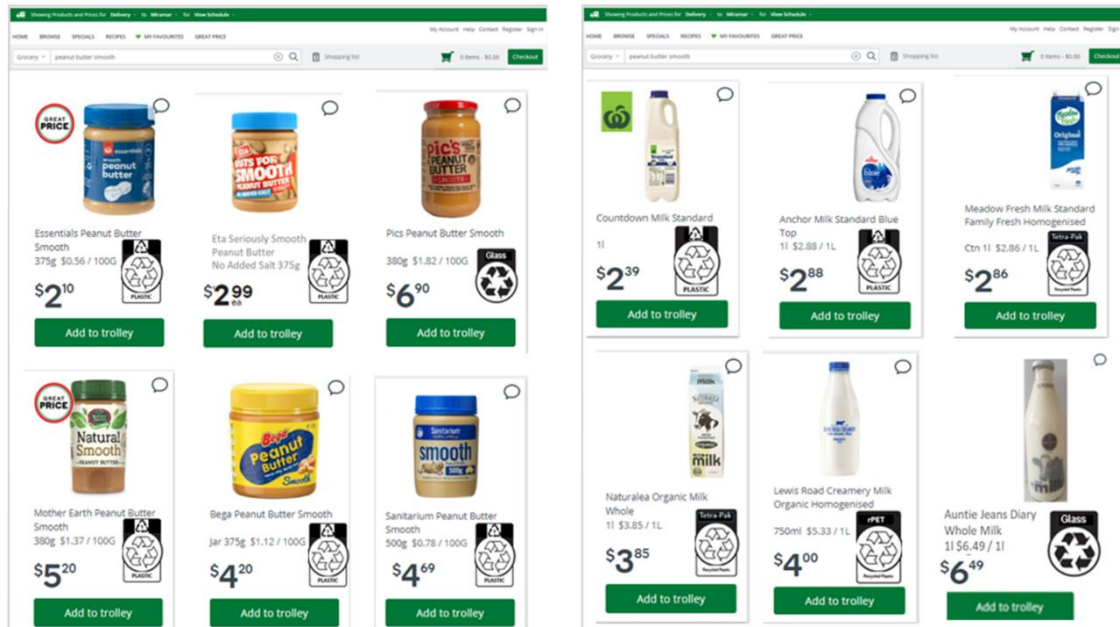
**Figure 3**

*Visuals shown for each condition*

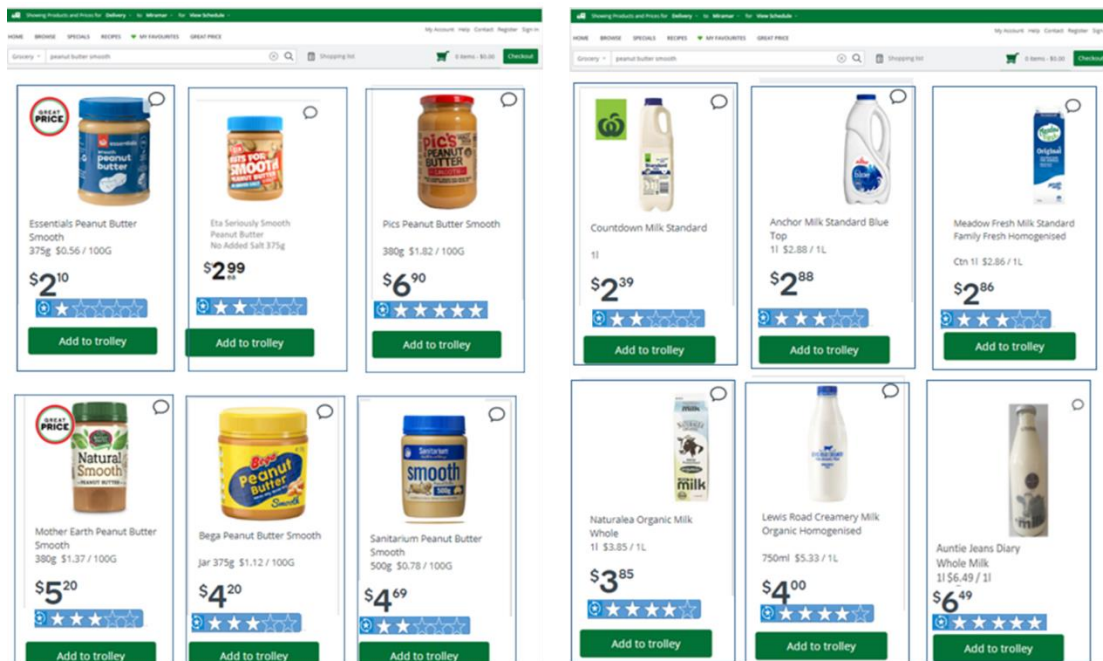
### 3.1 Control



### 3.2 Australasian Recycling Label Condition



### 3.3 Packaging Star Condition



Respondents were then asked to respond to three questions that measured their attitudes toward the store layout and design. They were asked to rank three attributes on a Likert scale; from 1= strongly dislike to 7=strongly like; from 1=not at all attractive to 7= very attractive; from 1= not at all informative to 7= very informative.

Next, respondents reported how willing they were to buy each of the six products on a “1” = “not at all willing” to “7” = “very much willing” scale before they answered a question about which of the six products they would choose. All respondents viewed and evaluated the six peanut butter choices first before viewing and evaluating the six milk choices.

All respondents were then asked a number of sustainability attitude questions (based on Martinho et al., 2015) and sustainability knowledge questions. The sustainable knowledge questions were derived from Zwickle and Jones’s (2018) work on determining a person’s knowledge by asking a set of questions which they called Assessment of Sustainable Knowledge (ASK). As this was a U.S. based assessment, a revised version was adapted for this dissertation with three general sustainability knowledge questions from ASK and three New Zealand centric sustainability questions sourced from the NZ Consumers Institute (Styles, 2019). Finally, respondents answer a series of demographic questions including age, gender, place of residence, education and income. These variables are measured to determine if they have a moderating effect on product decisions. Drawing from the hypotheses, this study will determine whether these factors have a moderating effect on whether or not people choose a product which has more sustainable packaging.

The complete survey questionnaire can be viewed in Appendix C.

### 3.3 Recruitment Procedure

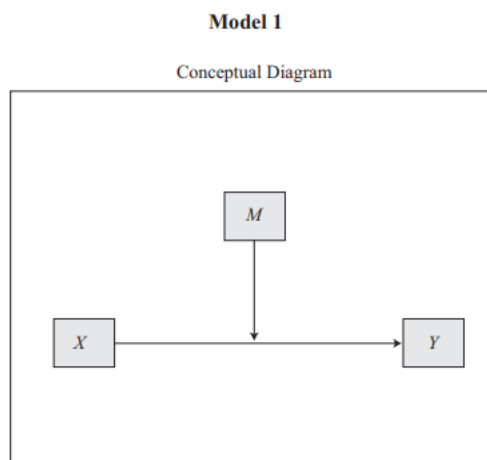
The survey was developed using the online survey tool Qualtrics. To ensure an anonymous randomised sample, respondents were selected using the panel CINT. The CINT database randomly selected participants meeting the criteria of being adults over 20 years of age who live in New Zealand. The reason for 20 years is that this group are more likely to be shopping for the household and themselves than those younger.

### 3.4 Data Analysis

The data was analysed using SPSS with the frequencies, ANVOA, univariate analysis and logistics regression tests to determine possible trends and to answer the hypotheses developed. Hayes Model 1, as depicted in figure 4, was used to analyse the moderating effect of sustainable knowledge, sustainable attitudes and demographics (Hayes, 2018).

**Figure 4**

*Hayes Model 1*



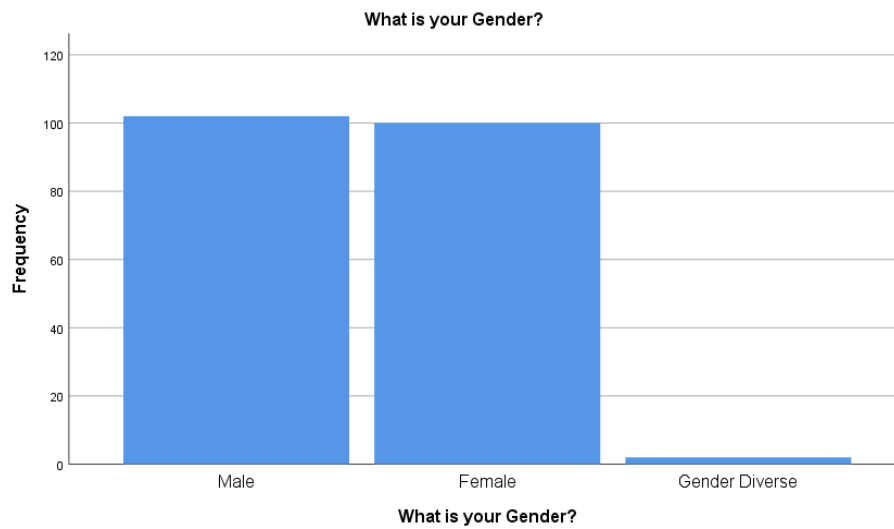
### 3.5 Respondents

The survey was sent out the week commencing 9th April 2020, via the CINT panel to 216 respondents with the criteria that they were resident in New Zealand and aged 20 years or over.

Whilst 216 responses were received, 204 surveys were completed. The dynamics of the sample were can be seen in figures 5 to 11.

**Figure 5**

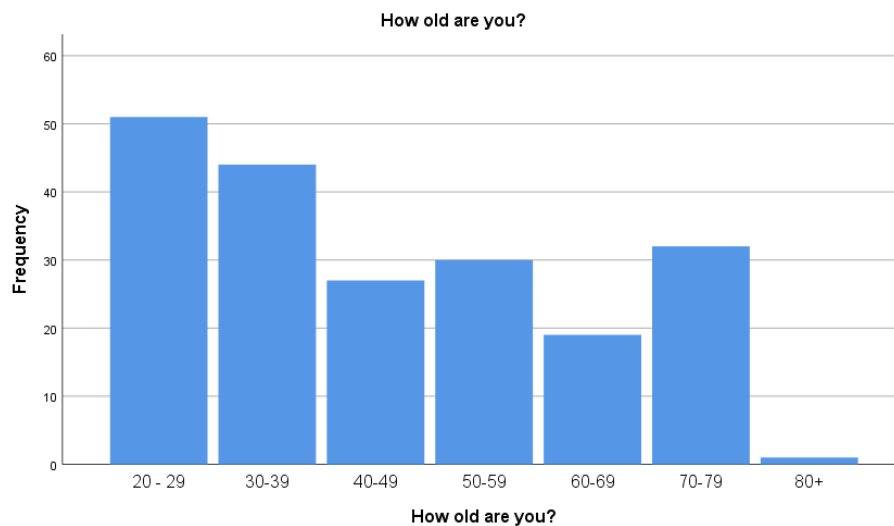
*Gender of Respondents*



*Note.* This figure shows that there was a relatively even gender split. Out of the 204 respondents 102 were male, 100 were female, and two were gender diverse.

**Figure 6**

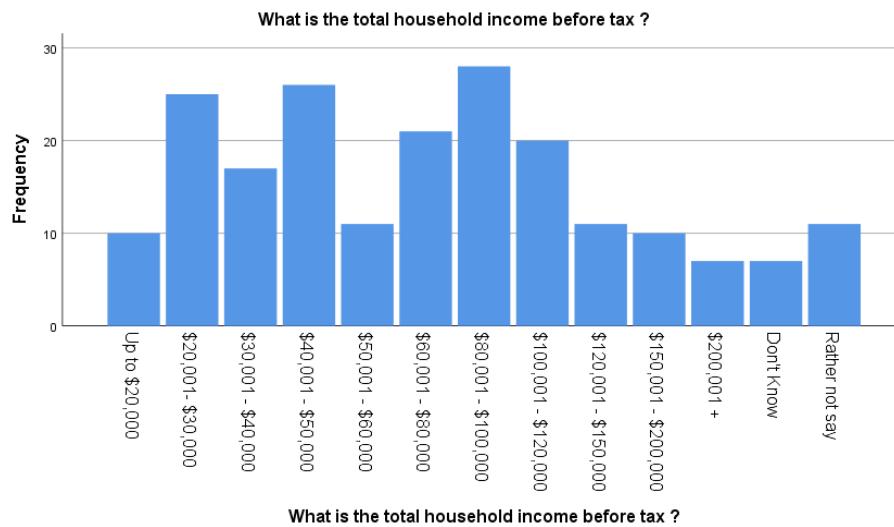
*Age of Respondents*



*Note.* This figure shows that the majority of respondents were aged 20-39 (46.5%), followed by those aged 40-59 (28%), and finally, those aged over 60 (25.5%).

**Figure 7**

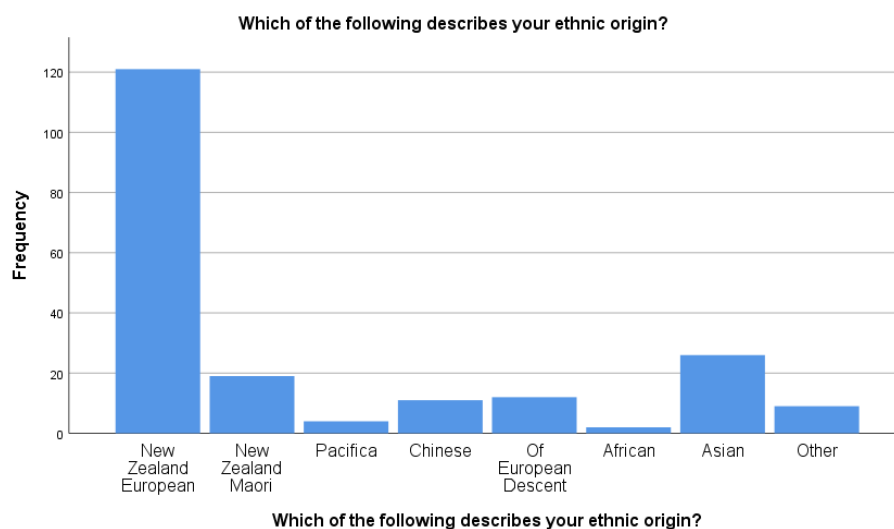
*Household Income of Respondents*



*Note.* This figure shows that there was a widespread of household incomes. Households with incomes \$0-\$40,000 (25.5%), \$40,001 – \$80,000 (28.4%); \$80,001-\$120,000 (23.5%) and those with incomes over \$120,001 (13.7%). Nine percent did not know or would rather not say.

**Figure 8**

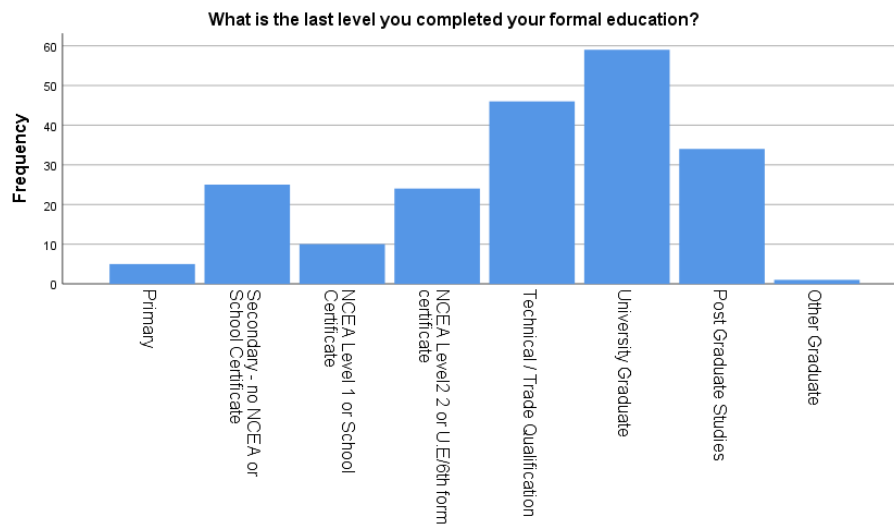
*Ethnicity of Respondents*



The above figure shows the ethnicity breakdown with 59% European New Zealanders, 18% Asian, 9% Maori, 6% of European descent and 6% of other ethnic origin, and 2% Pacifica.

**Figure 9**

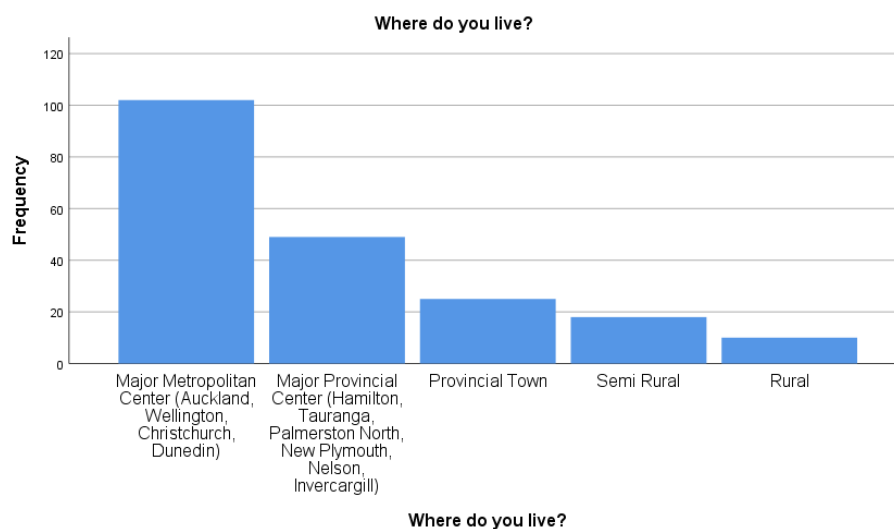
*Education of Respondents*



*Note.* This figure shows the level of education and revealed that 15% had no qualification, 17% had a secondary school qualification, 21% had a technical or trade qualification, 27% had a university degree and 17% had a post graduate degree.

**Figure 10**

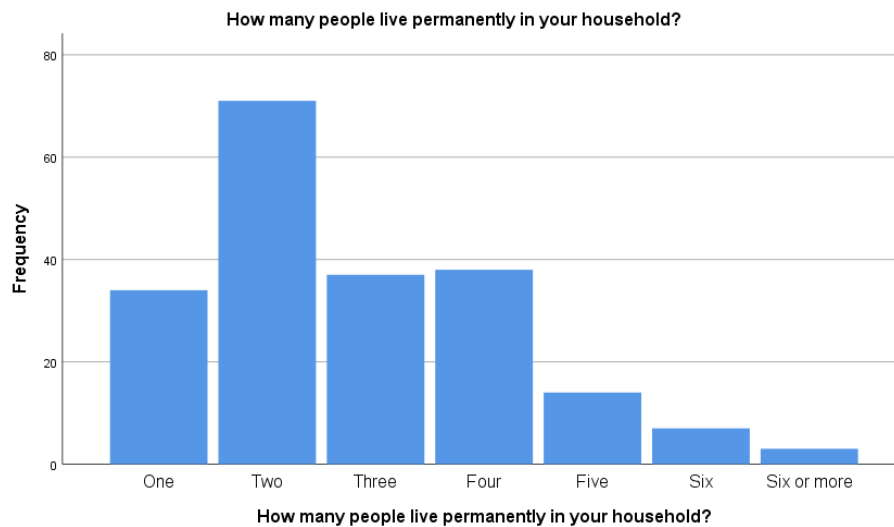
*Location of Respondents*



*Note.* This figure shows that half of the respondents lived in a major metropolitan centre of Auckland, Wellington, Christchurch or Dunedin, 24% in a major provincial centre of Hamilton, Tauranga, Palmerston North, New Plymouth, Nelson or Invercargill, with 12% in a provincial town and 14% in semi-rural or rural part of New Zealand.

**Figure 11**

*Household Composition of Respondents*



*Note.* This figure shows that the household make up was that 17% people live alone, 33% in homes of two people, 37% live in homes with three or four people, and 12% live in homes with five or more people. Thirty two percent of respondents live in homes with children under the age of 16, and of those homes, 48% had one child, 33% had two children and 19% had three or more children.

**Figure 12**

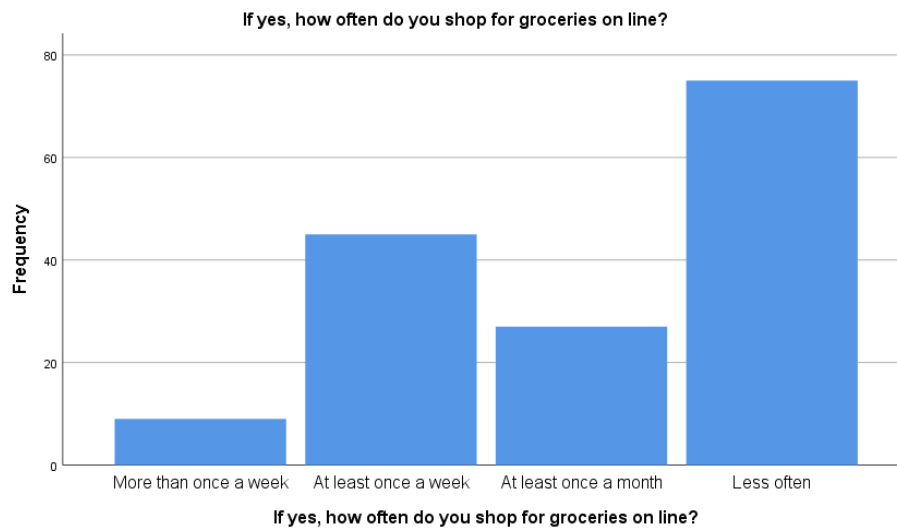
*Online Grocery Shopping Occurrence*



*Note:* This figure shows that 47% of respondents have shopped for household groceries online.

**Figure 13**

*Online Grocery Shopping Frequency*



*Note.* This figure above shows that 35% of those who have shopped for household groceries online are regular online shoppers, i.e. they have done so at least once a week.

**Figure 14**

*Purchase Patterns of Peanut Butter*



*Note.* The figure above shows that 10% or 22 respondents don't buy peanut butter.



**Figure 15**

*Purchase Patterns of Milk*



*Note.* The figure above shows that 4% of respondents don't buy milk.

### 3.6 The Variables

The main dependent variable of interest in this research is the intention to purchase. After viewing the shopping page with the six product choices, the respondent is asked using a Likert 7 point scale “How likely would you consider purchasing the products featured here?”, where 1= extremely unlikely to 7= extremely likely. They were then asked “which of these products are most likely to put in your shopping basket” and select from the six responses.

The independent variable in this research was the differing information on sustainable packaging given. There were three groups: (1) control, with no sustainable packaging information presented, (2) Australasian Recycle label and (3) the Packaging Star label.

Potential moderator variables were the amount of sustainable knowledge held by the respondent, their attitude towards sustainability and demographics of female, higher education and or higher income.

The following Tables 1 to 3 describe the variables used in this study.

**Table 1***Sustainability Knowledge Questions and Answers*

Sustainability Knowledge Questions	Answer	Correctly Answered
What is the most common cause of pollution of streams and rivers?	Surface water running off backyards, streets and farms	23.3%
Ozone forms a protective layer in the earth's upper atmosphere. What does ozone protect us from?	Harmful UV rays	69.9%
Which of the following is the most commonly used definition of sustainable development?	Meeting the needs of the present without compromising the ability of future generations to meet their own needs	55.6%
How much of New Zealand's electricity is generated from renewable resources?	82%	18.1%
Over a year, which of the following has the largest impact on your personal carbon footprint?	Raising a child	10.2%
Which sector produces the highest proportion of greenhouse gas emissions in New Zealand?	Agriculture	54.6%

*Note.* Questions were based on Zwickle and Jones (2018) and New Zealand Consumers Institute (Styles, 2019)

**Table 2***Sustainability Attitude Statements*

Sustainability Attitudes	Mean	Std. Deviation
Packaging waste is one of the main problems in the solid waste area, because there is a great volume of it	4.11	0.84
Packaging must be recycled because it allows for the recovery of materials and minimum environmental impact.	4.08	0.84
All packaging should be environmentally friendly, even if that requires a small charge in its price	3.99	0.96
I believe that in the world in which we are living, environmental quality is strongly related to my health and well-being.	3.79	0.96
Within the scope of environmental problems, the amount and destination of solid waste is, for me, one of the most important.	3.54	0.96
Whether the packaging is sustainable or not is irrelevant in the decision to purchase a product, the most important feature is price	3.37	1.10
Solid waste can be a problem currently, but soon it will stop being so because of advances in science and technology	3.26	0.99
The current environmental problems are secondary in relation to the other problems that our society is facing.	3.25	1.12

*Note.* Attitude statements were based on work completed by Martinho et al., (2015)

**Table 3***List of Variables in this study*

Independent	Dependent	Moderators
Condition	Intent to purchase	Sustainability Attitudes (Martinho et al., 2015)
Control (no label)		(Smith & Brower, 2012)
Australasian Recycling Label		(Prakash & Pathak, 2017)
Packaging Star Label		Sustainability Knowledge (Rokka & Uusitalo, 2008) (Thøgersen et al., 2010)
		Demographics:
		Gender
		Income
		Education
		(Rees et al., 2019) (Mitchell et al., 2018)

### 3.7 Reliability

Reliability checks were employed to determine that the scales were reliable and valid. Cronbach's alpha is often used to test the internal consistency of the scales used (Eisinga et al., 2013). In this study, Cronbach's alpha coefficient for the "how likely you would be to purchase peanut butter products" was 0.87 and for "how likely you would be to purchase milk products" was 0.91. For sustainability attitudes scales the Cronbach's alpha coefficient was 0.72 and the Product Attributes scale was .69. The acceptable Cronbach's alpha range is 0.7 to 0.9. Therefore, it can be concluded that the scales used in this research are reliable (Hair et al., 2014). The product attribute scale is the exception to this and at .69 is close to the lower range. Table 4 provides a summary of Cronbach Alpha Reliability scores.

**Table 4***Cronbach Alpha Reliability Scores*

Scale Definition	Cronbach's Alpha
Attitude to store layout for peanut butter	.87
Likelihood of purchasing peanut butter	.81
Attitude to store layout for milk	.91
Likelihood of purchasing milk	.80
Product Attributes scale	.69
Sustainable Attitudes scale	.72

## Chapter 4: Findings

This chapter reports the statistical analyses that were conducted to test the hypotheses. Firstly, the chapter examines the main effects to test the first hypothesis and to determine if consumers who were exposed to different packaging sustainability label information in an online grocery shopping scenario, increased their choice share for the most sustainably packaged item. Next, the analyses seek to determine if there are any moderating effects for choice of the most sustainably packaged goods when those goods are shown with either no label, an Australasian Recycling Label, or a Packaging Star label. A summary of Hypothesis testing is shown in table 5.

**Table 5**

### *Hypothesis Testing*

Hypothesis	Statistical test	Reference
H1: Shoppers are more likely (less likely) to choose items with more sustainable (vs. less sustainable) packaging labels.	ANOVA	Section 4.1
H2a: Shoppers with a higher (vs. lower) level of sustainable knowledge are more willing to purchase items with more sustainable packaging.	Hayes PROCESS Model 1	Section 4.2.1
H2b: Shoppers with higher (vs. lower) sustainability attitudes are more willing to purchase items with more sustainable packaging.	Hayes PROCESS Model 1	Section 4.2.2
H2c: Those shoppers who are female, have a high household income, and a higher level of education are more likely to consider purchasing products with sustainable packaging.	Hayes PROCESS Model 1	Section 4.2.3

### 4.1 The Main Effect

**H1:** Shoppers are more likely (less likely) to choose items with more sustainable (vs. less sustainable) packaging labels.

To test H1, the analysis needs to be carried out on willingness to purchase the most sustainable options of both product categories. In the case of peanut butter, this is Pic's (option 3) and for milk, the Aunt Jean's brand (option 6).

Completing an ANOVA analysis of condition on willingness to purchase the most sustainably packaged peanut butter (Pic's brand) yielded a nonsignificant result,  $F(2,210) = .50, p = .61$ . This result shows that there is no main effect of condition on willingness to buy the most sustainably packaged item, as the mean willingness to buy for the control condition ( $M = 4.46$ ) was

nonsignificantly different than the mean willingness to buy for the Recycling Label ( $M = 4.60$ ) and the Packaging Star label condition ( $M = 4.26$ ).

A similar nonsignificant effect of condition on willingness to pay is found for the most sustainably packaged milk, Aunt Jean's brand  $F(2,206) = .576, p = .56$ . This result shows that there is no main effect of condition on willingness to buy the most sustainably packaged item, as the mean willingness to buy for the control condition ( $M = 3.42$ ) was nonsignificantly different than the mean willingness to buy for the Recycling Label ( $M = 3.11$ ) and the Packaging Star label condition ( $M = 3.44$ ).

Results of these two ANOVAs reveal that there is no main effect of sustainable packaging label for general respondents.

## 4.2 Moderated Main Effects

To test the remaining hypotheses relating to possible moderating effects, the SPSS version 3.4.1 PROCESS by Andrew Hayes was used, with Hayes model 1 to test simple moderation.

### 4.21 Moderator: Sustainable Knowledge

**H2a:** Shoppers with a higher (vs. lower) level of sustainable knowledge are more willing to purchase items with more sustainable packaging.

A moderation analysis using Hayes model 1, as shown in figure 16, was run with the dummy coded condition Recycling Label (1) vs. Control (0) as the independent variable, sustainable knowledge as the moderator, and willingness to purchase the most sustainably packaged peanut butter (Pic's) as the dependent variable. The model was significant and showed that the condition of recycling label had a marginal ( $p = 0.056$ ) positive effect in choice of the most sustainably packaged item for those with more sustainable knowledge,  $t(1,137) = -1.93$ , coefficient  $b = -.46, p = .06$ .

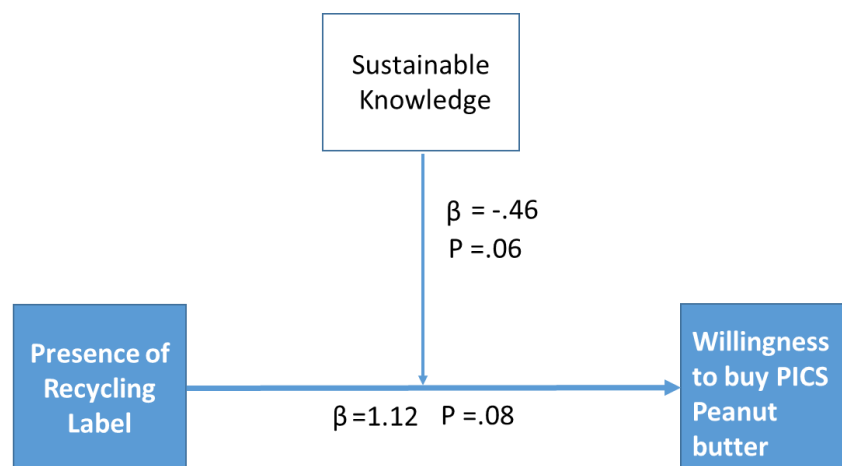
A moderation analysis using Hayes model 1 with the dummy coded condition Packaging Star label (1) vs. Control (0) as the independent variable, sustainable knowledge as the moderator, and willingness to purchase the most sustainably packaged peanut butter (Pic's) as the dependent variable, however, was not significant,  $t(1,133) = -1.13$ , coefficient  $b = -.29, p = .26$ .

This means that the Australasian Recycling label had a marginally significant effect on purchase intent for the more sustainability packaging item than on those with higher sustainability knowledge. However, the more complicated Packaging Star label did not yield such an effect, and this was only found for choice of sustainably packaged peanut butter.

The same effect was not found for the impact of the Australasian Recycling Label for the most sustainable packaging item for milk Aunt Jean's. A moderation analysis using Hayes model 1 with the dummy coded condition Recycling Label (1) vs. Control (0) as the independent variable, sustainable knowledge as the moderator, and willingness to purchase the most sustainably packaged milk (Aunt Jean's) as the dependent variable, was not significant  $t(1,135)=-1.13$ , coefficient  $b = -.09$ ,  $p = .71$ . A moderation analysis using Hayes model 1 with the dummy coded condition Packaging Star label (1) vs. Control (0) as the independent variable, sustainable knowledge as the moderator, and willingness to purchase the most sustainably packaged milk (Aunt Jean's) as the dependent variable, was again shown to be nonsignificant,  $t(1,132)=-.60$ , coefficient  $b = .16$ ,  $p = .55$ .

**Figure 16**

*Moderation Analysis of Sustainable Knowledge on Willingness to Purchase a Sustainably Packaged Item.*



## 4.22 Moderator: Sustainable Attitudes

**H2b:** Shoppers with higher (vs. lower) sustainability attitudes are more willing to purchase items with more sustainable packaging.

A moderation analysis using Hayes model 1 was run with the dummy coded condition Recycling Label (1) vs. Control (0) as the independent variable, sustainable attitude as the moderator, and willingness to purchase the most sustainably packaged peanut butter (Pic's) as the dependent variable. The model was not significant and showed that the condition of recycling label did not have an effect on the choice of the most sustainably packaged item for those with more sustainable attitudes,  $t(1,143) = .03$ , coefficient  $b = .02$ ,  $p = .97$ .

A moderation analysis using Hayes model 1 with the dummy coded condition Packaging Star label (1) vs. Control (0) as the independent variable, sustainable attitude as the moderator, and willingness to purchase the most sustainably packaged peanut butter (Pic's) as the dependent variable, however, was also not significant,  $t(1,138) = -1.08$ , coefficient  $b = -.75$ ,  $p = .28$ .

The same effect was found for the impact of the Australasian Recycling Label for the most sustainable packaging item for milk Aunt Jean's. A moderation analysis using Hayes model 1 with the dummy coded condition Recycling Label (1) vs. Control (0) as the independent variable, sustainable attitude as the moderator, and willingness to purchase the most sustainably packaged milk (Aunt Jean's) as the dependent variable, was not significant  $t(1,141) = -.06$ , coefficient  $b = -.37$ ,  $p = .96$ . A moderation analysis using Hayes model 1 with the dummy coded condition Packaging Star label (1) vs. Control (0) as the independent variable, sustainable attitudes as the moderator, and willingness to purchase the most sustainably packaged milk (Aunt Jean's) as the dependent variable, was again shown to be nonsignificant,  $t(1,137) = -.35$ , coefficient  $b = .25$ ,  $p = .73$ .

This means that sustainable attitudes do not have a moderating effect on either packaging options of Australasian Recycling label or Packaging Star label and the hypothesis that shoppers with higher (vs. lower) sustainability attitudes are more willing to purchase items with more sustainable packaging is not supported.

#### 4.23 Moderator: Demographics

**H2c:** Those shoppers who are female, have a high household income, and a higher level of education are more likely to consider purchasing products with sustainable packaging.

Tables 6 and 7 show that there are no significant moderating effects by gender, age, household income or education, despite some evidence in the literature that showed females with higher incomes and education might be more inclined to purchase sustainable products (Mitchell et al., 2018; Rees et al., 2019)

**Table 6**

##### *Demographic Moderating Effects Analysis for the Australasian Recycling Label*

Demographics	Pic's			Aunt Jean's		
	<i>t</i>	coefficient <i>b</i>	p value	<i>t</i>	coefficient <i>b</i>	p value
Gender	-0.8608	-0.1564	0.3894	0.9488	0.1688	0.3427
Age	0.8969	0.0443	0.3698	0.0171	0.0009	0.9864
Household Income	0.6422	0.0186	0.5208	-0.5508	-0.0152	0.5818
Education	-0.7507	-0.0449	0.4529	-0.4354	-0.0278	0.6632

**Table 7***Demographic Moderating Effects Analysis for the Packaging Star Label*

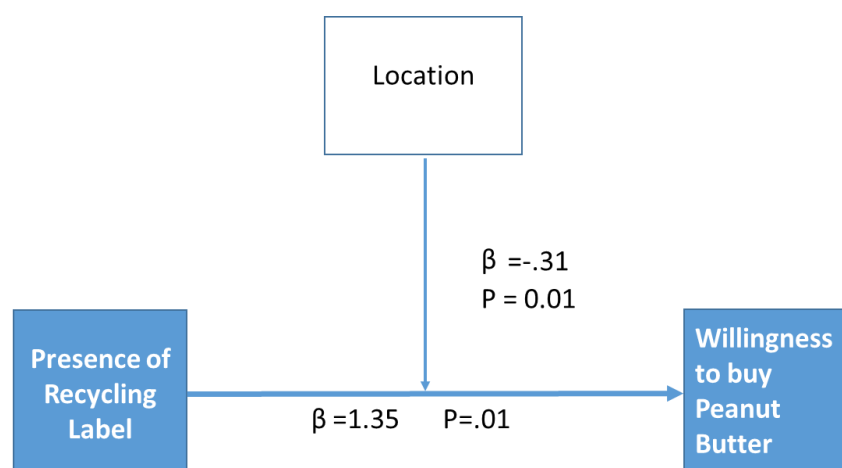
Demographics	Pic's			Aunt Jean's		
	<i>t</i>	coefficient <i>b</i>	p value	<i>t</i>	coefficient <i>b</i>	p value
Gender	0.3467	0.0608	0.7288	0.6976	0.1195	0.4854
Age	0.4333	0.0214	0.6648	-0.362	-0.0181	0.7173
Household Income	0.2416	0.0062	0.8091	0.2114	0.005	0.8326
Education	-0.1444	-0.0085	0.8852	0.3229	0.0184	0.7468

**4.24 Other moderating effects****4.241 Location**

A moderation analysis using Hayes model 1 was run with the dummy coded condition Recycling Label (1) vs. Control (0) as the independent variable, location as the moderator, and willingness to purchase the most sustainably packaged peanut butter (Pic's) as the dependent variable, as shown in figure 17. The model was significant and showed that the condition of Recycling Label had a marginal ( $p = 0.01$ ) positive effect in choice of the most sustainably packaged item for those who live in the main New Zealand metropolitan centres  $t(1,138) = -2.79$ , coefficient  $b = -0.31$ ,  $p = 0.01$ .

**Figure 17**

*Moderation Analysis of Location on the Presence of a Recycling Label on the Willingness to Purchase Sustainably Packaged Peanut Butter*

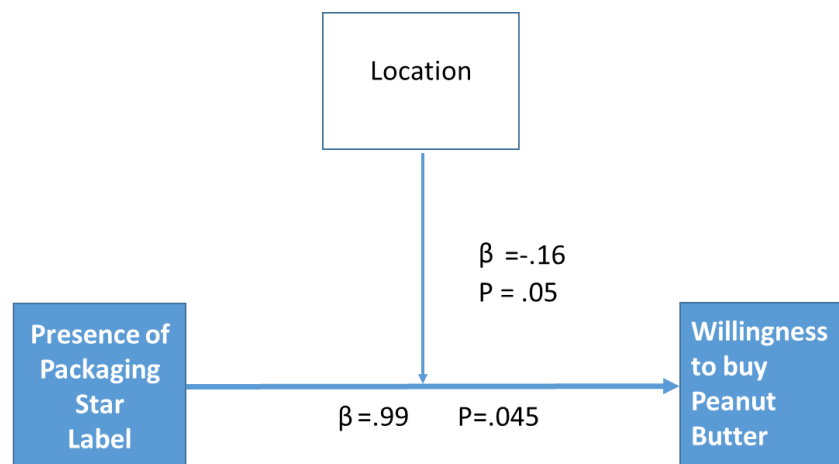




A moderation analysis using Hayes model 1 was run with the dummy coded condition Packaging Star label (1) vs. Control (0) as the independent variable, location as the moderator, and willingness to purchase the most sustainably packaged peanut butter (Pic's) as the dependent variable, shown in figure 18. The model was significant, and showed that the condition of Recycling Label had a marginal ( $p = .01$ ) positive effect on choice of the most sustainably packaged item for those who live in the main New Zealand metropolitan centres,  $t(1,134) = -2.0$ , coefficient  $b = -.016$ ,  $p = .05$ .

**Figure 18**

*Moderation Analysis of Location on the Presence of a Packaging Star Label on the Willingness to Purchase Sustainably Packaged Peanut Butter*



Looking at the moderator of location, i.e. where people live, there is a moderating effect on Pic's peanut butter but not Aunt Jean's milk.

**Table 8**

*Moderation Analysis of Location on the Presence of a Recycling Label on the Willingness to Purchase a Sustainably Packaged Grocery Product*

Demographics	Pic's			Aunt Jean's		
	<i>t</i>	coefficient <i>b</i>	<i>p</i> value	<i>t</i>	coefficient <i>b</i>	<i>p</i> value
Location	2.799	-0.3061	0.0051	-1.0262	-0.0814	0.3048

**Table 9**

*Moderation Analysis of Location on the Presence of a Packaging Star Label on the Willingness to Purchase a Sustainably Packaged Item*

Demographics	Pic's			Aunt Jean's		
	<i>t</i>	coefficient <i>b</i>	p value	<i>t</i>	coefficient <i>b</i>	p value
Location	2.0035	-0.1617	0.0451	-0.8527	-0.058	0.3938

This means that both the Australasian Recycling label and the Packaging Star label had a significant effect on purchase intent for the more sustainability packaging item (Pic's peanut butter) on those who live in main metropolitan centres of Auckland, Wellington, Christchurch and Dunedin.

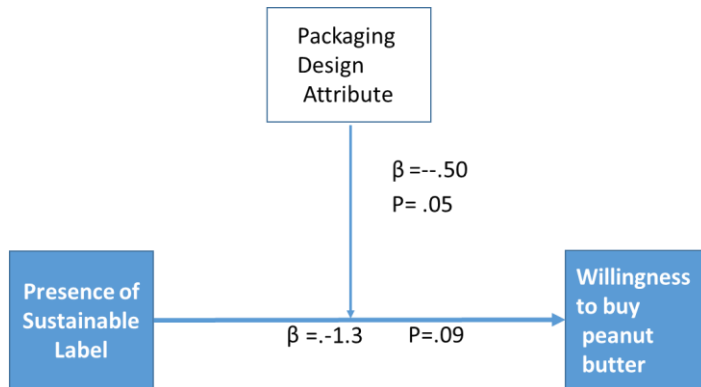
#### 4.242 Packaging Design

When looking at the attributes that respondents take into account when buying a product, those who said they care about package design showed a significant moderating effect on willingness to purchase the most sustainably packaged product for peanut butter choices. This was true regardless of the type of sustainable packaging label, whether Australasian Recycling or Packaging Star, when contrasted with the control condition. A moderation analysis was run using Hayes model 1 with the dummy coded condition sustainable packaging labels (1) vs. control (0) as the independent variable, preference for packaging design as the moderator, and willingness to purchase the most sustainably packaged peanut butter (Pic's) as the dependent variable. The model in figure 19 was significant and showed that the conditions in which respondents encountered sustainable packaging label of either sort had a positive effect in choice of the most sustainably packaged item for those who care about packaging design when they shop,  $t(1, 205) = 1.99$ , coefficient  $b = -.50$ ,  $p = .05$ .

However, a moderation analysis using Hayes model 1 with the dummy coded condition sustainable packaging labels (1) vs. control (0) as the independent variable, preference for packaging design as the moderator, and willingness to purchase the most sustainably packaged milk (Aunt Jean's) as the dependent variable, was not significant  $t(1, 201) = 1.70$ , coefficient  $b = -.34$ ,  $p = .17$ .

**Figure 19**

*Moderation analysis of Packaging Design on the presence of a sustainable label, either a Recycling Label or a Packaging Star Label on willingness to purchase a sustainably peanut butter option.*



**Table 10**

*Moderation Analysis of Packaging Design on the Presence of either a Recycling Label or Packaging Star Label on the Willingness to Purchase a Sustainably Packaged Item*

Demographics	Pic's			Aunt Jean's		
	<i>t</i>	coefficient <i>b</i>	<i>p</i> value	<i>t</i>	coefficient <i>b</i>	<i>p</i> value
Packaging Design Attribute	1.9384	-0.4988	0.05	-1.379	-0.3414	0.1693

Whilst there was a moderating effect of those who rated packaging design as an important attribute on sustainable product choice, the attribute itself, pack design was rated the least important of attributes that respondents thought about when purchasing a product. Table 11 shows the ranked list for attributes for this sample.

**Table 11**

*Product Attributes Importance*

Product Attribute	Mean	Std. Deviation
Taste	4.29	0.84
Quality	4.23	0.89
Price	4.08	0.96
Sustainability credentials	3.63	1.01
Locally Made	3.48	1.15
On-pack Promotion	3.42	1.01
Loyalty( I always buy)	3.23	1.02
Pack Design	2.65	1.21

### 4.3 Summary of Findings

This section summarises the findings of the experiment conducted to test the four hypotheses proposed for this research, and the results of the data analysis of these results. The respondents were randomly chosen via a third party (CINT panel) with the criteria that they are aged over 20 years of age and lived in New Zealand. Two hundred and sixteen responses were received with 204 being completed. A summary of the results is presented in figure 20

**Figure 20**

#### *Results Summary*

Hypothesis	Result
H1: Shoppers are more likely (less likely) to choose items with more sustainable (vs. less sustainable) packaging labels.	<b>X</b> Not supported Peanut Butter: $F(2,210) = .502$ , $p = 0.606$ Milk: $F(2,206) = .576$ , $p = 0.563$
H2a: Shoppers with a higher (vs. lower) level of sustainable knowledge are more willing to purchase items with more sustainable packaging.	<b>✓</b> Supported with Peanut Butter sustainable choice of recycled label, PICS $t(1,137) = -1.93$ , coefficient $b = -.46$ , $p = 0.056$ .  Not supported for milk sustainable product choice Aunt Jean's or packaging star label for either peanut butter or milk.
H2b: Shoppers with higher (vs. lower) sustainability attitudes are more willing to purchase items with more sustainable packaging.	<b>X</b> Not supported
H2c: Those shoppers who are female, have a high household income, and a higher level of education are more likely to consider purchasing products with sustainable packaging.	<b>X</b> Not supported
Other: Moderator, respondents who lived in major New Zealand metropolitan centres are more likely to consider purchasing products with sustainable packaging	<b>✓</b> Supported for Peanut Butter Recycling label: $t(1,138) = -2.79$ , coefficient $b = -0.31$ , $p = 0.051$ . Packaging Star label: $t(1,134) = -2.0$ , coefficient $b = -0.16$ , $p = 0.045$
Other: Moderator, respondents that ranked pack design as a key attribute in deciding on purchase	<b>✓</b> Supported for Peanut Butter $t(1, 205) = 1.94$ , coefficient $b = -.50$ , $p = .05$

## **Chapter Five: Discussion**

This chapter discusses the findings identified in the dissertation with respect to the testing of the hypotheses developed from the key research questions. The framework of this section is to look at the contributions to knowledge via theoretical and practical implications. Based on the conclusions from these findings, this chapter will also discuss the limitations of the research and finally look at possible directions for future research.

The key motivation behind this research is to determine whether household shoppers care about the packaging that their grocery goods arrive in. Can marketers encourage consumers to care about the sustainability of the packaging their goods arrive in? For example, do the images of plastic pollution, such as those of the turtles with plastic straws protruding from their noses in plastic polluted oceans, have sufficient effect to persuade shoppers to change their everyday grocery purchase decisions? So far, even consumers who express strong attitudes about the environment do not always make purchases that support their beliefs. This attitude-behavioural gap is encapsulated well in the work by White et al. (2019) with the SHIFT framework to drive behavioural change in sustainable consumption using such inputs as social influence. In this dissertation, the focus is narrowed to packaging. Plastic packaging waste has been identified as one of the key environmental issues facing the planet (WWF, 2019), and yet a vast of weekly grocery goods come surrounded by plastic. Therefore in order to address this key global environmental threat, it is essential to understand the use (or not) of sustainable packaging in the everyday grocery purchases that household shoppers make.

This research took two common household grocery product categories, peanut butter and milk, and presented them to the consumer in a familiar online shopping forum, i.e. in the same format as a popular New Zealand supermarket. Six different brands for each category were displayed on one page, and for each brand there was a picture of the pack, the price, and product description. Respondents to the study were randomly assigned one of three groups. The first group had no additional information. The second group was given additional information about recycling and whether or not the product featured could be recycled in accordance with the Australian Recycling Association guidelines. The third group was given additional information about a Packaging Star label that encompassed how sustainable the whole production lifecycle of a product's packaging is. This study design allowed the researcher to test if consumers are more likely to buy targeted products when exposed to additional packaging sustainability information.

Finally, based on the literature, three moderators were identified and tested to gauge the effect on the relationship between presence (or not) of an environmental/sustainability information label and purchase intent. The moderators were consumer sustainability awareness, sustainability knowledge, and a set of demographics (gender, age, income and education).

Overall, the study found no main effect for packaging sustainability condition. Consumers, in general, did not change their choice share of a target peanut butter or milk when there was a label (vs. no label) that provided information on the sustainability of the product's packaging. However, interactions with moderators allow this research to conclude that (1) consumers with more sustainability knowledge (2) those who consider the aesthetics of packaging design an important feature, and (3) live in a main New Zealand metropolitan city, are more likely to purchase a product when it is known to be sustainability packaged.

## **5.1 Methodological**

Methodological contributions were not the main goal of this dissertation. However, two key areas that developed in the course of this research are worth future scholars' attention and consideration and form the core of this work's potential contribution to method.

First, the researcher found there was no clear way in the literature to test sustainability knowledge of New Zealand consumers and developed a unique way of testing this knowledge, drawn from the literature. Both sustainability knowledge and sustainability attitudes were identified in the literature as key positive drivers of nudging consumers towards purchasing of sustainable packaging (Martinho et al., 2015; Prakash & Pathak, 2017; Smith & Brower, 2012; Thøgersen et al., 2010). Whilst consumer attitudes are generally measured by Likert scales, to understand a person's knowledge of a subject, Zwickle and Jones (2018) show they should be tested with questions that have only one correct answer.

Zwickle and Jones (2018) developed the Assessment of Sustainability Knowledge (ASK) based on a set of 12 questions relating to sustainability at the University of Maryland. A number of these questions were American-centric, and given that the study was conducted in New Zealand, a set of sustainability knowledge questions suitable for testing New Zealanders' knowledge were developed using three questions drawn from ASK (Zwickle & Jones, 2018) and three from New Zealand Consumer Institute (Styles, 2019). This is the first time, to this researchers' knowledge, that such an assessment of sustainability knowledge has been developed for consumers in New Zealand.

Second, this research tested how an eco-label or other product label might be placed in the shopping environment (i.e., on a webpage of product results) rather than on the actual packaging itself. This was inspired by the work of the Crunch & Flourish Limited in New Zealand. They propose a technological solution such as an online overlay of information via e-commerce to eliminate packaging waste. The environment in which the sustainable packaging alternatives in this dissertation's study were presented was in the form of an online grocery shopping page. Online

shopping is growing in popularity (McBeth, 2019), and has the ability to convey information next to, but not actually on the packaging. This gives benefits that the information is delivered “where it is needed” in the consumer decision process, as in, at point of purchase. It also has the advantage of being able to be changed and added to without the long lead times of production of packaging.

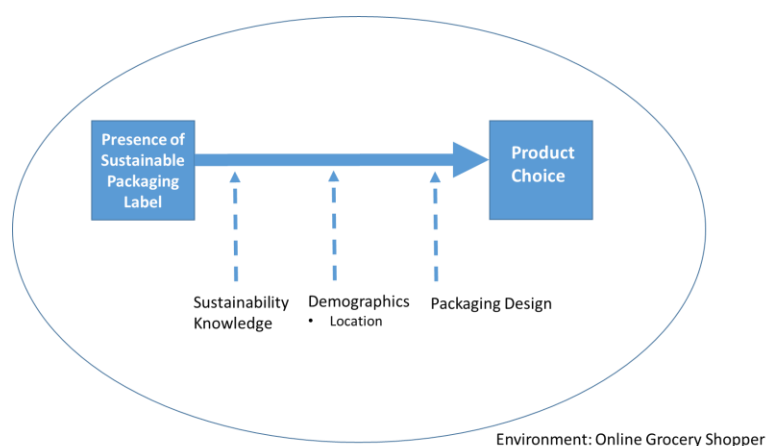
Further, the online visual product display was adapted from and similar to the leading New Zealand online supermarket chain, and the sample of respondents were drawn from New Zealand shoppers. That renders this dissertation’s results more generalisable to the population of New Zealand consumers, as it was presented in a format that they are familiar with, using brands and designs they are already accustomed to seeing.

## 5.2 Theoretical

Based on the literature, the model below in Figure 21, was developed to test whether household shoppers can be nudged to purchase items with more (vs. less) sustainable packaging. Based on the literature review, three moderators were established, these being the level of sustainability knowledge held by the household shopper (Rokka & Uusitalo, 2008; Thøgersen et al., 2010), their attitude to sustainability (Martinho et al., 2015), and demographic profile of female, high income and high level of education (Mitchell et al., 2018; Rees et al., 2019). However, based on this study the model has been revised to reflect the results. The key moderator of knowledge did have an effect on product choice as did location, ie main metropolitan dwellers where more likely to consider sustainable packaged products, and those interested in overall pack design.

**Figure 21**

*The Revised Model: Effect of Sustainable Packaging on Grocery Purchase Intent.*



## 5.21 The Main Effect

The following hypotheses were therefore tested:

**H1:** Shoppers are more likely (less likely) to choose items with more sustainable (vs. less sustainable) packaging label information

The short answer is no. There was no statistically significant support for the hypothesis that the presence of a sustainable packaging label information does nudge the consumer to purchase the sustainably packaged product. This result was found for both the peanut butter and milk categories. For the peanut butter category, the sustainable packaging choice was Pic's brand and this yielded a nonsignificant result,  $F(2,210) = .51$ ,  $p = 0.61$ , and for the milk category Auntie Jean's, a similar result of  $F(2,206) = .58$ ,  $p = .56$  showed nonsignificant findings,

This possibly reflects the continued presence of the sustainability attitude-behaviour gap (White, Habib, & Hardisty, 2019). It also is an indication that other product attributes are, at least in this study's sample of New Zealand shoppers, more important than the container the product is delivered in. As seen in table 12, the top three attributes are taste, quality and price with a mean score of at least 4 out of a scale of 5. Sustainability credentials is an important fourth. This is line with the study by van Birgelen et al. (2009) that found that consumers were happy to consider environmental packaging if the product attributes of taste and price were satisfied first.

**Table 12**

*Product Attributes by Type of Sustainable Label and by Type of Product Bought*

Means	Control	Recycle	Packaging Star	Peanut Butter Buyers*	Milk Buyers*
Taste	4.28	4.33	4.26	4.35	4.35
Quality	4.2	4.01	4.02	4.04	4.13
Price	4.16	4.19	4.35	4.33	4.3
Sustainability credentials	3.59	3.59	3.71	3.85	3.7
Locally Made	3.57	3.25	3.45	3.7	3.46
On-pack Promotion	3.32	3.56	3.55	3.79	3.53
Loyalty (I always buy)	3.26	3.23	3.21	3.54	3.27
Pack Design	2.84	2.73	2.36	2.95	2.67

*Note.* \* Bought at least once a month.



## 5.22 Moderators

The next three hypotheses-related factors that were identified in the literature as possible influencing factors were sustainable knowledge, sustainable attitudes and demographic factors of female, higher income and higher levels of education.

**H2a:** Shoppers with a higher (vs. lower) level of sustainability knowledge are more willing to purchase items with more sustainable packaging.

**H2b:** Shoppers with higher (vs. lower) sustainability attitudes are more willing to purchase items with more sustainable packaging.

**H2c:** Those shoppers who are female, have a high household income, and a higher level of education are more likely to consider purchasing products with sustainable packaging

Only one hypothesis was supported, H2a, which tested the moderating impact of sustainability knowledge on willingness to purchase more sustainability packaged items. This is in line with literature that showed that if a consumer had a high level of sustainability knowledge, then they are more likely to purchase sustainable packaged goods (Rokka & Uusitalo, 2008; Thøgersen et al., 2010). Here the presence of the Australian Recycling label (vs. no Recycling label) moderated by sustainability knowledge increased the willingness to purchase the most sustainably packaged peanut butter option, Pic's,  $t(1,137) = -1.93$ , coefficient  $b = -.46$   $p = 0.06$ .

Interestingly, this effect was not replicated for the sustainably packaged milk brand option, Aunt Jean's, nor was it supported for the Packaging Star label option. Reasons for the lack of response for the sustainable milk brand could be due to the generic nature of the taste of milk, and that all milk brands are seen as similar. This combined with the price difference of \$2.39 for the private label versus \$6.49, (i.e. 271% premium for a glass sustainable packaged milk) may be too big a jump to make for the consumer. Of note, the next most sustainably packaged option, Lewis Road with recycled plastic packing, was priced at \$4.00, a 167% premium to purchase also was not supported by a moderator such as increased sustainability knowledge. The Packaging Star label, which encompasses substantial sustainable knowledge about the product, including the manufacturing and sourcing of the product, is new to the marketplace and therefore not as widely recognised, and consequently has little resonance with consumers. It could be adding to more label confusion, an issue that was identified in the literature (Nguyen et al., 2020). The Australian Recycling Label, on the other hand, relied on a classic recycling emblem of three arrows that was originally developed for Earth Day in 1970 (Jones & Powell, 1999) and therefore possibly has higher recognition and a history in some form for most consumers.

The moderating variable of sustainable attitudes (tested via H2b) was not supported for either product category or either sustainable packaging label. This result is in line with the literature and supports the existence of the attitude-behaviour gap. Whilst the sustainability attitudes were measured on a five point Likert scale, the highest ranking attitude, “Packaging waste is one of the main problems in the solid waste area, because there is a great volume of it,” indicates an attitude towards sustainable packaging,  $M = 4.11$  with a standard deviation of .84. This was shown in Table 13. What is also interesting to note that the third-ranked attitude that indicates the willingness to pay a price premium, however, this was not reflected in the results of this study. The price premium for milk as previously mentioned at 271% may be too high, and the peanut butter price premium on private label is similar, \$6.90 vs \$2.10, although it could be expected that taste preferences for the peanut butter category may also play a factor in the decision making process.

**Table 13**

*Top Three Sustainable Attitudes*

Sustainability Attitudes	Mean	Std. Deviation
Packaging waste is one of the main problems in the solid waste area, because there is a great volume of it	4.11	0.84
Packaging must be recycled because it allows for the recovery of materials and minimum environmental impact.	4.08	0.84
All packaging should be environmentally friendly, even if that requires a small charge in its price	3.99	0.96

This study’s findings that higher sustainability attitudes do not moderate the impact of consumer willingness to purchase a product with more sustainable packaging information reinforces prior studies on the attitude-behaviour gap (Joshi & Rahman, 2015; Shim et al., 2018; White et al., 2019). However, contrary to this it is important to note that Martinho et al. (2015) did find that positive attitudes towards green issues were important when predicting consumer intention to purchase sustainable packaging.

In the literature, a number of demographics were identified that were found to possibly moderate sustainable purchase behaviour (Mitchell et al., 2018; Rees et al., 2019). These were females, those with a higher income and those with a higher level of education. This study found that the demographics of gender, age, household income, and education, however, had no effect on the decision making process for more (vs. less) sustainably packaging goods. This is contrary to what was found in the literature. It may be because the products tested in this dissertation were everyday household items that have heuristic qualities, which is especially seen with milk purchases, where 44% of the sample reported they would purchase the private label option.

## **5.23 Additional Moderating Factors**

### **5.231 Location**

It would appear that where you live has a moderating factor on your purchase intention of a product with sustainable packaging. Respondents who resided in the main metropolitan cities of New Zealand were more likely to make sustainable packaging choices. This was relevant for both sustainable peanut butter and milk brands and for Packaging Star label sustainable peanut butter, but not the sustainable milk brand. Whilst there are a number of studies looking at the demographics of sustainable packaging, there is presently a gap in the literature on the possible moderating effect of where you live, i.e. city or country and sustainable packaging choice.

### **5.232 Product Attribute: Pack Design**

Packaging design moderated the impact of sustainable packaging label (present vs. absent) on willingness to purchase the most sustainability packaged item. This was true for peanut butter, but not for milk's in the main study. Consumers who ranked the aesthetics of packaging design as a product attribute they considered important when purchasing a product, were more drawn to products which featured sustainably packaged labels in an e-commerce storefront. Yang and Zhou (2019) study also found that that green packaging contributed to "green trust". Research by Steenis et al. (2018) found that packaging can "readily give rise to thoughts about sustainability" however there comes some confusion as to the meaning of that symbol/graphic. This consumer confusion is backed Ketelsen et al (2020) review of 46 scientific articles that concluded that consumers need guidance through the many and sometimes misleading eco labelling and packaging. It may be that the online environment gives 'space' for building green stories around both packaging and product. One online shoppers study found that shoppers were less price sensitive (Harris, 2019) and another study found shoppers had longer time to make decisions (Marette et al. 2019).

This effect shows there might be room for online grocers to enhance their online shopping experience in such a way that shoppers who care about packaging design can be cued to purchase higher-margin goods with distinctive packaging design that is, coincidentally, more sustainable as well.

## **5.3 Overall Conclusion**

Overall, this study leads to the conclusion that sustainable packaging information given to a general consumer in an online shopping environment does not nudge the consumer to purchase a more sustainable household product. There is, however, a positive moderating effect in that consumer if a holds a higher level of sustainable knowledge, if they live in a main metropolitan city and/or are

interested in the package design of the product. A consumer who scores high on sustainable attitudes does not exhibit corresponding sustainable action of purchasing the sustainable packaged product. This is further evidence, tested with sustainable packaging labels in an e-commerce setting among New Zealand shoppers, of the green attitude-behaviour gap identified in the literature.

Finally, the study does not find any support via hypothesis that demographic factors of gender, those with a higher household income and/or a higher level of education are more (vs. less) likely to purchase sustainable products.

## **5.4 Practical Implications**

A recurring theme in the literature on sustainability is the attitude-behaviour gap that occurs when consumers say that they are “green” but do not follow through with the expected consumer action of purchasing more green and sustainable products (i.e., White et al., 2019).

Results of the present study confirm this identified trend of consumers with sustainable attitudes saying and acting differently with respect to sustainable packaging. The main finding was that the presence of sustainable packaging label information does not change the purchase intent of a consumer when considering household grocery items. Therefore, the clear implication for marketers, and policy makers alike, is that buying behaviour will not change by just adding a sustainable packaging label, logo, or symbol to a product or to the product’s digital display.

It may now be time for a change in approach to achieve increased demand for sustainable packaging. Manufacturers who encounter increased demand for products with sustainable packaging will be more likely to adopt such practices. Consumers alone however may not be able to build such demand, which leaves room for a policy to spur the growth of sustainable packaging. The focus could move from individual consumer decision making to the collective, macro decisions made by groups of people in societies (such as government initiatives and business-level changes to practice). This research study has shown that individual consumers overall are not going to make the jump to purchase, from just being informed about how sustainable the packaging of a grocery product is, if there are other product attributes more individually compelling such as taste, quality and price.

However, change may be more effectively driven by a combination of good governance, government and business practises, and increased consumer environmental knowledge. For instance, the ban on single-use plastic bags is an example of where first one grocer in New Zealand (in 2018) and then the New Zealand government (in 2019) instituted a ban on plastic bags at the checkout. Following this,

there was little supermarket shopper resistance, and a switch was made to reusable shopping bags. The implication for marketers is to acknowledge that the individual consumer is not going to decide their product choice based solely on sustainable packaging alone. However, sustainability may become part of the brand story that keeps their product relevant to today's consumer. As an example of this, beverage giant Coca-Cola recently moved to promote their products in recyclable plastic bottles. They further aim to make 100% of their packaging fully recyclable globally by 2025 (<https://www.coca-colacompany.com/sustainable-business/packaging-sustainability>).

This study offers some opportunities and glimmers of hope, however, to help decision makers' progress with the acceptability of sustainable packaging labelling going forward. Increasing knowledge through education is one such clear route. In this research, the moderator of sustainable knowledge did have an effect on the sustainable choice of at least one of the household products in the study, peanut butter. This shows initial evidence that increasing general sustainability knowledge of how the use of plastics damages the environment and the consequences for society as a whole, may have an effect on consumer purchase behaviour. Two other moderators were discovered in the study. The first was those consumers that were interested in packaging design were more likely to choose the product with more (vs. less) sustainable packaging. This shows some potential for using the aesthetics of distinctive elements of sustainable packaging as a selling point for shoppers. However, this result must be balanced by the response that for most consumers, packaging design was the least important product attribute on which consumers made their purchase decision. The second was location, where those consumers who lived in a main metropolitan New Zealand centre were more likely to choose product with more (vs. less) sustainable packaging. This could be because their city environment is more susceptible to packaging pollution than rural New Zealand.

In summary, this study concluded that mere exposure to sustainable packaging information does not nudge consumers to purchase more sustainably packaged household grocery products. The moderators of sustainable attitudes and demographics identified in the literature did not have a moderating effect in this study. However, there is an opportunity to have an effect on purchase intent for some products with sustainable packaging by increasing the consumers' knowledge of sustainability. The opportunity, therefore, is not a consumer attitude change, because attitudes did not have a bearing on study results and did not impact behaviour. As this and many prior studies have demonstrated, sustainable attitudes alone do not lead to behavioural choice of a more sustainable product, in this case, a sustainably packaged grocery product. However, the opportunity could be better described as a consumer knowledge behaviour journey, in which the more educated consumers are about the reasons for sustainable packaging, the more likely they are to choose sustainably packaged items.

## **5.5 Limitations of the Study**

There are several limitations that need to be acknowledged in this study, from product selection and sampling to the fact that this study's main results were collected during a nationwide lockdown in the era of COVID-19.

### **5.51 Product Selection**

The initial proposal for this study was to use one common household product (peanut butter) because it has distinguishable packaging options of plastic and more sustainable glass varieties. However, the issue of taste was considered as not every shopper likes peanut butter, so to mitigate this concern the researcher sought to test two product categories, the second being milk. Milk also had distinctive packaging options via plastic, glass and Tetra Pak, and was a common weekly household grocery purchase. However, the study yielded no results for the milk category. All results discussed in this research centre on peanut butter choices.

Within the selection of milk brands, the most sustainable option of Aunt Jean's, packaged in glass, was the first choice of only 11 respondents overall. This small sample size may have had an effect on the statistical analysis. However, it is also worth noting the next most sustainably packaged brand, Lewis Road (packaged in recyclable plastic) had a similar choice share,  $n=12$ . The brand with the most respondents was the house brand /private label brand milk Countdown,  $n=90$ . It is feasible to conclude that the category of milk may be more generic and price driven.

Although both product categories from this study (milk, peanut butter) sell over 10 million units each year in New Zealand with a population of five million, there are limitations on both products chosen for the study (Nielsen, 2020). In future, it is recommended to test a wide range of grocery products, both food and non-food.

### **5.52 Online Sample**

Whilst online grocery shopping is growing, it is not widespread and does not represent the entire household grocery shopping universe. This may have meant that the delivery of information this way to some respondents was not a familiar format in which to make household grocery decisions. Some respondents may not have recognised the visuals shown as a supermarket online e-commerce shopping page, even though it was in the supermarket brand colours, which would have aided recognition. This may have hindered /biased responses.

### **5.53 Real life sample**

All information on the online shopping page used as stimuli for the study was an accurate replication of what was currently on the supermarket's webpage in April 2020, including price and product description. The only change from the actual online shopping page for the two sustainable label

groups, was in the inclusion of information about sustainability. This may mean that there were too many variables at play for one page.

#### **5.54 Sustainable labels**

It is possible that the Australian Recycling label visual (which relies in part on the classic recycling emblem of three arrows, first introduced in 1970) has had more exposure and is generally better known and recognised by consumers. The Packaging Star label, however, is in trial stages in New Zealand via a tech company start-up, Crunch & Flourish Limited, and has not been in use before. This could have contributed to the confusion that has been identified in previous literature (Orzan et al., 2018; Nguyen et al., 2020). The sustainable packaging information was also not on the pack itself in store, but as an additional tech overlay. That overlay and digital display could be a benefit for some shoppers, whereas other shoppers might benefit more from in-store, on-package eco labelling.

#### **5.55 COVID-19**

Data and responses for this study were collected in early April 2020. This coincided with the worldwide pandemic of COVID -19. In New Zealand, this meant that the country went into full lockdown, known nationally as Level 4, for a period of 5 weeks from 25<sup>th</sup> March to 28<sup>th</sup> April 2020. This may have had an effect on responses. Though supermarkets were still open, supermarkets were subject to restrictions of numbers and newly introduced safety measures such as plastic shields separating checkout workers from shoppers. Whilst this survey was conducted online, it may or may not have been received at a time when New Zealanders felt differently about grocery shopping. Two effects are possible and at present unaccounted for in this study – first, New Zealand shoppers during coronavirus lockdowns could have been more open to and willing to experiment with online grocery shopping and have had more time and energy to respond with considered answers. On the other hand, New Zealand shoppers who participated in the study might not have felt they were answering under “normal” circumstances. The Covid-19 effects were not measured, but warrant being detailed here. This does mean a replication of the study in a time not effected by the pandemic could be warranted.

### **5.6 Direction for Future Research**

This study sought to understand if the simple act of placing sustainable packaging information in front of consumers might nudge them to purchase a sustainable product alternative. The short answer was that overall it did not. The study then looked at the possible moderators identified in the literature review. The majority of these were not supported by this research. The most interesting outcome was that education or increased knowledge about sustainability was the most powerful determinant of positive sustainable packaging decision making. This differs from just holding a positive sustainable attitude, as this study reaffirms the literature that details the sustainability attitude –behaviour gap

(White et al., 2019). Therefore, future research should look to expand on sustainability knowledge and determine how household shoppers can best acquire that knowledge. What are the ways in which marketers can help consumers increase their sustainability knowledge in effective ways to enable more day-to-day sustainable decisions?

This study sought to replicate an online grocery shopping scenario where the online category shopping page contained six differing brands. Each brand had visual, price and product description. It may be that price played too great a role in the respondent's choice. For future research, it is suggested that the variant of price is removed or that products with similar prices be tested to answer if the price of those products with versus without sustainable packaging might have an effect. Further observational study would be interesting to place in store as a form of behavioural research to discover how people physically shop a category. This would give the researcher the ability to test variables such as price and placement on shelf in a real life environment.

It is difficult to isolate taste, which is an important choice variant. Future research to isolate taste may include replicating the study over a much broader product basket and include both food and non-food items. Research into other trade-offs may be interesting to measure the opportunity cost of other product attributes.

The study relied on claimed behaviour, i.e. purchase intent as opposed to actual behaviour. A phenomenological approach is recommended to study observational actual in-store behaviour coupled with in-depth qualitative interviews to gain more insight into motivational levers for purchase (non) of products with sustainable packaging.

It would also be of help to the field of sustainable consumer behaviour to determine if sustainable packaging is an individual decision or a collective community one. The common finding of this and other studies, such as of positive sustainable attitudes not leading to sustainable purchase decision making may hold a clue that for there to be an effective shift it is not an individual purchase decision but a community conscious one, directed by the greater good definition of an authority such as government regulation. The New Zealand Government's ban on plastic bags in 2019 met with very little consumer resistance. This is a sustainable packaging solution imposed and accepted by consumers, which while taking away individual product choice, achieves an end environmental goal. It would be interesting for future research to look at the role of the individual versus a community or societal focus.

Another possible answer to nudging sustainable packaging purchasing may not be consumer driven, but rather brand driven, where the brand taps into the sustainable attitude dimension of their consumer needs and fulfils this through its marketing and product development as a good corporate citizen. As an example of this, Pump water bottles are now being advertised as made from 25% recycled plastic. It would be interesting to research the role that sustainability plays within a brand promise.



This research was conducted in New Zealand, and future research may consider a global audience, which can be easily accessed by online panels.

## **6.0 Conclusion**

As disappointing as it is to report the results of a study with no sizable main effect, the goal was to determine if activating sustainable attitudes by providing sustainable packaging information might change the choice share of a sustainably packaged grocery product. It turns out the answer is complicated, and not as simple as labelling the items that are more (vs. less) sustainably packaged. From this research project, it is clear that individual consumers may not be able to generate enough demand for sustainable packaging without regulatory and business and brand intervention.

It may be time to reframe the argument/discussion and look at achieving the end goal of waste reduction from another perspective. The individual consumer does hold positive sustainable attitudes, as seen in this and other studies, however, these positive attitudes are not translating into purchase intent. This is possibly because of the other competing product attributes such as price, quality and taste. Future research could look at the inclusion of a sustainability element in the brand story of a product and be part of what makes a brand relevant to today's consumer. Maybe it is the collective we, where the purchase decision is changed by government regulation or business practices in the supply chain that lower prices or make such sustainable options more widely and readily accessible to the market. This study hints that the issue of sustainability and the reduction of waste, in particular, is not going to be solved via an easy solution of putting an eco-label on a product. The issue of consumer uptake of sustainable packaging has many layers and complexities, and as researchers, marketers and policy makers, we need to think laterally and innovatively on how we create a supermarket full of sustainable packaged goods by not entirely relying on the individual consumer purchase decision.

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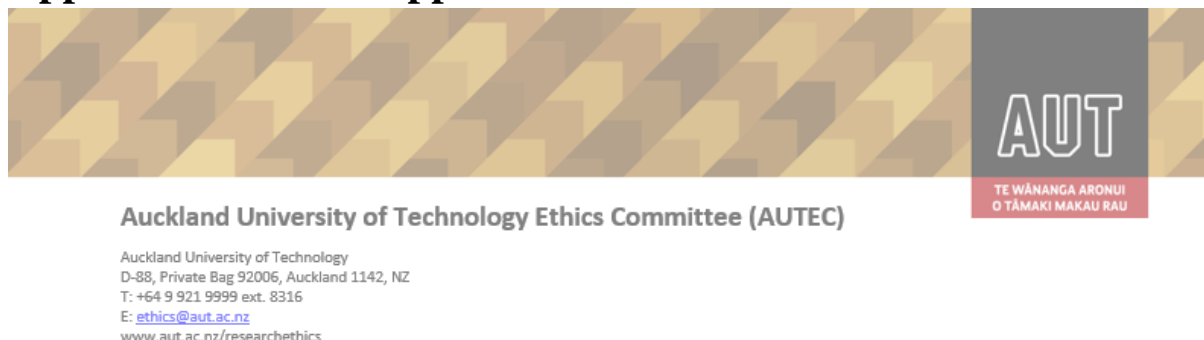
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# Appendices

## Appendix A: Ethics Approval



7 April 2020

Sommer Kapitan  
Faculty of Business Economics and Law

Dear Sommer

Re Ethics Application: **20/101 The effect of sustainable packaging on household shopper's purchase intent**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 7 April 2023.

### Standard Conditions of Approval

1. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.

AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz). The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat  
**Auckland University of Technology Ethics Committee**



## Appendix B: News Posts

### Group One: Control news

#### *Supermarket Shopping Trends*

Many New Zealanders are now **choosing to purchase their weekly groceries online**. It was reported that last year we spent \$4.8 billion, up 38% on the prior year.

By shopping online, consumers report they save time. They have the convenience of shopping when they want, any time of day or night. They also say that they can consider purchases more carefully as they can more easily compare different product information such as price, ingredients and packaging.

One of the more recent services being offered by supermarket is the choice of either having their **groceries delivered for a fee** or "pick it up" collecting from the store.



Thanks for reading the news post!

### Group Two: Packaging Star

#### *Supermarket Shopping Trends*

Many New Zealanders are now **choosing to purchase their weekly groceries online**. It was reported that last year we spent \$4.8 billion, up 38% on the prior year.

By shopping online, consumers report they save time. They have the convenience of shopping when they want, any time of day or night. They also say that they can consider purchases more carefully as they can more easily compare different product information such as price, ingredients and packaging.

To help consumers **better choose environmentally friendly goods**, stores are considering introducing a Packaging Star. Similar to the Health Foundation Tick or Energy Star, each product's packaging is analysed and awarded a number of stars (out of 5) to show the consumer how sustainable the packaging is.

The Packaging Star takes into account **the whole production cycle of the packaging**, including the material its made of, where the product is made, if the materials can be recycled and the sustainable practices of the company.

The Packaging Star symbols look like this:



Thanks for reading the news post!

### Group Three: Recycling Label news

#### *Supermarket Shopping Trends*

Many New Zealanders are now choosing to purchase their weekly groceries online. It was reported that last year we spent \$4.8 billion, up 38% on the prior year.

By shopping online, consumers report they save time. They have the convenience of shopping when they want, any time of day or night. They also say that they can consider purchases more carefully as they can more easily compare different product information such as price, ingredients and packaging.

To help consumers better choose environmental friendly goods, the Australasian Recycling label has been introduced in Australia and New Zealand. This label helps consumers understand what products can be recycled.

The labels are designed to show how effective recycling is for each part of an item's packaging.



These symbols look like this:

Thanks for reading the news post!

## Appendix C: Questionnaire

### Household Grocery Shopping Survey

Hi and welcome.

You are invited to participate in a research study that investigates current supermarket shopping trends.

Please be as honest and accurate as you can. There is no physical risk involved in this study to you. The records of this study will be kept completely private and confidential.

Please read the information sheet and click agree.



#### *Participant Information Sheet*

*Date Information Sheet Produced: 7 April 2020*

#### *Project Title: Household Grocery Shopping Survey An Invitation*

Hello, my name is Penny Munro, and I would like to invite you to participate in a study as a part of my Masters' programme. The weekly grocery shopping experience is changing with the introduction of online shopping and a broadening of purchase decision criteria to include environmental issues such as plastic waste. I would like to personally invite you to present your opinions on the subject. Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you.

**What is the purpose of this research?** The purpose of the research is to understand the effects of current supermarket shopping trends of on line shopping and environmental and sustainable shopping. Your contribution will help build a foundation for future academics to understand the current trends in grocery shopping. The research will benefit brands and the marketing industry as they will be able to better understand how household shoppers view the impact the changing grocery environment. Your contribution will benefit academic researchers in understanding current grocery trends and will assist in gaining my master qualification. The findings from this research may be used in other academic publications or presentations.

**How was I identified and why am I being invited to participate in this research?** The reason I have invited you to participate in this study is you reside in New Zealand and are responsible for the

grocery shopping in your household. The research requires 300 participants, once the criteria has been met the survey link will be closed

**How do I agree to participate in this research?** Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

**What will happen in this research?** The survey will take no longer than 10 minutes. The project requires you to answer a few questions about yourself, your shopping habits.

**What do I do if I have concerns about this research?** Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Sommer Kapitan, [sommer.kapitan@aut.ac.nz](mailto:sommer.kapitan@aut.ac.nz), and 09 021 9999 ext. 5131.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTC, Dr Carina Meares, [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz), 921 9999 ext 6038.

**Whom do I contact for further information about this research?**

Researcher Contact Details: Penny Munro, [penelope.munro@aut.ac.nz](mailto:penelope.munro@aut.ac.nz)

Project Supervisor Contact Details: Sommer Kapitan, [sommer.kapitan@aut.ac.nz](mailto:sommer.kapitan@aut.ac.nz), and 09 0219999 ext 5131

Approved by the Auckland University of Technology Ethics Committee on 7 April 2020

## Part 1: Evaluate a News Post

This study has two parts. First, we need your help to review an online shopping page for two grocery products. Then we would like to ask you some questions grocery shopping and current trends. Please read the news post on the following page.

We need to know if the news post is:

- (1) **enjoyable and informative to read**, and
- (2) **easy to understand**

## Supermarket Shopping Trends

Many New Zealanders are now **choosing to purchase their weekly groceries online**. It was reported that last year we spent \$4.8 billion, up 38% on the prior year.

By shopping online, consumers report they save time. They have the convenience of shopping when they want, any time of day or night. They also say that they can consider purchases more carefully as they can more easily compare different product information such as price, ingredients and packaging.

One of the more recent services being offered by supermarket is the choice of either having their **groceries delivered for a fee** or "pick it up" collecting from the store.



Q15 Thanks for reading the news post!

First, how enjoyable/interesting was this writing to read?

Not at all enjoyable to read 1 2 3 Neutral 4 5 6 Very enjoyable to read 7

Second, how easy was it to understand the key messages of the news post?

Very hard to understand 1 2 3 Neutral 4 5 6 Very easy to understand 7

Finally, in your own words, can you describe the key messages of the news post?

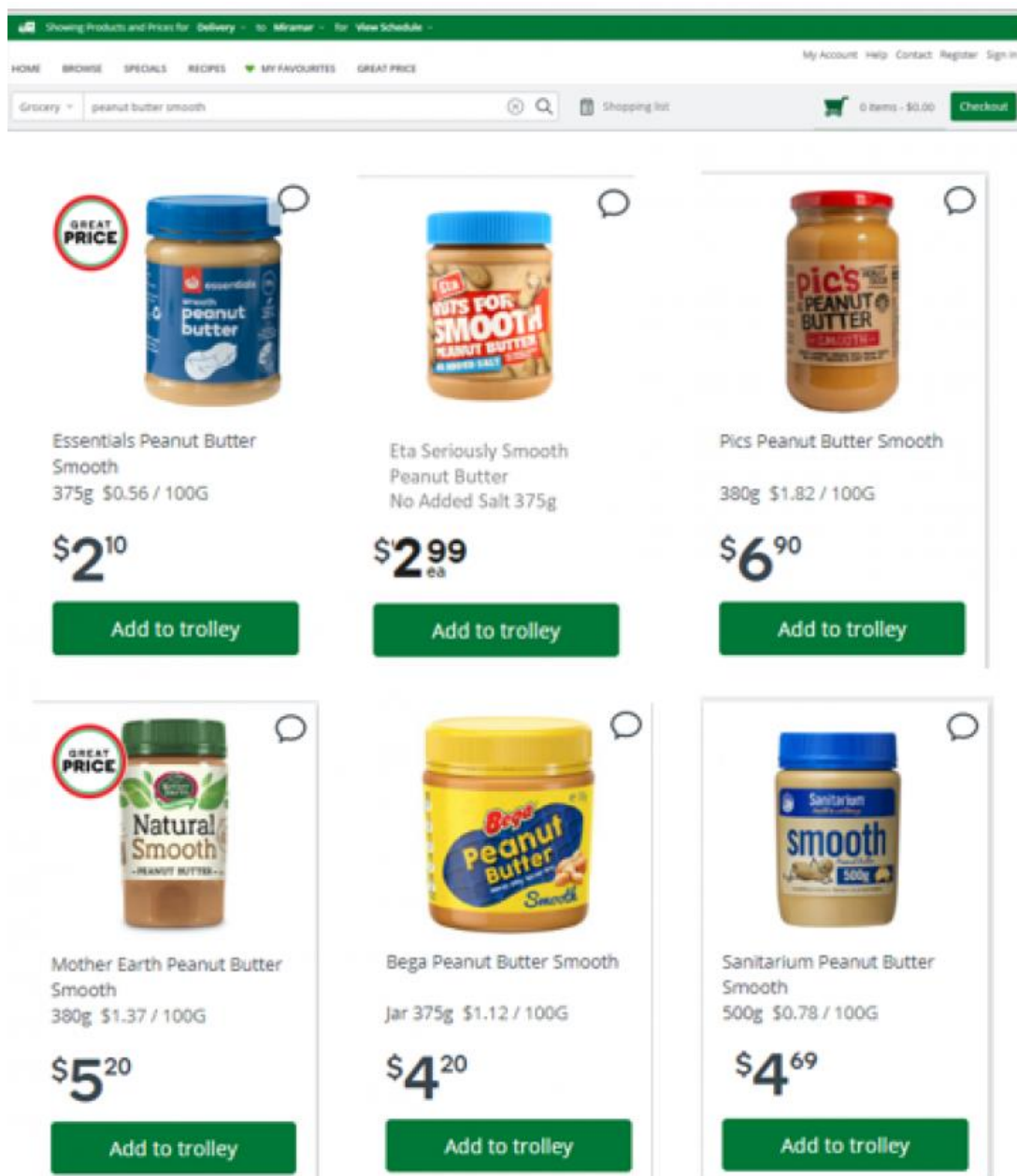
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Thanks for completing part 1!

Please proceed to the next page for part 2 to evaluate some products.

## Part 2: Evaluate some grocery products

In this next section, please view the following online shopping pages for two different product categories. You'll answer questions after viewing each shopping page. Thanks!



What is your attitude toward the store layout and display above?

Strongly dislike 1 2 3 4 5 6 strongly like 7

What is your attitude toward the store layout and display above?

Not at all attractive 1 2 3 4 5 6 Very attractive 7

What is your attitude toward the store layout and display above?

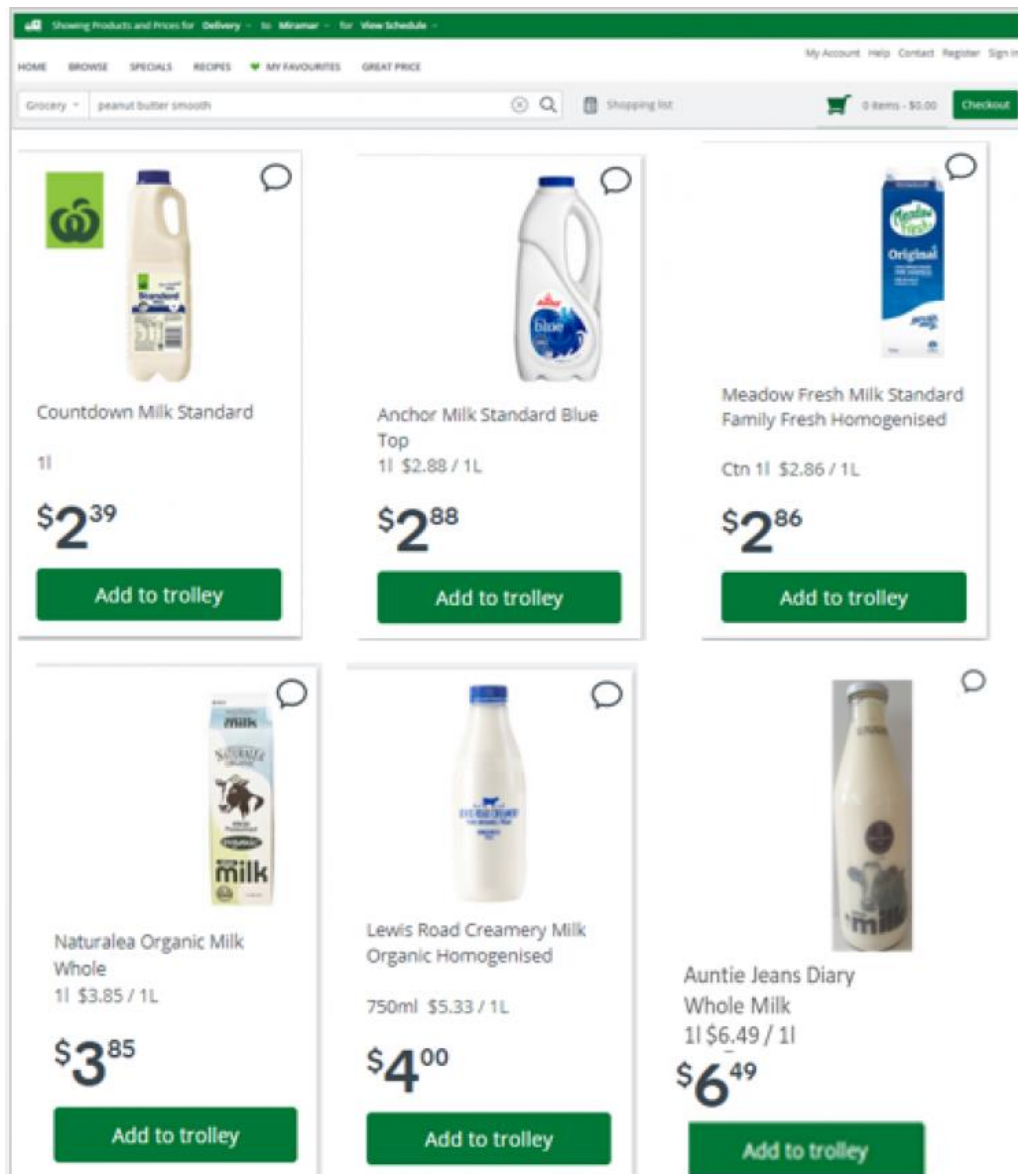
Not at all informative 1 2 3 4 5 6 very informative 7

How likely would you be to consider purchasing the peanut butters featured here?

	Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
Essentials							
Eta							
Pic's							
Mother Earth							
Bega							
Sanitarium							

Which of the peanut butter options above would you be most likely to put in your shopping basket?

- Essentials
- Eta
- Pic's
- Mother Earth
- Bega
- Sanitarium



What is your attitude toward the store layout and display above?

Strongly dislike 1 2 3 4 5 6 strongly like 7

What is your attitude toward the store layout and display above?

Not at all attractive 1 2 3 4 5 6 Very attractive 7

What is your attitude toward the store layout and display above?

Not at all informative 1 2 3 4 5 6 Very informative 7



How likely would you be to consider purchasing the milks featured here?

	Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
Countdown							
Anchor							
Meadow Fresh							
Naturalea							
Lewis Road							
Aunt Jean's							

Which of the milk options above would you be most likely to put in your shopping basket?

- Countdown
- Anchor
- Meadow Fresh
- Naturalea
- Lewis Road
- Aunt Jean's

End of Block: Control condition

Start of Block: Packaging Star news

### Part 1: Evaluate a News Post

This study has two parts. First, we need your help to review an online shopping page for two grocery products. Then we would like to ask you some questions grocery shopping and current trends.

Please read the news post on the following page.

We need to know if the news post is:

- (1) **enjoyable and informative to read**, and
- (2) **easy to understand**

Please proceed to the next page to view the news post.

### Q39 Supermarket Shopping Trends

Many New Zealanders are now **choosing to purchase their weekly groceries online**. It was reported

that last year we spent \$4.8 billion, up 38% on the prior year.

By shopping online, consumers report they save time. They have the convenience of shopping when they want, any time of day or night. They also say that they can consider purchases more carefully as they can more easily compare different product information such as price, ingredients and packaging.

To help consumers **better choose environmentally friendly goods**, stores are considering introducing a Packaging Star. Similar to the Health Foundation Tick or Energy Star, each product's packaging is analysed and awarded a number of stars (out of 5) to show the consumer how sustainable the packaging is.

The Packaging Star takes into account **the whole production cycle of the packaging**, including the material it's made of, where the product is made, if the materials can be recycled and the sustainable practices of the company.

The Packaging Star symbols look like this:



How enjoyable/interesting was this writing to read?

Not at all enjoyable to read 1 2 3 Neutral 4 5 6 Very enjoyable to read 7

How easy was it to understand the key messages of the news post?

Very hard to understand 1 2 3 Neutral 4 5 6 Very easy to understand 7

Finally, in your own words, can you describe the key messages of the news post?

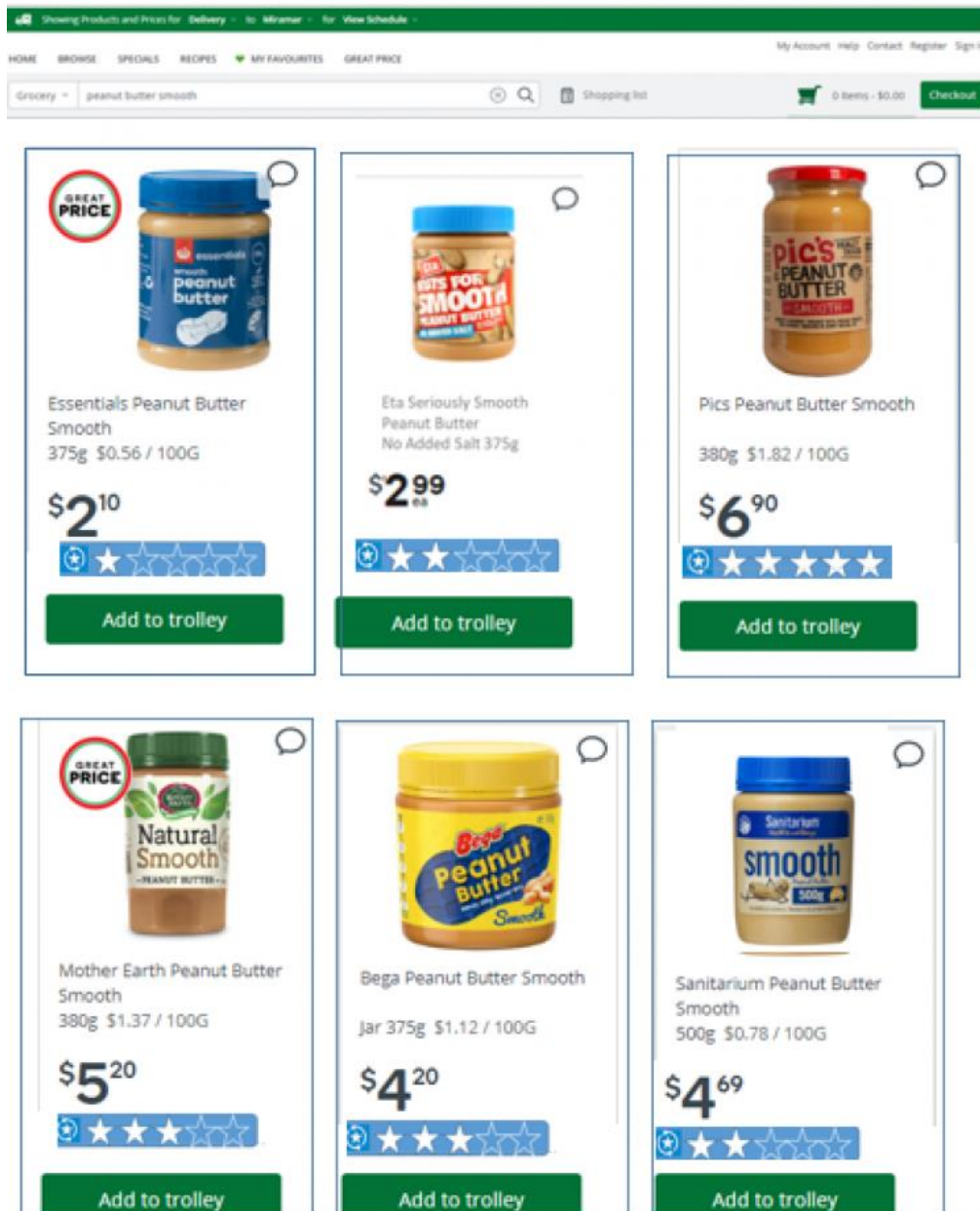
---

Please proceed to the next page for part 2 to evaluate some products.

Start of Block: Packaging Star Condition

## Part 2: Evaluate some grocery products

In this next section, please view online shopping pages for two different product categories. You'll answer questions after viewing each shopping page. Thanks!



What is your attitude toward the store layout and display above?

Strongly dislike 1 2 3 4 5 6 strongly like 7

What is your attitude toward the store layout and display above?

Not at all attractive 1 2 3 4 5 6 very attractive 7

What is your attitude toward the store layout and display above?

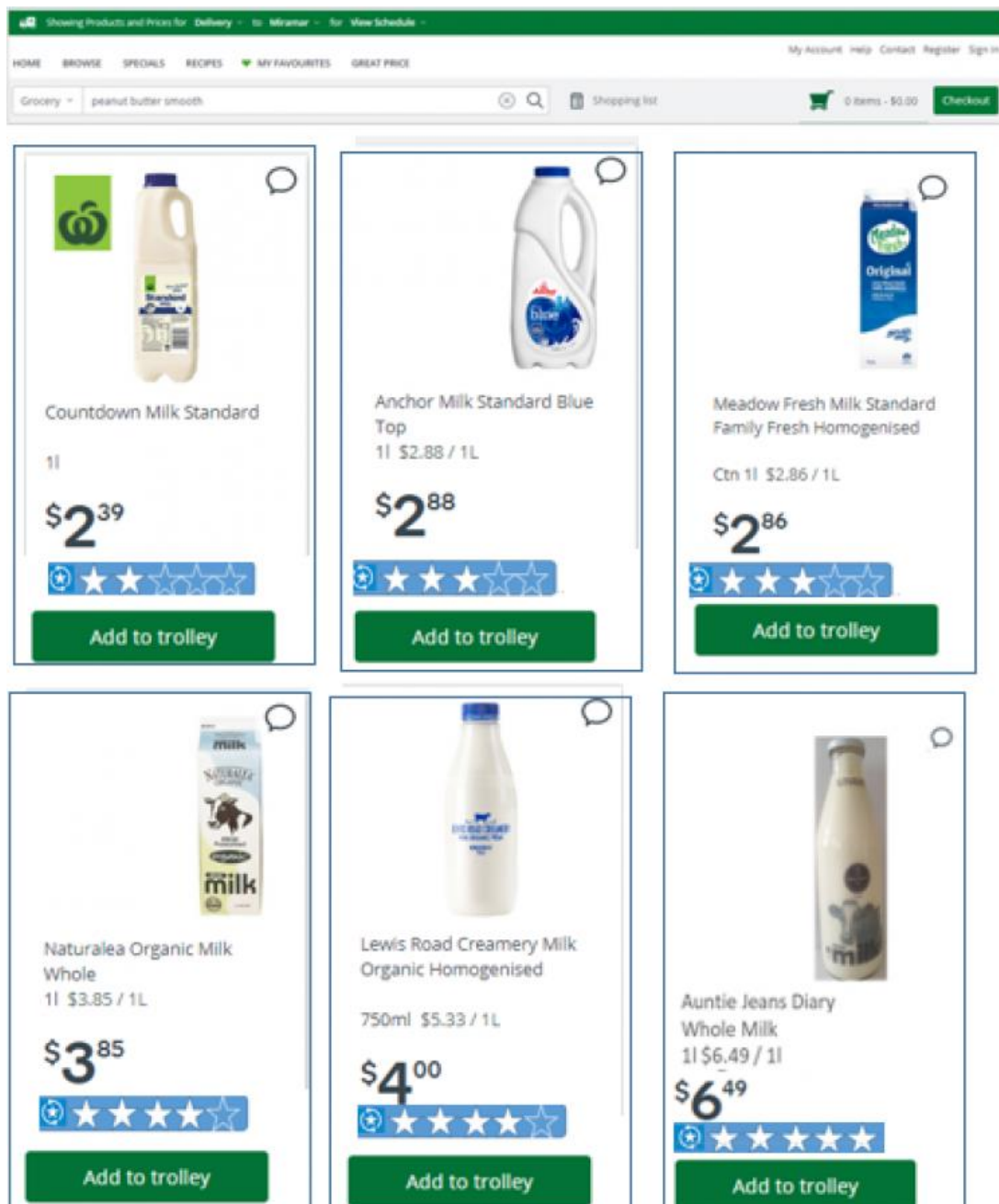
Not at all informative 1 2 3 4 5 6 Very informative 7

How likely would you be to consider purchasing the peanut butters featured here?

	Extrem ely unlikel y	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
Essentials							
Eta							
Pic's							
Mother Earth							
Bega							
Sanitarium							

Which of the peanut butter options above would you be most likely to put in your shopping basket?

- Essentials
- Eta
- Pic's
- Mother Earth
- Bega
- Sanitarium



What is your attitude toward the store layout and display above?

Strongly dislike 1 2 3 4 5 6 strongly like 7 (7)

What is your attitude toward the store layout and display above?

Not at all attractive 1 2 3 4 5 6 Very attractive 7

What is your attitude toward the store layout and display above?

Not at all informative 1 2 3 4 5 6 very informative 7

How likely would you be to consider purchasing the milks featured here?

	Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
Countdown							
Anchor							
Meadow Fresh							
Naturalea							
Lewis Road							
Aunt Jean's							

Which of the milk options above would you be most likely to put in your shopping basket?

- Countdown
- Anchor
- Meadow Fresh
- Naturalea
- Lewis Road
- Aunt Jean's

---

## Part 1: Evaluate a News Post

This study has two parts. First, we need your help to review an online shopping page for two grocery products. Then we would like to ask you some questions grocery shopping and current trends.

### Supermarket Shopping Trends

Many New Zealanders are now **choosing to purchase their weekly groceries online**. It was reported that last year we spent \$4.8 billion, up 38% on the prior year.

By shopping online, consumers report they save time. They have the convenience of shopping when they want, any time of day or night. They also say that they can consider purchases more carefully as they can more easily compare different product information such as price, ingredients and packaging.

To help consumers **better choose environmental friendly goods**, the Australasian Recycling label has been introduced in Australia and New Zealand. This label help consumers understand what products can be recycled. The labels are designed to **show how effective recycling is for each part of an item's packaging**. These symbols look like this:



Thanks for reading the news post!

First, how enjoyable/interesting was this writing to read?

Not at all enjoyable to read 1 2 3 Neutral 4 5 6 Very enjoyable to read 7

Second, how easy was it to understand the key messages of the news post?

Very hard to understand 1 2 3 neutral 4 5 6 very easy to understand 7

Q58 Finally, in your own words, can you describe the key messages of the news post?

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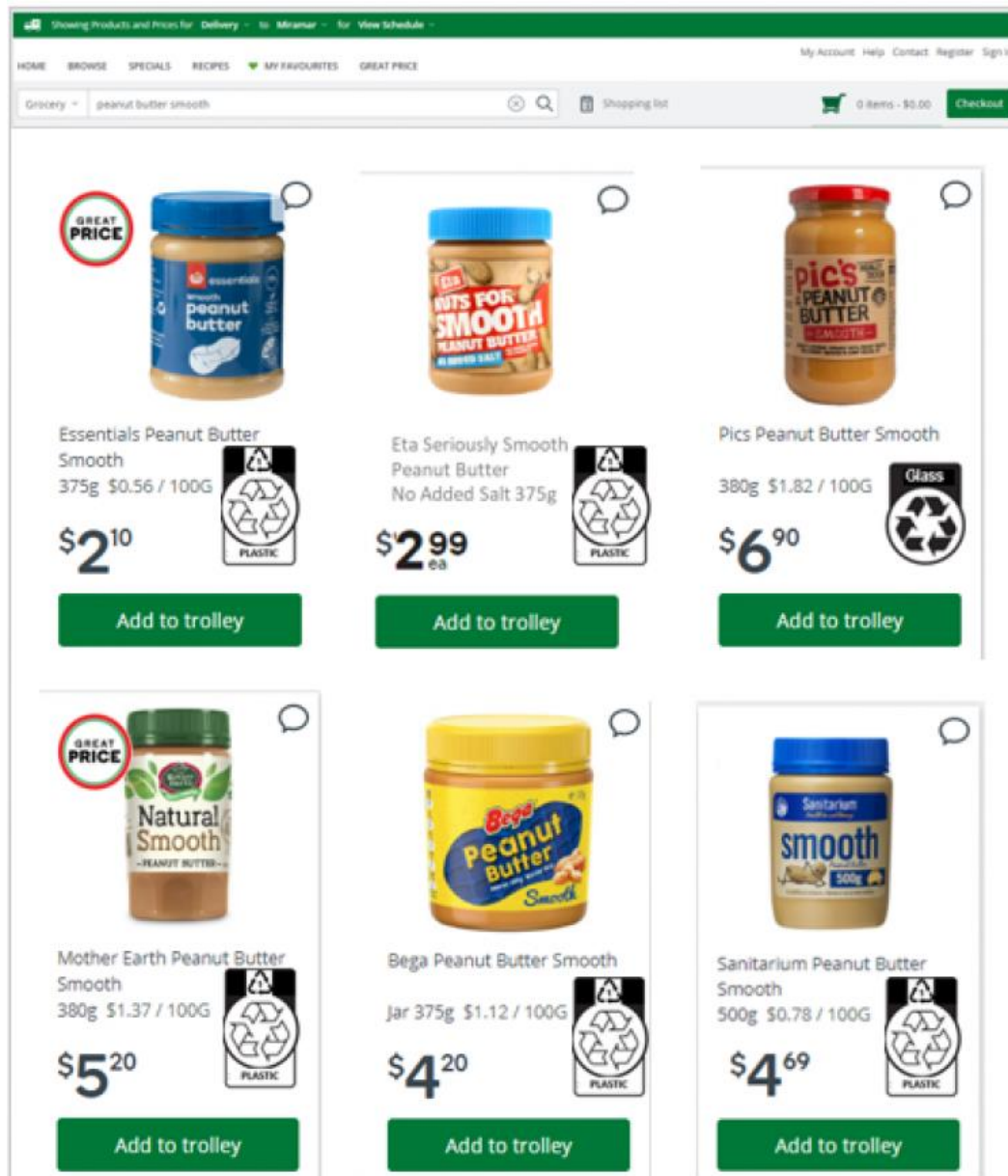


---

Please proceed to the next page for part 2 to evaluate some products.

## Part 2: Evaluate some grocery products

In this next section, please view online shopping pages for two different product categories. You'll answer questions after viewing each shopping page. Thanks!



What is your attitude toward the store layout and display above?

Strongly dislike 1 2 3 4 5 6 Strongly like 7

What is your attitude toward the store layout and display above?

Not at all attractive 1 2 3 4 5 6 Very attractive 7



What is your attitude toward the store layout and display above?

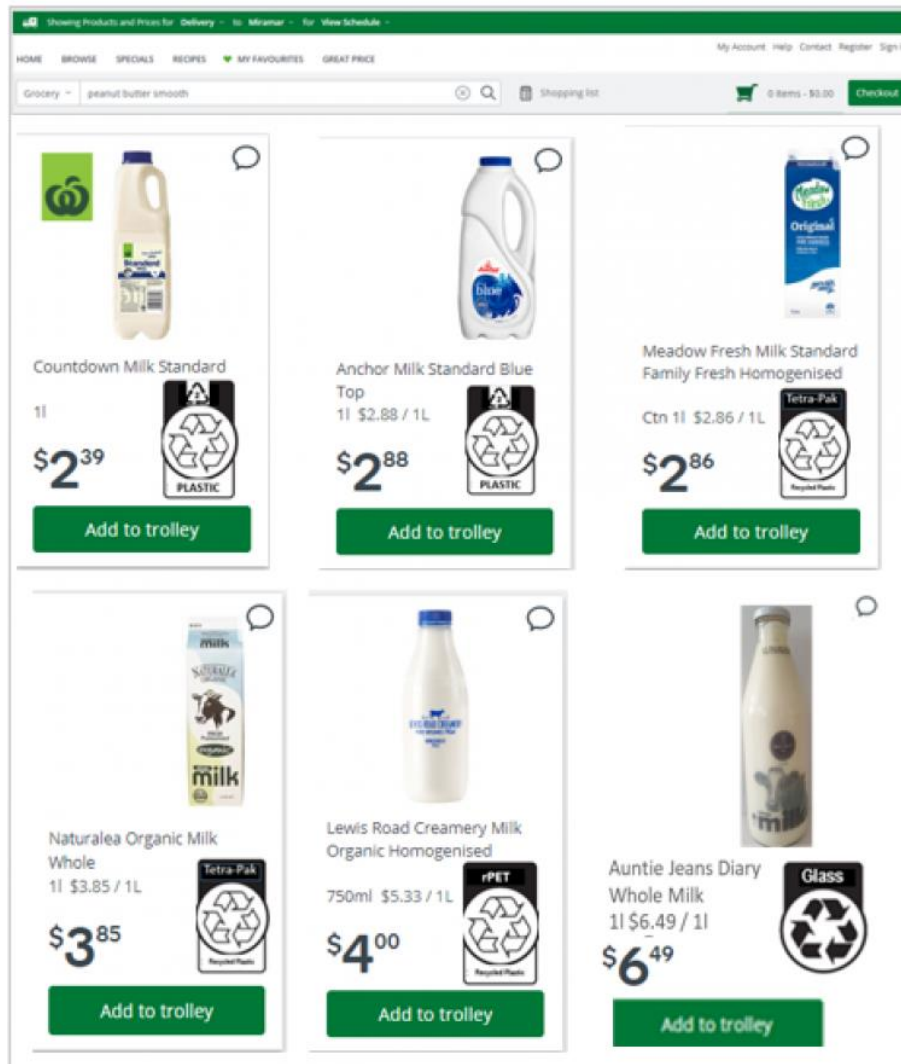
Not at all informative 1 2 3 4 5 6 Very informative 7

How likely would you be to consider purchasing the peanut butters featured here?

	Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
Essentials							
Eta							
Pic's							
Mother Earth							
Bega							
Sanitarium							

Which of the peanut butter options above would you be most likely to put in your shopping basket?

- Essentials
- Eta
- Pic's
- Mother Earth
- Bega
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What is your attitude toward the store layout and display above?

Not at all informative 1 2 3 4 5 6 Very informative 7

How likely would you be to consider purchasing the milks featured here?

	Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
Countdown							
Anchor							
Meadow Fresh							
Naturalea							
Lewis Road							
Aunt Jean's							

Which of the milk options above would you be most likely to put in your shopping basket?

- Countdown
- Anchor
- Meadow Fresh
- Naturalea
- Lewis Road
- Aunt Jean's

### Sustainability and the Environment (ALL groups answer)

Thinking about the following statements please indicate if you whether you agree or disagree.

	Completely Disagree	Disagree	Neither agree or disagree	Agree	Completely agree
I believe that in the world in which we are living, environmental quality is strongly related to my health and well-being.					
The current environmental problems are secondary in relation to the other problems that our society is facing.					
Within the scope of environmental problems, the amount and destination of solid waste is, for me, one of the most important.					
Solid waste can be a problem currently, but soon it will stop being so because of advances in science and technology					
Packaging waste is one of the main problems in the solid waste area, because there is a great volume of it					

All packaging should be environmentally friendly, even if that requires a small charge in its price

Whether the packaging is sustainable or not is irrelevant in the decision to purchase a product, the most important feature is price

Packaging must be recycled because it allows for the recovery of materials and minimum environmental impact.

All citizens should recycle their packaging because it would contribute greatly to reducing solid waste problems

I feel that it is my duty to sort waste and place it in the recycling bin so that it can be recycled.

Choosing to buy products that are contained/wrapped in sustainable packaging does not help in solving environmental problems

The most important persons to me (relatives and friends) usually buy products that are contained/wrapped in sustainable packaging.

### **Sustainability Knowledge**

What is the most common cause of pollution of streams and rivers?

1. Dumping of rubbish
2. Surface water running off backyards, streets and farms
3. Litter in streams and rivers
4. Waste dumped by factories

Ozone forms a protective layer in the earth's upper atmosphere. What does ozone protect us from?

1. Acid rain
2. Climate Change
3. Sudden changes in temperature
4. Harmful UV rays

Which of the following is the most commonly used definition of sustainable development?

1. Creating a government welfare system that ensures universal access to education, health care, and social services
2. Setting aside resources for preservation, never to be used
3. Meeting the needs of the present without compromising the ability of future generations to meet their own needs
4. Building a neighbourhood that is both socio-demographically and economically diverse

How much of New Zealand's electricity is generated from renewable resources?

1. 23%
2. 45%
3. 62%
4. 82%

Over 1 year, which of the following has the largest impact on your personal carbon footprint?

1. Raising a child
2. Owning a car
3. Airplane travel
4. Eating meat

Which sector produces the highest proportion of greenhouse gas emissions in New Zealand?

1. Aluminium manufacturing
2. Agriculture
3. Energy
4. Forestry

When thinking about buying a product what attributes are most important?

	Unimportant	Fairly Important	Indifferent	Important	Very Important
Price					
On pack promotion					
I always buy that product (loyalty)					
Locally made					
Taste					
Pack design					
Quality					
Sustainability credentials					

Household Shopper Questions

Which one statement best describes your involvement in your household's food and grocery shopping in the last month?

- I do the majority of the food and grocery shopping
- I have equal responsibility for the food and grocery shopping
- I am not responsible for the food and grocery shopping

Have you ever used online shopping to buy your household groceries?

- Yes
- No

If yes, how often do you shop for groceries on line?

- More than once a week
- At least once a week
- At least once a month
- Less often

What is the key reason you shop on line for your household groceries?

- To save time
- The ability to budget
- Limited temptation to buy on impulse
- The ability to compare products brands and prices
- Other , please specify

If you haven't shopped on line for groceries before today is it something that you would consider doing in the future?

- yes
- no
- maybe
- don't know

Thinking about the following grocery products, please indicate if you purchase them, and if so, how often?

	Don't buy	Buy Occasionally	By at least once a month	Buy at least once a week

Peanut Butter

Cheese

Milk

Cereal

Jam

What is your Gender?

- Male
- Female
- Gender Diverse
- Rather not say

How old are you?

- Under 20
- 20 - 29
- 30-39
- 40-49
- 50-59
- 60-69
- 70-79
- 80+

What is the total household income before tax?

- Up to \$20,000
- \$20,001- \$30,000
- \$30,001 - \$40,000
- \$40,001 - \$50,000
- \$50,001 - \$60,000
- \$60,001 - \$80,000
- \$80,001 - \$100,000
- \$100,001 - \$120,000
- \$120,001 - \$150,000
- \$150,001 - \$200,000
- \$200,001 +
- Don't Know
- Rather not say

Which of the following describes your ethnic origin?

- New Zealand European
- New Zealand Maori
- Pacifica

- Chinese
- Of European Descent
- African
- Asian
- Other

How many people live permanently in your household?

- One
- Two
- Three
- Four
- Five
- Six
- Six or more

Are there any children aged under 16 living in your household?

- yes
- no

If yes how many under 16?

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What is the last level you completed your formal education?

- Primary
- Secondary - no NCEA or School Certificate
- NCEA Level 1 or School Certificate
- NCEA Level 2 or U.E/6th form certificate
- Technical / Trade Qualification
- University Graduate
- Post Graduate Studies
- Other Graduate

Where do you live?

- Major Metropolitan Center (Auckland, Wellington, Christchurch, Dunedin)
- Major Provincial Center (Hamilton, Tauranga, Palmerston North, New Plymouth, Nelson, Invercargill)



- Provincial Town
- Semi-Rural
- Rural

Thank you for your time, it is very much appreciated.