



Understanding the short-term impact of product discontinuations on consumer response behaviour

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Attestation of authorship

I 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.

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Abstract

Retailers as well as manufacturers can suffer substantial revenue losses as a result of product discontinuations. The magnitude of this sales loss is dependent on how the consumer responds, which in turn is affected by various product and consumer factors. To date empirical research on consumer responses to product unavailability has focussed on out-of-stocks and to a lesser extent permanent assortment reductions implemented by the retailer. A critical area that has not been explored to date is that of examining consumer responses to manufacturer product discontinuations and how those responses will affect product category sales.

Drawing on insights from past empirical research on product unavailability, this original research investigates the short-term impact of three different types of product discontinuation on the shoppers' switching behaviour and on sales within the product category. The research also examines whether varying purchase levels of the preferred discontinued product moderates the switching behaviour. Several propositions are developed and tested using scanner data collected from Flybuys' customers across three product categories and 48 New World stores within the Auckland region.

Results from the study indicate that although the dominant switching behaviour to a preferred-product discontinuation is to substitute within the product category, both the retailer and the manufacturer experience short-term sales losses. Findings suggest that prior purchasers of the discontinued product do not spend as much in the product category in the three month period following the discontinuation. Furthermore; shoppers are more likely to substitute with products that have similar attributes in terms of flavour, form or benefit and this switching behaviour is moderated by varying purchase levels of the discontinued product.

The findings suggest that retailers should be cautious in assuming that shoppers will continue to spend the same amount on a substitute item after the discontinuation and should ensure there are a number of acceptable alternatives available on shelf. The results further suggest that the retailer may wish to explicitly signal the products with similar attributes to heavy purchasers of the discontinued product to help mitigate sales losses. By empirically investigating consumers' responses to preferred-product discontinuations this study adds to the body of knowledge in the area of consumer

responses to product unavailability. Finally, a number of limitations are discussed and suggestions made for future research.

Chapter 1: Introduction

1.1 Research motivation

Walking into a supermarket and discovering that a favourite or regular product is not on the shelf is a common occurrence for most consumers (Sloot & Verhoef, 2008; Sloot, Verhoef, & Franses, 2005). According to supermarket shopping studies, product assortment unavailability is one of the most significant annoyances for supermarket shoppers (EFMI & CBL, 2005) and leads to lower levels of customer satisfaction (Fitzsimons, 2000).

Product unavailability, defined as products being unavailable to consumers from the product category, can be temporary or permanent in nature. When a product becomes temporarily unavailable or out-of stock the consumer generally becomes frustrated as new purchase plan decisions and choices have to be made (Schary & Christopher, 1979). Research suggests that consumers react negatively to an out-of-stock in proportion to the consumer's personal commitment to the out-of-stock product item (Fitzsimons, 2000). The resulting sales loss for industry is estimated to be around AUD\$3.2 billion per annum across Australia and New Zealand (Riggans, 2008).

Temporary product assortment unavailability, commonly known as an out-of-stock, refers to a situation whereby a product is not available to the consumer for a short period of time e.g. a few hours or days. The retailer often signals the out-of-stock to the consumer by means of an on shelf sign. Past research has shown that the consumers' response to an out-of-stock can take various forms including switching to another product within the product category, postponing the purchase for another time, switching store or even stop purchasing (also known as cancellation of the purchase) from the product category altogether (Campo, Gijsbrechts, & Nisol, 2000; Corstjens & Corstjens, 1999; Emmelhainz, Stock, & Emmelhainz, 1991; Peckham, 1963; Schary & Christopher, 1979; Verbeke, Farris, & Thurik, 1998; Walter & Grabner, 1975).

Furthermore, research has found evidence to suggest that the adverse effect on retailers' sales is dependent on the drivers of the different responses namely product, consumer, store and situational –related factors (Broniarczyk, Hoyer, & McAlister, 1998; Campo

& Gijsbrechts, 2005; Campo, Gijsbrechts, & Nisol, 2003; Emmelhainz et al., 1991; Sloot et al., 2005; Verbeke et al., 1998; Zinn & Liu, 2001).

In situations such as a product assortment reduction, a product delisting or a product discontinuation, the unavailability of the product is of a more permanent nature and the consumer's response is likely to be more intense as options such as postponing the purchase or temporarily switching to a different product are no longer available. Understanding consumers' behavioural responses to permanent product unavailability and their potential effect on sales as well as moderators of the switching response will provide valuable insights to both supermarket retailers and manufacturers.

Permanent product unavailability research discusses two main forms of product unavailability: permanent assortment reduction and product delisting. Permanent assortment reductions and product or brand delisting refers to situations where product items or all items of a single brand are removed by the retailer for several months or even longer (Sloot & Verhoef, 2008). Permanent assortment reductions and product delistings are becoming common practice for several reasons. Firstly, the manufacturer, when introducing new product offerings to the retailer is confronted by the "one-in-one-out" decision. Considering that Australian consumer goods manufacturers each introduce on average, over 50 new products a year (ECR Australasia & Accenture, 2006), this "one-in-one-out" policy results in many forced product delisting annually. Secondly, the rise of supermarket private labels (Nielsen, 2008) to win over the all-important "value for money" customer has meant product or even brand delistings of manufacturers' branded lines. Thirdly, retailers are under pressure to optimise their assortments and will drop lines that are not meeting certain sales levels (Corstjens & Corstjens, 1999; Sloot, Fok, & Verhoef, 2006).

A challenging task for today's retailers is to create customer satisfaction by offering a wide assortment of products while at the same time reducing the number of stock keeping units (SKUs) in order to minimise supply change costs and avoid out-of-stocks. Product unavailability, whether it be out-of-stocks, permanent assortment reductions or product delistings, leads to customer dissatisfaction, store disloyalty (Sloot et al., 2006; Zinn & Liu, 2001) and sales losses for the retailer (Campo et al., 2000; Emmelhainz et al., 1991; Sloot et al., 2006; Sloot & Verhoef, 2008).

This study focuses on the special case of a product delisting initiated by the manufacturer, commonly known as a product discontinuation. Unlike the out-of-stock,

permanent assortment reduction or product/brand delisting situations the consumer's switching response of switching to another store or postponing the purchase to a later date is no longer an option and the retailer plays little to no role in the decision to remove the product from their store. Consumers often react extremely negatively towards both the manufacturer and the retailer as the product or brand is no longer available nationally (Vass, 2010).

In the short term consumers facing a product discontinuation commonly decide to switch to an alternative product within the product category, this response is known as substitution. The other, less frequent response is that of "cancelling" the purchase where the consumer stops buying from the product category altogether and does not buy a substitute. The common view held is that if a consumer responds by switching to another brand then it is the manufacturer, and not the retailer, that is negatively affected. However, if consumers switch to a cheaper alternative substitute, purchase less of the substitute (Campo et al., 2003) or stop purchasing from the product category, the retailers' sales could be severely adversely affected.

Understanding the risk of potential responses when consumers are faced with a product item or brand discontinuation and therefore a reduced product assortment is important to retailers wishing to build store loyalty and increase sales. Furthermore, an improved understanding of consumer responses and their underlying driving factors might provide retailers with information to make appropriate product assortment changes before the product discontinuation takes place and thus reduce category sales losses.

There is a scarcity of research on consumers' responses to permanent product unavailability such as permanent assortment reductions and even less literature on product or brand delisting. In the special case of a product delisting by a manufacturer, defined as a product discontinuation in this research, the literature appears to be non-existent. In contrast to this paucity of research in the area of permanent product unavailability, considerable attention has been paid to temporary product unavailability. Since the 60's (Peckham, 1963) there has been much interest in the marketing literature on consumers responses to out-of-stocks and a few of these studies have indicated a link between out-of-stock responses and consumer responses to permanent unavailability responses (Campo, Gijbrecchts, & Nisol, 2004; Sloot et al., 2005).

This thesis aims to start closing the gap in the research by exploring consumer responses to a product discontinuation in terms of switching behaviour, the effect on

product category sales and the underlying factors that moderate the switching behaviour.

1.2 Research problem

The problem this research examines is whether the consumer response to a preferred-product discontinuation will have an adverse impact on retailers' sales in the short-term (defined as three months), and if consumers respond differently to different types of product discontinuations. Thus, three types of product discontinuations, each in a different product category are examined by analysing the switching behaviour of three cohorts of shoppers that have faced a preferred-product discontinuation. The study also examines whether shoppers switch to products with similar attributes to the discontinued product and finally, if the shoppers' response to their preferred-product discontinuation is affected by varying purchase levels of the discontinued product.

The three different types of product discontinuations are as follows:

- No manufacturer replacement product
- A rebranded replacement by the manufacturer
- A new product replacement by the manufacturer

The primary objective of this research is to explore the relationship between the preferred-product discontinuation and consumer purchase behaviour within a product category. The research objectives developed from the research problem are:

- To determine if the dominant switching response to a preferred-product discontinuation is to substitute within the product category.
- To determine the kind of impact that the shoppers' switching behaviour has on product category sales at the supermarket retail level in the short-term.
- To examine the switching behaviour patterns of shoppers faced with a preferred-product discontinuation and determine if shoppers are more likely to switch to products with similar product attributes to those of the discontinued product than switch to products with dissimilar attributes.

- To determine if varying purchase levels of the discontinued product has a moderating effect on the switching behaviour patterns.
- To assess whether or not the different types of product discontinuation selected in this study have the same impact on the shoppers' response to the product discontinuation in terms of both switching behaviour and sales.

The research problem will be explored through scanner data gathered from purchases made by Flybuys card users, at New World supermarkets within the Auckland region. The following three product discontinuations are analysed:

Anlene milk 2L: Discontinued in November 2009

Kellogg's Cocoa Crispix cereal 340g: Discontinued in October 2009

Bluebird CC's Tasty Cheese 190g: Discontinued in March 2010

1.3 Contributions of the thesis

This study intends to make both academic and managerial contributions to the marketing discipline.

1.3.1 Academic contributions

The thesis aims to contribute to the literature in several ways. Firstly, the review of the extant product unavailability literature reveals gaps in the body of knowledge regarding consumer responses to permanent product unavailability and more specifically in the area of a product discontinuation. Therefore, the evidence resulting from this study aims to start closing the gap in the research by exploring consumer responses to a product discontinuation and the impact of the discontinuation on product category sales, switching behaviour and the underlying factors that moderate this switching behaviour.

Secondly, most studies researching consumers' responses to permanent product unavailability use hypothetical product delisting scenarios and report on consumers' response intentions only. This study uses real-life product discontinuations and reports on actual purchasing behaviour by individual shoppers in the form of dollar sales thus adding to the external validity of the findings.

Thirdly, the study makes contributions to the marketing and retailing literature by relating research on out-of-stocks, product assortment reductions and brand delisting to the switching behaviour of consumers facing a product discontinuation.

1.3.2 Managerial contributions

As discussed earlier in this chapter, consumers become irritated and annoyed when faced with product unavailability. The consumer's response to product unavailability can lead to category sales losses for both the manufacturer and the retailer. Thus an improved understanding of consumer responses to a product discontinuation and the effect of those responses on category sales is vital. Providing retailers with information to make product assortment changes before and shortly after the product discontinuation takes place might help mitigate sale losses. Insights on the impact of a product discontinuation on manufacturer's sales losses are also of benefit to manufactures' making product discontinuation decisions.

1.4 Structure of the thesis

The thesis follows the structure outlined in Figure 1.1, and comprises six chapters.

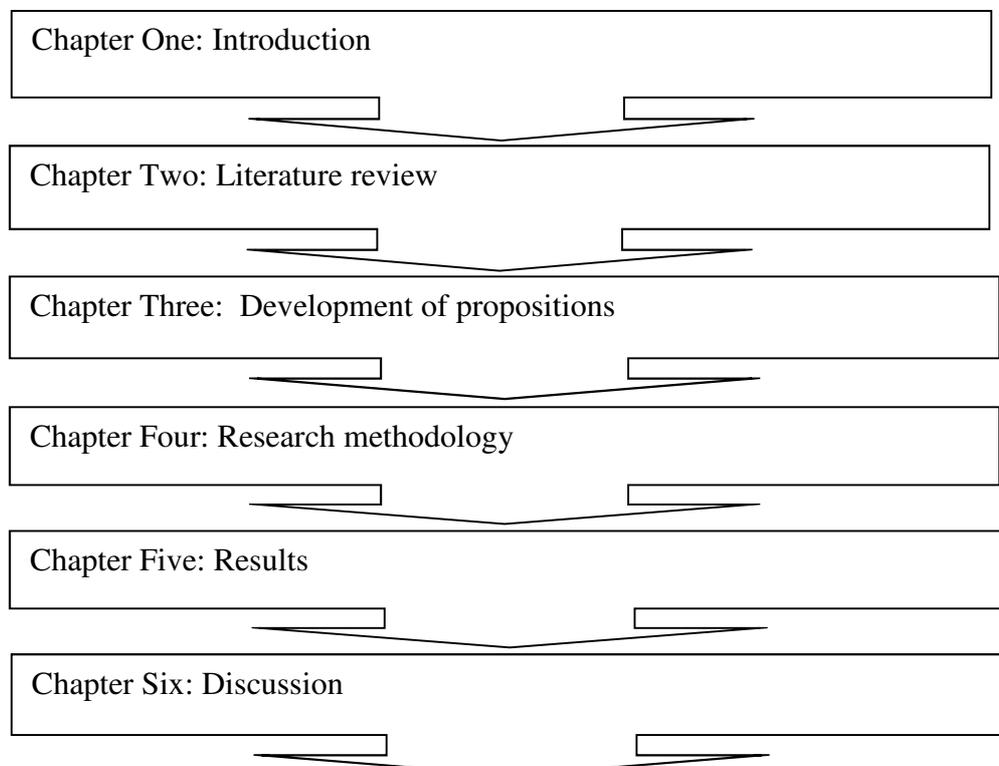


Figure 1-1 Structure of the thesis

Chapter two begins broadly with an overview of the prior research findings on consumers' responses to temporary product unavailability. Then the literature related to product assortment perceptions and a number of choice theories such as theories of regularity, psychological reactance theory and context theory are briefly introduced to provide a theoretical backdrop to the permanent product unavailability research. Thereafter, the major studies and findings of the permanent product unavailability literature in the form of permanent assortment reductions and product delistings are presented as these findings offer valuable insights for this research and aid in the development of the propositions that are discussed in the next chapter.

Based on the review of the literature and the major findings of the product unavailability literature Chapter three presents the propositions which this study will investigate.

Chapter four discusses in more detail the research problem, objectives and questions this thesis will examine. Next the research design, data collection and research methodology employed to explore and analyse the data is described and justified.

Chapter five presents the results of the statistical analysis of the data from the three separate studies. Each study represents a different type of product discontinuation in a different product category.

Finally, Chapter six discusses the results of the research and the implications for both retailers and manufacturers that arise from the findings. The limitations of the study are addressed and recommendations for future research are made.

1.5 Chapter summary

This chapter has provided an introduction to the topic of this thesis and the motivations for conducting this research. A brief overview of the research problem and objectives followed. Lastly the contributions of the thesis were described and a structure of the thesis outlined. In the next chapter key studies in the areas of temporary and permanent product unavailability together with the literature on product assortment perceptions and choice theory is reviewed.

Chapter 2: Literature review

Sue walks in to her local New World supermarket to purchase her weekly groceries. Standing in front of the milk fridge she places two bottles of regular blue top milk for her family in her trolley before realising that one of her regular milk purchases, Anlene 2L milk, is no longer in its usual position on the shelf. Sue approaches a New World staff member to enquire about the unavailability of the Anlene milk. Sue discovers that the Anlene milk range is being discontinued nationally and feeling quite irritated by this news turns back to the fridge to try and decide what to do.

2.1 Introduction and overview

The scenario above illustrates a situation that consumers face from time to time as they go about their grocery shop. The purpose of this thesis is to gain a deeper understanding of how consumers respond in the short term (defined as a three month period), to a product discontinuation in terms of the alternative choices that they make and the effect these choices have at a sales category level. Three different types of product discontinuation are examined, each in a different product category. Moreover, this study attempts to determine if the effect on sales is moderated by varying purchase levels of the discontinued product. The purpose of the literature review that follows is threefold:

Firstly, due to the paucity of research in the literature regarding consumer responses to product discontinuations, the concept of consumers' responses to temporary unavailability of products, more commonly referred to as out-of-stocks, will be introduced and discussed. Although this study is concerned with consumers' responses to permanent unavailability of a product (a product discontinuation) the numerous studies conducted within the related area of out-of-stocks will provide valuable insights to this research. More specifically, the out-of stock studies provide guidance as to the different types of consumer responses, the drivers and moderators of these responses as well as the implications for retailers and manufacturers.

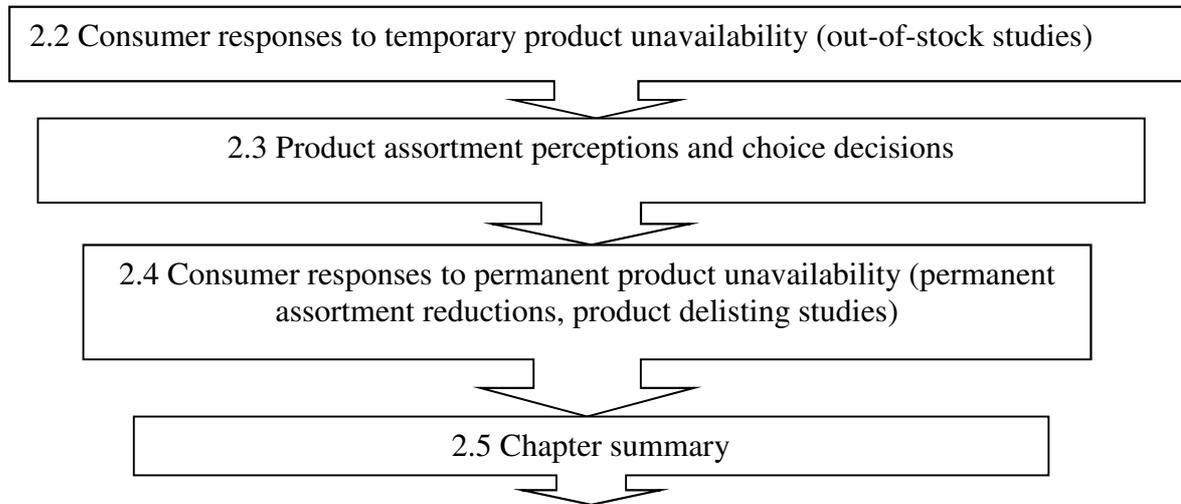
Secondly, the literature review focuses on studies examining the perceptions of product assortments and how consumers make choices within the product assortment. Aspects of choice theory, including context theory, that relate to the influence of the choice set on consumer decision making are briefly introduced. These theories are discussed to

help guide and justify the substitution behaviour patterns of consumers when faced with choice modification and aid in developing the propositions specifically related to substitution behaviour. This section serves as a background to the permanent product unavailability research which is broadly classified into permanent assortment reduction and product delisting.

As a product discontinuation is both a form of a product assortment reduction (Sloot & Verhoef, 2008) and a product delisting, the third section of the literature review discusses prior studies within these two areas of the research literature. The findings of these prior studies in permanent unavailability literature will provide major building blocks for the development of the propositions of this thesis. The main types of consumer response options, for a consumer facing a product assortment reduction or product delisting, are more similar in nature to a consumer facing a product discontinuation than the response options a consumer has in an out-of-stock situation. When the consumer faces an out-of-stock situation, the consumer has the response option of postponing the purchase until the next shopping trip or going to another shop if they don't wish to substitute within the product category. In the case of a permanent assortment reduction or a product delisting, the product will no longer be available in that particular store or supermarket chain on a permanent basis, so the consumer will no longer have the response option of postponing the purchase until the next shopping occasion in that store and may have to seek out the product in another supermarket chain if they don't wish to substitute. The permanent assortment reduction and product delisting situations are thus more similar, in terms of the nature of the consumer response, to a product discontinuation situation where the consumer has no longer the option of postponement.

Using the above reasoning it is expected that the impact of the consumer response to a permanent assortment reduction and brand delisting on retailers and manufacturers, will be pertinent to the research at hand. Unfortunately there are fewer studies within the areas of consumers' responses to permanent assortment reductions and product delisting than there are in the out-of-stock literature and none that directly relate to the objectives of this research. An outline of the chapter is presented in Figure 2.1 below.

Figure 2-1 Chapter outline



2.2 Consumer response to temporary product unavailability

Product unavailability can be broadly categorised as *temporary* unavailability in the form of out-of- stocks and *permanent* unavailability in the form of permanent assortment reductions and product delisting. This section discusses the major findings of studies that examine consumers’ responses to temporary out-of-stocks in the following three areas: defining and measuring the choice responses to an out-of-stock, the drivers of the consumers’ response and factors that moderate the response, and lastly, the implications of the out-of-stock response for the retailer.

2.2.1 Behavioural consumer responses to an out-of-stock

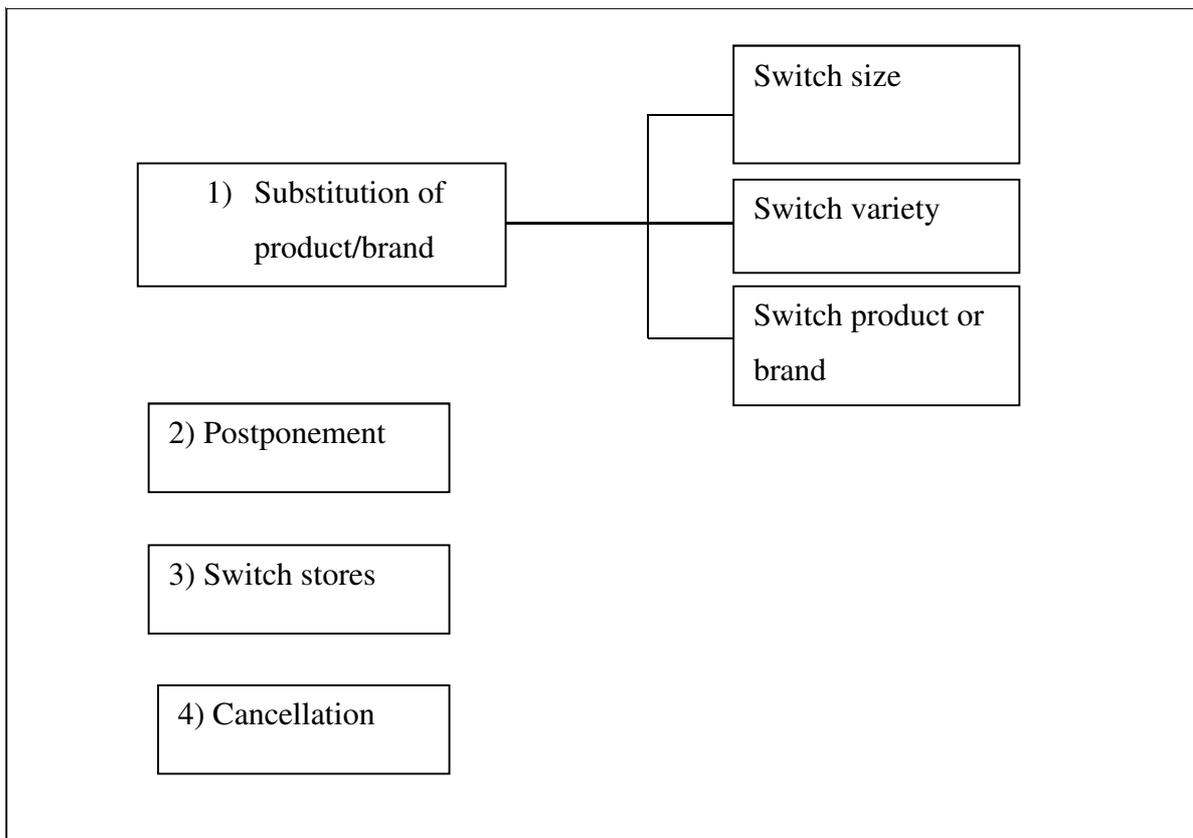
From as early as the 1960’s marketing researchers were studying the nature and impact of an out-of-stock on retailers and manufacturers’ sales and profits. These earlier studies were largely empirical in nature and tended to concentrate on defining and measuring choice responses to an out-of-stock using a questionnaire (Peckham, 1963; Schary & Christopher, 1979; Walter & Grabner, 1975). Any attempt to explain out-of-stock responses was mainly descriptive in nature and very little direct evidence of the impact of an out-of-stock existed.

One of the impacts of an out-of-stock is that of sales loss to both the retailer and the manufacturer. The magnitude of sales losses to the retailer or manufacturer varies

depending on the type of consumer response to the out-of-stock. For example, if the consumer facing an out-of-stock situation merely purchased a substitute product in the store the impact on the retailer would be less than if the consumer went and purchased their preferred product in another store. For the manufacturer, the losses of substitution within the category could be quite severe if the consumer switches to a competitor's product instead of one of the manufacturer's brands. Much of the focus in earlier studies was thus placed on establishing types of response options were and their prevalence.

The number of response options to an out-of-stock of a product item or brand differs depending on the study at hand. A diagram of all the response options identified by the more notable studies (Campo et al., 2000; Corstjens & Corstjens, 1999; Emmelhainz et al., 1991; Schary & Christopher, 1979; Verbeke et al., 1998; Walter & Grabner, 1975) is provided in Figure 2.2, followed by a description of these response options.

Figure 2-2 Diagram of consumer response options to an out-of-stock



1) *Substitution of product item /brand*

Many studies distinguish between switching to another brand (at a lower, the same or higher price) and switching to another product item (size or variety) within the brand (Emmelhainz et al., 1991; Schary & Christopher, 1979; Sloot et al., 2005; Walter & Grabner, 1975). For example, if a consumer could not purchase their favourite family cereal, Kellogg's Coco Pops 700g, they may decide to substitute in one of the following ways:

- a) Purchase Kellogg's Coco Pops 340g (switch pack size)
- b) Purchase Kellogg's Coco Pops Coco Rocks 700g (switch variety)
- c) Purchase Hubbards' Big Bugs N Mud 700g (switch brands)

The impact in terms of sales losses is obviously far greater for the manufacturer than the retailer if the consumer decides on switching brands, however, if the consumer selects a lower priced substitute , buys smaller quantities of the substitute product or both then the retailer suffers a sales loss too. The actual substitution response option depends upon a number of factors including the product category itself. Certain product categories do not offer the consumer the option of changing to a different pack size or variety within the brand.

2) *Postpone or" defer" the purchase*

If the consumer is able to wait a few days for the preferred product item then the consumer may postpone (also called "defer") the purchase until their next shopping trip (Corstjens & Corstjens, 1999) . This response would have the least effect on the sales losses of the retailer and manufacturer.

3) *Switch stores in order to obtain the preferred product elsewhere*

The consumer may decide to purchase the preferred item from another store if they are in urgent need of the product (Emmelhainz et al., 1991). This response option , although not as frequent as *substitution of the product*, could have a far bigger impact on the retailer's sales losses if the consumer decides to purchase more than the out-of-stock item in the alternative store or permanently switches store (Campo et al., 2000).

4) *Cancellation of the purchase altogether* (stop or drop the purchase from the product category)

If the consumer decides against purchasing a product in the product category altogether this will impact on the sales of both the retailer and the manufacturer (Corstjens & Corstjens, 1999). The out-of-stock of a preferred product item may, however, drive the consumer to purchase an item in a different product category. Switching to a different product category, is however, a very rare response (Sloot et al., 2005).

It is difficult to directly compare the consumer response results from the out-of-stock studies due to differences in research goals, experimental design, product categories examined and even the of number of response options considered. For example, the Verbeke et al. (1998) study only considered the response options of brand switch, store switch and postponement. The Campo et al. (2000) study investigated consumer responses to an out-of-stock situation within two product categories and found response results were product category dependent. As can be seen in Table 2.1, the most common response to an out-of-stock situation within the cereal product category was “*postponement*” whereas the most common response within the margarine category was “*substitution of a product/brand*”. Although there is a lack of convergence in the results of the consumer response options amongst many of the out-of-stock studies, some generalities can be drawn and these are depicted in Table 2.1 and discussed below.

Table 2-1: Consumer responses (Substitution, Switch stores or Postpone) to an out-of-stock (%)

	Walter and Grabner (1975)	Schary and Christopher (1979)	Emmelhainz et al. (1991)	Zinn and Liu (2001)	Campo et al. (2000)		Verbeke et al. (1998)
					Marg.	Cereal	
Substitute product	83%	22%	73%	62%	66%	44%	47%
Switch store/Cancel	14%	67%	14%	23%	4%	7%	34%
Postpone purchase	2.5%	11%	13%	15%	30%	49%	19%

Firstly, substitution in terms of switching to another brand or product item within the brand is the most probable response ((Emmelhainz et al., 1991; Verbeke et al., 1998; Walter & Grabner, 1975; Zinn & Liu, 2001). In these scenarios it was indicated that manufacturers would sustain substantial sales losses during out-of-stock situations relative to the retailer. These findings were borne out by an out-of-stock study by Straughn (1991) who pioneered the use of scanner data and estimated the effects on brand share for Candy bars. In the short-term, defined as a month or less, the effect of the out-of-stock was not significant but in the long-term brand shares declined on average by 10%.

Secondly, switching stores is the next most common response to an out-of-stock, followed by postponing and cancellation of the purchase (Emmelhainz et al., 1991; Verbeke et al., 1998; Walter & Grabner, 1975; Zinn & Liu, 2001). The switch store, postpone or cancel purchase responses indicate a severe negative impact on the sales of the retailer in the Schary and Christopher (1979) and Verbeke et al. (1998) studies. In fact, according to Corsten and Gruen (2004) an out-of-stock situation can translate to a 4% sales loss for the retailer.

Later research conducted by Sloot et al. (2005), which examined the impact of brand equity and the hedonic levels of products on consumer out-of-stock responses, confirmed findings of the earlier out-of-stock studies in that brand substitution was found to be the most prevalent response at 34%. Interestingly the study found that postponing the purchase (23%), and not store switching (19%), followed as the second most frequent response.

Limitations of the consumer response findings in several of these studies centre on the fact that the response options were neither perfectly mutually exclusive nor exhaustive. Many of the studies focused on the type and frequency of the response options but disregarded the impact on purchase quantities. A further limitation shared with most of the empirical studies is that they measured consumer responses to a hypothetical out-of-stock situation therefore bringing in to question the external validity of the findings.

Overall, these empirical studies supported the potential threat of an out-of-stock occurrence in terms of real sales and also the idea that the consumer responses varied according to multiple factors. These factors are discussed in the next section.

2.2.1.1 Key factors driving the out-of-stock responses

A multiplicity of factors drives the consumer response to the out-of-stock situation, which in turn affects the buying decision process. The Schary and Christopher (1979) study was the first to attempt to explain the possible drivers of out-of-stock responses. Their process-model identified five out-of-stock response behaviours and described three factors that affected the out-of-stock response: brand loyalty, store loyalty and lack of expressed loyalty. They described the typical responses of a brand loyal consumer to be that of “*switch stores*” or “*substitute with a product item from the same brand*”. The store-loyal consumer’s characteristic response would be to “*substitute the brand or product item*” or “*postpone the purchase*” and the non-loyal consumer’s behaviour, by definition, was expected to be pragmatic with purchases being made from existing stock in the product category.

The Emmelhainz et al. (1991) study, although also largely descriptive in nature, further explained out-of stock responses by focussing on product and situational factors that influenced responses. Their study found that the decision to substitute or not depended on the perceived product risk, the intended product usage, and the urgency of need. If consumers felt that the risk of purchasing a brand other than their preferred brand was high then they would be less likely to substitute as substitution costs were regarded as high. The higher the perceived product risk the more likely the consumer will switch stores or defer purchase. Consumers who were purchasing a product for regular usage rather than a special occasion or needed the product urgently were more likely to make a product substitute within the product category. In these two situations the cost of postponement was too high. Furthermore, repeat brand purchase patterns were found to moderate the consumer response of “*substitution within the brand*” *i.e.* strong repeat brand purchasers substituted with a product item from the same brand significantly more frequently than weak repeat brand purchasers.

In the 2000’s, many researchers started providing more explicit theoretical explanations for the observed differences in the out-of-stock responses. One of the first notable studies to build a comprehensive conceptual framework was that of Campo et al. (2000). Building on the contributions of the Corstjens and Corstjens (1999) cost based approach, Campo et al (2000) posited that the trade-off between various types of costs (*i.e.* the cost of substituting a product, the cost of switching store and the cost of postponement or cancellation of a purchase) determined the ultimate consumer

response. The basic paradigm behind their model is that consumers' decisions on how to respond to an out-of-stock are based on utility-maximisation principles. Thus, a consumer facing an out-of-stock situation has a number of decision options, each associated with a specific cost. Once the consumer has weighed up the various decision costs, the consumer's response option will likely be the one that reduces their costs and maximises their utility or benefits. Three main types of costs are identified: substitution costs (satisfaction decreases after a switch to an alternative because of lower preference and/or higher price, alternatively, consumption benefits could be derived from alternative choices in the category), transaction costs (search, holding or shopping costs - including time and effort) and opportunity costs (cost of postponement or cancellation of product purchase and thus loss in product utility (Campo & Gijsbrechts, 2005; Campo et al., 2000, 2003; Corstjens & Corstjens, 1999). These costs, which are considered mediators of the consumer response, are in turn, influenced by three broad categories. These categories are product-related (e.g. consumption rate of the preferred product), consumer-related (e.g. store loyalty) and situation-related (e.g. time available to shop). These consumer, product and situational factors, which may affect the weight of the cost/benefit trade-off for consumers (i.e. moderate the cost/benefit trade-off), suggest possible drivers in other areas such as permanent assortment reductions, product delisting and product discontinuations (Campo & Gijsbrechts, 2005).

Clearly, greater knowledge of the moderating factors is vital, as it provides insights into the possible effects of a product discontinuation. Moderating factors found to be of significance in the out-of-stock response literature are grouped into four categories: product, store, situational and consumer, and are discussed below:

Product-related factors: These are characteristics of the product that are generally related to the specific product attributes and/or product usage;

Level of commitment or preference for the unavailable product: Level of commitment or preference for the unavailable product has a significant impact on the consumer response (Broniarczyk et al., 1998; Campo et al., 2000; Fitzsimons, 2000). As personal commitment or preference to the out-of-stock item increases so does the consumer's negativity towards the product and the store, causing consumers to switch store. This thinking is in line with "reactance theory" described by Brehm (1966) as a social psychological theory dealing with how people react when their freedom is threatened. In the case of consumers facing an out-of-stock they are motivated towards re-attaining

their restricted freedom (Clee & Wicklund, 1980) and thus obtain their preferred product by switching stores.

Item or Brand Loyalty (viewed by a few researchers as a consumer characteristic): The concept of purchasing a favourite item rather than seeking variety was commonly measured using self-report scales. A number of studies found similar results to that of the Emmelhainz et al.'s 1991 study in that strong brand loyalty decreases brand switching behaviour. Brand loyal consumers would be more inclined to postpone the purchase, switch store or switch to another size within the brand (Campo et al., 2000; Peckham, 1963; Schary & Christopher, 1979; Sloot et al., 2005; Verbeke et al., 1998; Zinn & Liu, 2001).

Repeat brand purchase: Different purchase levels of the product of interest significantly influenced the type of substitution made. Consumers with higher product purchase levels substituted within the brand more often than those consumers with lower purchase levels (Emmelhainz et al., 1991).

Perceived product risk: The higher the perceived product risk the more likely the consumer will switch stores or defer purchase. (Emmelhainz et al., 1991).

Product category type: Emmelhainz et al. (1991) found that the specific product category type significantly influenced whether the size or the variety was substituted. For example, in the orange juice and peanut butter categories consumers were more likely to keep the variety the same and switch size. For the toothpaste category consumers were more likely to keep the size the same and switch the variety and in the coffee and tomato sauce categories consumers equally switched size or variety. Both Campo et al. (2000) and Sloot et al. (2005) found that a more hedonistic product type, like cereal or salty snacks, increased the postponement and switch store responses as did products with high brand equity. Consumers buying impulse type products were less likely to switch stores and more likely to postpone the purchase (Sloot et al., 2005).

Available assortment's size and composition: (classified as a store specific characteristic by a few studies). The availability of acceptable alternatives or perceived attractiveness of alternatives reduced the perceived risk and significantly increased brand substitution responses (Broniarczyk et al., 1998; Campo et al., 2000; Fitzsimons, 2000). This factor suggests that consumers tend to switch to particular substitute products that have similar attributes to the out-of-stock product (Campo et al., 2003).

Store-related factors: Store characteristics pertain to factors that are related to the store or chain in which the out-of-stock occurs.

Store Loyalty: Several studies found that “store loyals” were less likely to switch stores to obtain the brand and would either substitute or postpone the purchase (Campo et al., 2000; Emmelhainz et al., 1991; Schary & Christopher, 1979; Sloot et al., 2005). The findings of the Verbeke et al. (1998) study were interestingly counterintuitive in that “store loyals” were more likely to switch stores in response to an out-of-stock. The authors interpreted this result as “store loyals” wishing to punish the store owner.

Store prices: If the consumer perceives the store prices to be low there would be a perceived risk of paying more at another store so consumers may avoid switching store and favour substitution or postponement (Zinn & Liu, 2001).

Interestingly no studies found the *availability of acceptable stores in the vicinity* significantly related to high store switching and low brand switching behaviour.

Situational-related factors: Characteristics that relate to the specific conditions of the consumers shopping occasion.

Required purchase quantities per shopping trip: Consumers were less likely to switch stores if they were purchasing a large quantity of products and less likely to switch brands if they were purchasing small amounts in the shopping trip (Campo et al., 2000; Verbeke et al., 1998).

Urgency of need/time available to buy product: Switching to a substitute brand or item within the brand range was increased when the consumer was under a time constraint (Campo et al., 2000; Emmelhainz et al., 1991; Zinn & Liu, 2001).

Consumer-related factors: Consumer-related characteristics included factors that were independent of specific products and related more to the characteristics of the consumer facing an out-of-stock situation.

Shopping attitude: Consumers who enjoyed shopping were more likely to switch stores when faced with an out-of-stock as they derived more benefit from visiting stores than a consumer with a negative attitude towards shopping (Campo et al., 2000).

Surprisingly, only a few of the above studies found consumer demographics to be a driving factor in terms of response to out-of-stock. Both Sloot et al. (2005) and

Peckham (1963) found that older shoppers, who have more time on their hands, are more likely to switch stores and less likely to substitute products.

These out-of-stock antecedents provide a strong basis for assumptions made in this research as similar underlying drivers may prevail when examining a product discontinuation.

2.2.1.2 Implications of out-of-stock behaviour for retailers

Although out-of-stock situations represent a serious threat to brand loyalty and to the evaluation of a store (Corsten & Gruen, 2004), another big concern to the retailer is a decrease in the spending of a consumer in the store. Research shows that a decrease in spending could be as a result of the consumer reducing the number of visits to the store as shopping patterns change. This change in shopping pattern includes visits to an alternative store or making a smaller amount of purchases per visit (Emmelhainz et al., 1991; Verbeke et al., 1998). These out-of-stock consequences are often more severe than the loss of revenue for the individual out-of-stock item.

In order to obtain a better understanding of the true impact and implications of an out-of-stock on retailers' sales, Campo et al. (2003) turned their attention to studies that included data on purchase quantities. In particular their study investigated the impact of an out-of-stock on category purchase incidence (whether or not to purchase from the product category within the store on a particular shopping occasion), purchase quantity (how much is bought) and within-category choice (product selection). Much out-of-stock response research at the time of the Campo (2003) study had ignored the issue of purchase quantities. Many prior studies made the assumption that the consumer would either not buy or buy substitute products in similar quantities to that of the out-of-stock product. Possible reasons put forward for the purchase of smaller quantities include: limiting the risk of buying a less familiar product or reducing the loss of utility of a less preferred item. Obviously purchasing smaller quantities of the substitute product will result in a more serious loss for the retailer than if the consumer purchases similar quantities of the substitute product.

Based on scanner panel data for two product categories (cereal and margarine) the Campo (2003) study found that the out-of-stock did indeed lead to smaller purchase quantities in certain circumstances and that consumer's purchase quantities tended to vary depending on the type of product category involved. The impact on sales appeared

to be weakened in a category where consumers exhibited high variety seeking behaviour and did not need to cut back on purchase quantities to reduce the perceived risk associated with substitution. Furthermore, sales losses were affected by the level of preference for the product so if the study comprised of a large number of consumers who had a strong preference for the out-of-stock product item within the category then sales losses for the retailer were greater than expected. Interestingly, switching behaviour or choice shifts towards items with similar product attributes was much more evident in some product categories than others. For example, in the cereal study, consumers faced with an out-of-stock tended to switch to another brand to buy products with similar attributes (type and/ or flavour) whereas the margarine consumers seemed to remain with the same brand and buy another pack size. These findings were in line with the results of the out-of-stock response study carried out by Sloot et al. (2005).

Campo et al., (2003) also investigated the possibility that post out-of-stock sales in the longer term may increase above the level of sales prior to the out-of-stock and thus negate the out-of-stock retailer's sales losses. This finding, however, was confirmed in only one product category.

Overall the retailer is interested in the impact of out-of-stocks on total category sales. Theoretically the retailer can reduce the adverse effect of the out-of-stock by ensuring that there are acceptable alternatives in the product category. This solution, however, is not as simple as it might appear. Finding an alternative brand in the same size and variety or different variety/same size or same variety/different size within the brand while trying to adhere to optimal ordering and inventory policies (Emmelhainz et al., 1991) is challenging. Further insights into the category-specific characteristics driving out-of-stock based switches are needed in order to counteract their negative effects (Boatwright & Nunes, 2001; Broniarczyk et al., 1998; Campo et al., 2000, 2003; Fitzsimons, 2000).

Retailers need to be able to understand and even predict consumers' responses to product unavailability. If a consumer's main response is to substitute the unavailable item with a product with similar attributes then the retailer could then try to ensure that the assortment includes these substitutable stocks-keeping- units. However, if the consumer's response is to switch stores then the above strategy would be fruitless.

2.3 Product assortment perceptions and choice decisions

When a product is discontinued by the manufacturer the consumer's switching response behaviour is limited to substitution within the product category or to stop purchasing altogether. Previous research on consumers' responses to out-of-stocks has found that product substitution, also known as product switching, within the category is the most common response and so insights on how consumers evaluate product assortments and make choices amongst alternatives is of importance to this study.

This section briefly introduces studies on product assortment perceptions, moderating factors of those perceptions which serve as a backdrop to the consumer response to permanent product unavailability.

2.3.1 Product assortment

A product assortment is typically defined as the number of products offered within a single product category (Levy & Weitz, 2001). Trying to obtain the optimal product assortment to offer consumers is a strategic decision retailers must make and involves balancing the correct product variety with an efficient service level. Determining the optimal number of stock-keeping-units to offer within a product category is a challenge in itself for the retailer but trying to ensure that every stock-keeping-unit is carried at all times is not feasible. The high costs of holding such stock levels of every stock-keeping-unit would be unprofitable and thus understanding assortment evaluations can aid the retailer when the realities of product unavailability occur.

2.3.2 Product assortment perceptions, moderating factors and context theory

If finding and purchasing what they want is a positive experience for the consumer they become loyal to the store and this loyalty in turn creates revenues for the retailer (Mantrala et al., 2009). Consideration of consumer's perceptions and preferences is therefore vital to achieving a desirable product assortment. Obviously this is a complex task for the retailer as many factors influence consumers' preferences. According to Green and Krieger (1985) even the simple solution of including each of the target market's preferred brand in the product assortment can be difficult as preferences can be so varied. Furthermore, consumers desire flexibility (Kahn & Lehmann, 1991) within the chosen assortment for a multitude of reasons including: uncertainty regarding future

preferences, avoidance of stress that may be associated with making a trade-off between two attributes (Simonson, 1989), or for the simple desire to have variety (Kahn, 1998).

The basic requirement of a product assortment including a “first choice preference” in the choice set is further complicated by the fact that consumers’ preferences do not remain stable but change over time. Many preferences are constructed according to the situation or circumstance the consumer finds themselves in at the time of the decision making (Mantrala et al., 2009). As manufacturers launch or discontinue products within a product category the choice set changes and so too can the consumer’s preferences. Context theory assumes that consumers tend to make choices at the time a decision is being made as opposed to having a complete and well-defined preference order of all options available (Tversky & Simonson, 1993). In contrast to rational choice theory, research on context effects states that choice decisions made between options depends on the presence or absence of other alternatives in the set (Huber, Payne, & Puto, 1982). Much context-effect research, examines the effect that the new alternatives in the choice set have on the ultimate consumer decision choice. Early research on context effects (Huber et al., 1982; Simonson, 1989) demonstrated how the introduction of a new product could lead to an increase in preference for an existing alternative that dominated (Huber et al., 1982) and that the preference for a compromise alternative can increase when an extreme option is introduced (Simonson, 1989). The findings from these context-effect studies violated the axioms of regularity whereby the choice probability of an existing item cannot be increased by adding another new product item (Huber et al., 1982).

Although large assortments can satisfy consumers’ desires for flexibility (Kahn & Lehmann, 1991), large assortments can also have negative consequences. Studies conducted by Iyengar and Lepper (2000) demonstrated that large assortments can be demotivating. This negative perception of a large assortment was thought to be due to the consumer feeling either overwhelmed or being frustrated by the complexity of the choice set.

Much of the early assortment research made the assumption that consumer perceptions of the product assortment were a direct function of the number of products offered. More recent research, however, questioned this direct relationship and provided evidence of moderating factors that affect how some consumers perceive assortment including the composition of the product set and assortment display and organisation

(Broniarczyk, 2008). For example, in a laboratory study involving subjects shopping for microwaveable popcorn in two mock stores, Broniarczyk et al. (1998) found that manipulation of the shelf-space and the structure of the assortment provided an impression of variety not directly related to the actual number of stock-keeping-units on shelf. Even though the assortments were reduced from 48 products to 24, assortment perceptions were high due to the shelf-space being held constant and the duplication of the most attractive products. The duplication of the favourite product made it easier for consumers to find their favourite product and reduced consumers' processing load.

Product and attribute similarity were also found to be important factors influencing consumers' perceptions of assortment. In a study conducted by Hoch, Bradlow, and Wansink (1999) consumers held a more positive perception of product assortments that offered a variety of important attributes. The importance of the attribute affecting perceptions of product assortment also varies. The Hoch et al. (1999) study found that colour and shape had the greatest influence on assortment perceptions whereas for grocery products brand name and flavour were shown to be more important attributes than package size (Boatwright & Nunes, 2001, 2004).

Product preference was another important factor influencing the perception of a product assortment. Chernev (2003) found that consumers with well-developed preferences regarding attribute levels had an easier time choosing from large assortments.

In summary, product assortments are complex phenomena. Although consumers are initially attracted to large product assortments that offer both process and choice related benefits (Broniarczyk, 2008), several studies carried out by Iyengar and Lepper (2000) have shown that given the option, consumers are more likely to purchase from a small rather than a large product assortment. In fact, they found that large product assortments can increase the decision difficulty and cause confusion. How consumers perceive the product assortment, however, depends on numerous moderating factors such as the composition of the product set, assortment display, attribute type and preference development.

The findings of these product assortment studies suggest that the consumer's response to a reduction in choice will not necessarily have a negative impact on sales. The next section specifically reviews studies focusing on the consumer response to permanent product unavailability, in the form of permanent assortment reductions and product delistings, and their impact on sales.

2.4 Consumer response to permanent product unavailability

This research is interested in the switching behaviour of consumers when faced with a product discontinuation and how the response impacts on sales for the retailer. As a product discontinuation means that the product is permanently unavailable to the consumer, this final section reviews how consumers respond to product assortment reductions and brand delistings. Of specific interest to this research are studies that focus on the switching behaviour, moderating factors of the switching behaviour and the impact of the response on retailers' sales.

2.4.1 Permanent assortment reductions

Permanent assortment reductions are usually carried out by retailers as part of a cost cutting exercise and traditionally the low selling stock-keeping-units are permanently delisted from the retailer's product categories (Broniarczyk et al., 1998). In other words the retailer will no longer sell the products in their store. Although both out-of-stock and permanent assortment reductions are similar in that consumers may face the problem of being unable to purchase their preferred product in their regular store, the permanent assortment reduction situation is different to the out-of-stock situation in that the unavailability of the product item is permanent. The consumer facing a permanent assortment reduction will no longer have the option of postponing the purchase at their store but may still have the option of finding the delisted product in another supermarket chain. Few studies have focused on the specific topic of consumer responses to permanent assortment reductions; in fact, compared to the out-of-stock literature the research is very sparse. Generally the studies also provide little in the way of theoretical underpinnings for the observed permanent assortment responses but have focussed more on the impact on product category sales.

2.4.1.1 Switching behaviour, moderating factors and impact on sales

Campo et al. (2004) analysed the similarities and differences between out-of-stock and permanent assortment reduction responses and concluded that permanent assortment reductions triggered more store switching and purchase cancellation responses than out-of-stock responses which implied higher sales losses for the retailer. Moderating factors that magnified the response changes included: *time constrained consumers* and *consumers on major shopping trips*. These consumers were more inclined to switch stores if the product became permanently unavailable. A positive finding for retailers

was that store-loyal consumers were less inclined to switch stores implying that a store loyalty program could help retain consumers facing a permanent assortment reduction.

Despite a number of industry and academic studies in the 1990s reporting that a reduction in stock-keeping-units in various product categories resulted in either no significant loss in category sales or even a slight increase in sales (Dréze, Hoch, & Purk, 1994), retailers resisted a reduction in category offerings. The general belief was that consumers preferred larger assortments that offered a greater choice (Broniarczyk et al., 1998; Chernev, 2006; Kahn & Lehmann, 1991; Oppewal & Koelmeijer, 2005) and retailers were concerned that consumers facing a reduced product assortment would lower their perceptions of the assortment offering and therefore their attitude to the store (Louviere & Gaeth, 1987). The retailers, therefore, tended to offer a wide variety of products creating large assortments (Boyd & Bahn, 2009).

As mentioned earlier, many of the studies on product assortment reduction tend to concentrate on the impact of consumers' response behaviour on category sales, store choice, and shopping frequency. A review of the major studies focussing on these topics and in particular, the sales effects of assortment reductions, follows.

In the 1990s, a series of field experiments carried out by Dréze et al. (1994) examining the impact of shelf positioning and facing allocations on sales, found that category sales did not decrease but actually increased by almost 4% in the face of a 10% product item reduction. The positive results, however, could be due to an increase in the space facings allocated to high selling items as a result of the deletion of low selling stock-keeping-units. In fact, Campo and Gijsbrechts (2005) found that consumers use shelf space as a heuristic in their perceptions of assortments. They argued that retailers could delete products but maintain shelf space in such a way that consumers wouldn't notice the reduction of choice. The presentation or arrangement of the assortment was found to influence perceived variety and affect search costs and choice. Broniarczyk et al. (1998) also examined the link between the number of items offered in a category assortment from the consumer's perspective, and sales. Although the findings confirmed that reducing a number of low selling stock-keeping-units need not affect perceptions of variety and therefore sales, they questioned whether these results could be generalised to other product categories. The suggestion was made that the consumers' sensitivity to the reductions in stock-keeping-units may be dependent on the specific features of a particular category.

Boatwright and Nunes (2001) addressed some of these issues by examining how different types of stock-keeping-unit reductions, defined by reductions in various assortment attributes such as number of brands, sizes, and flavours, affect sales differently. Overall, they found that product category sales increased rather than decreased as a result of pragmatic stock-keeping-unit cuts to the assortment, though they did find negative sales for categories with deep assortment deletions. The number of brands and flavours available within a category were also found to be important factors to take into consideration when making reductions to the product category. Furthermore, consumers were far less likely to buy in a category when their preferred brand was deleted. Only 38.7% of brand loyal customers switched to an alternative product when their preferred brand was deleted. However, in a later study Boatwright and Nunes (2004) conclude that no significant changes in the overall category sales were actually found.

In stark contrast to these non-significant or positive results, a study carried out by Borle, Boatwright, Kadane, Nunes, and Galit (2005), using household panel data from the same on-line grocer as the Boatwright and Nunes's (2001,2004) study but different product categories, concluded that overall storewide and category sales declined significantly as a result of assortment reductions. The negative results were ascribed to a reduction in store-level shopping frequency (23%) and reduced purchase spending on each shopping trip (4%). The category-level analysis revealed that less frequently purchased categories were more adversely affected by the assortment reduction than other product categories and that the effect of the reduction had a greater impact on category purchase incidence than purchase quantity.

Similarly, a study conducted by Sloot et al. (2006) found substantial category sales losses in the short term, when a 25% item reduction was conducted in a major Dutch supermarket chain. Data from more than 25, 000 loyalty-card holders in two test stores and two control stores was analysed to assess the short-term and long-term sales effects in the detergent category. In the short- term the detergent sales losses were mainly caused by a drop in detergent purchases by former buyers of the deleted detergent items, however, in the long-run the assortment reduction appeared to attract new detergent buyers and this resulted in only a weak negative sales effect.

Permanent assortment reduction studies that resulted in negative sales effects were most commonly a result of customers not being able to find their preferred item in the store

(Campo & Gijsbrechts, 2005; Campo et al., 2000, 2004; Sloot et al., 2006). Whereas, the positive sales or no sales effects found in the Dréze et al. (1994), Broniarczyk et al. (1998) and Boatwright and Nunes (2001) studies were thought to have occurred because of the decrease in search complexity of smaller assortments (Iyengar & Lepper, 2000). This decrease in search complexity could in turn attract new buyers into the product category and thus increase sales. Borle et al. (2005) speculated that it was the selected product categories utilised in the Boatwright and Nunes (2001, 2004) study that explains the non-significant effect on sale purchases. Product categories that were more frequently purchased such as milk, bread, cereal and soft drinks were less adversely affected in terms of the impact on sales. The explanation provided by Borle et al. (2005) was that shoppers needed a larger assortment for product categories in which they purchased less frequently because they either had very specific needs, which could not easily be substituted, or were inexperienced shoppers in this area and needed more choice. It was later acknowledged that this explanation could not be determined through their data and that further research was required in the area of cross-category effects.

To provide further insights to the retailer and manufacturer Zhang and Krishna (2007) explored how a permanent assortment reduction, implemented by a retailer, affects sales at an individual brand-level. A brand-level analysis can provide a better understanding of what type of brands consumers tend to switch to after other brands have been deleted. These substitutions or switching of brands can translate into more or less profit for the retailer. One of their main findings of their research was that after the removal of product items, brands with larger market shares and higher prices gained shares from brands with smaller market shares and lower prices. Private label brands especially suffered severe sales losses. Effects on the sales, at a category level, varied across the three different product categories examined which is a very similar result to many of the out-of-stock studies (Broniarczyk et al., 1998; Campo et al., 2003). These mixed sales results were explained by the differences in the size of the assortments. Reducing an assortment with a large number of stock-keeping units can have a positive effect if it reduces clutter and makes choices easier whereas removing items from a small assortment can create a strong negative perception. The researchers also suggested that future research in permanent assortment reductions should incorporate product attributes/features in the assessment of the assortment changes (Zhang & Krishna, 2007).

Although the divergent findings in these permanent assortment reduction studies suggest that more research is needed on the impact of reducing product items from an assortment, the studies do indicate that removing preferred products from a product category leads to an adverse impact on category sales for the retailer in the short-term. Furthermore, the effect of the permanent assortment reduction depends on: the nature of the product category, the depth of the assortment, characteristics of the eliminated brand and its consumers.

2.4.2 Product/brand delisting

Much of the permanent assortment reduction literature examines the consumer response to a situation in which a number of low selling product items are removed from product categories within a store by the retailer. A few recent studies (Sloot & Verhoef, 2008; Wiebach & Hildebrandt, 2012) have focussed on consumers' responses to a brand delisting whereby the product or brand delisted is not necessarily a low selling item. Sloot and Verhoef (2008) define brand delisting as the permanent removal of all items of a single brand within a store and view brand delisting as a type of assortment reduction.

2.4.2.1 Switching behaviour, moderating factors of the switching behaviour and impact of a product/brand delisting on sales

Using a controlled online experiment and an in-store shopper survey, Sloot and Verhoef (2008) examine the impact of a delisting of the consumers' preferred brand on retail sales in 10 product categories. Focusing on the consumers' brand and store switching intentions, they argue that if the brand delisting severely hurts sales then the retailer will think twice about threatening the manufacturer with a brand delisting. The main objective of their study was to gain an in-depth understanding of the drivers of the switching behaviour and thus tested several brand-related, product category-related, assortment-related and store-related antecedents. The authors conclude that many consumers stay brand loyal and switch store for their preferred brand and a small percentage of consumers would stop buying at the store completely if their preferred brand was delisted. This finding implies a loss of sales at the category level and possibly a loss of the consumer's total shopping basket. Their study also revealed that the main drivers of brand and store switching intentions were brand equity, market share and the products' hedonic level. Delistings of brands with high market share or high brand equity in hedonic product categories were found to have stronger negative

effects on category sales and store choice as consumers were less inclined to switch to another brand. Furthermore, the results showed that product categories that contained a large number of brands, for example the beer category, suffered more in terms of category sales loss. Interestingly, store-related antecedents played no significant role in driving switching behaviour.

Whereas the Sloot and Verhoef (2008) study contributed to the product unavailability literature through primarily empirical associations, Wiebach and Hildebrandt (2012) used context theory to explain customers' switching behaviour to a brand delisting. Previous research on context-dependent choices was based on new product introductions and investigated three context effects, namely; the similarity effect, the attraction effect (Huber et al., 1982) and the compromise effect (Simonson, 1989). Wiebach and Hildebrandt used this prior context theory research as a basis to develop hypotheses for a brand delisting and examined three negative context effects: the negative similarity effect, the negative attraction effect and the negative compromise effect. The major finding of their research was that consumers of fast moving consumer goods (FMCG) products (pizza, cereal and orange-juice) tended to substitute with a similar brand thus confirming a negative similarity effect for the delisting of different brands. In addition to the above finding, the results showed that the switching patterns of the consumers led to larger sales losses for the manufacturers than the retailers as most consumers switched to the main competitor of the delisted brand. The findings of the Wiebach and Hildebrandt (2012) study are relevant for two reasons. Firstly, the type of switching response options available to respondents is similar to that of a consumer facing a product discontinuation. In both scenarios respondents are forced to switch to another product within the product category. Secondly, consumers face the permanent unavailability of a FMCG product. The negative similarity effect finding provides a theoretical lens from which to base the switching response behaviour of a consumer facing a discontinued product. According to the negative similarity effect, consumers facing a delisted FMCG brand will tend to substitute with a brand that has similar attributes.

2.5 Chapter summary

This chapter has provided an overview of the extant temporary and permanent product unavailability literature. Within the temporary product unavailability research, the major

findings of key studies relating to the consumer response to out-of-stocks were outlined. The topics of types of consumer response options, drivers of the consumer response, within category switching behaviour and the impact of the response on sales were discussed.

Next the literature concerning product assortment perceptions and consumer choice was introduced as a backdrop to the product assortment reduction literature. Context theory was also briefly presented to further explain how consumers make choices when faced with a change in the assortment choice.

Lastly, the findings of major studies regarding consumers' responses to permanent assortment reductions and product delistings were discussed. These studies provided valuable insights to the research at hand by examining how consumers' responses change when the product unavailability becomes permanent. The topics of influencing factors of the consumer response and the impact of the response on sales were once again discussed.

The major findings of the out-of-stock, permanent assortment reduction and product/brand delisting studies of this literature review have informed the questions and propositions of this research. In the next chapter the development of the propositions that relate to the consumers' response to a product discontinuation are discussed in detail.

Chapter 3: Development of the propositions

3.1 Chapter overview

Consumer responses to product discontinuations by the manufacturer have not been specifically discussed in the consumer or retailing literature. There are, however, related areas of interest within the product unavailability literature which are relevant to the research at hand. The first area of relevance is the literature concerning consumer responses to temporary product unavailability or 'out-of-stocks'. The focus of the majority of these studies is on the nature of the consumer response and the theoretical explanations of the observed differences in the out-of-stock responses. The nature of the consumer response and the moderators of the response provide valuable insights for this research. The impact of the out-of-stock on category sales has also been investigated but to a lesser extent. The out-of-stock response studies have predominantly applied a traditional survey based research approach and relied on reported purchase intentions and behaviour.

The second area of relevance to this research is the literature investigating how consumers respond to permanent product unavailability. This research has generally taken the form of permanent assortment reduction studies. In comparison to the out-of-stock studies, research on the consumer response to a permanent assortment reduction is scarce. The lack of research in this area can be explained by the fact that the permanent assortment reduction is a permanent and strategic move by the retailer as opposed to the more frequent occurrence of the out-of-stock situation. Although the nature of the consumer response to a permanent assortment reduction is similar to that of an out-of-stock (Campo et al., 2004) the majority of these studies have provided little or no theoretical underpinnings to the observed permanent assortment reduction responses. The focus of the permanent assortment literature has largely been in the areas of assortment perceptions, assortment preferences (Boyd & Bahn, 2009; Broniarczyk et al., 1998; Campo & Gijbrecchts, 2005; Kahn & Lehmann, 1991; Mantrala et al., 2009) and the impact of product assortment reductions on item, category and store sales (Boatwright & Nunes, 2001; Borle et al., 2005; Dréze et al., 1994; Fader & Hardie, 1996; Sloot et al., 2006; Zhang & Krishna, 2007). The studies that addressed the effect

of permanent assortment reductions on sales commonly used natural and field experiments that involved the removal of a large number of items in a category.

Finally, there are a few seminal studies that cover consumer responses to a brand delisting, which according to Sloot and Verhoef (2008) can be viewed as a form of permanent assortment reduction. Sloot and Verhoef (2008) measure the impact of a brand delisting on store and brand switching intentions, whereas Wiebach and Hildebrandt (2012) use context theory to explain customers' switching behaviour to a brand delisting.

In summary, there appears to be no studies of consumer responses to a manufacturer product discontinuation. Therefore, there is a great opportunity to contribute to the body of knowledge by exploring the consumers' behavioural response to a manufacturer's product discontinuation as well as provide some managerial relevance. Insights from the extant literature on out-of-stocks, permanent assortment reductions and product delistings discussed in Chapter two have guided the development of the following propositions for a preferred-product discontinuation.

3.2 Research objectives and propositions

3.2.1 Research objectives

The primary objective of this research is to explore the relationship between a preferred-product discontinuation and the consumers' response purchase behaviour. The research objectives developed from the research problem are as follows:

- To determine if the dominant switching response to a preferred-product discontinuation is to substitute within the product category.
- To determine the kind of impact that the shoppers' switching behaviour has on product category sales at the supermarket retail level in the short-term.
- To examine the switching behaviour patterns of shoppers faced with a preferred-product discontinuation and determine if shoppers are more likely to switch to products with similar product attributes to those of the discontinued product than switch to products with dissimilar attributes.

- To determine if varying purchase levels of the discontinued product has a moderating effect on the switching behaviour patterns.
- To examine whether the different types of product discontinuation selected in this study have the same impact on shoppers' responses to the product discontinuation in terms of both switching behaviour and sales.

3.2.2 Propositions

Based upon the understanding of the reviewed literature in Chapter two the propositions to test are as follows:

3.2.2.1 Behavioural consumer response to product unavailability

Firstly, it can be derived from the available studies on out-of stocks, permanent assortment reductions and product delistings that substitution within the product category is generally the dominant switching response to product unavailability whilst the stop purchasing response is very low (Emmelhainz et al., 1991; Sloot et al., 2005; Walter & Grabner, 1975; Zinn & Liu, 2001). As this study intends to explore the switching behaviour of consumers faced with a product discontinuation, the first proposition is concerned with the nature of the consumer response and is as follows:

P1: The dominant switching response to the preferred-product discontinuation is that of switching to a substitute within the product category and the stop purchasing response is very low.

It should be noted that the discontinuation of a preferred item may drive some consumers to purchase an item from a different product category. This switching behaviour, is however, a very rare response (Sloot et al., 2005).

The next proposition focuses on the impact of the product discontinuation on product category sales.

3.2.2.2 Impact on product category sales

Within the out-of-stock response literature little attention was paid to the impact of out-of-stocks on actual purchase amounts within the product category. Most of the studies typically concentrated on purchase incidence and choice decisions and relied on surveys measuring reported or intended behaviour. These studies assumed that those consumers

either stopped buying or bought their regular quantity of the substitute item. Research conducted by Campo et al. (2000), however, suggested that consumers may buy smaller sizes or fewer units to reduce the risk of a poor choice, or reduce the loss in value due to having to purchase a less preferred product in the category. A later study conducted by Campo et al. (2003) did investigate the out-of-stocks' impact on purchase quantities using scanner panel data for two product categories within a store. Their findings revealed that an out-of-stock affected the consumer's decision to buy or not buy, how much to purchase and what to choose. On average, unavailability of one item from the category led to an immediate 2.0 % sales loss. However, in the Campo (2003) study the out-of-stock item was not necessarily the consumers' preferred choice.

The product assortment reduction studies, on the other hand, had very mixed results when it came to the impact of the reduction on category sales. The positive sales or no sales effects found in the Dréze et al. (1994), Broniarczyk et al. (1998) and Boatwright and Nunes (2001) studies were thought to have occurred because of the decrease in search complexity of smaller assortments (Iyengar & Lepper, 2000) whereas studies that resulted in negative sales effects were most commonly a result of customers not being able to find their preferred item in the store (Campo & Gijsbrechts, 2005; Campo et al., 2000, 2004; Sloot et al., 2006).

Finally, the Sloot and Verhoef (2008) study that was concerned with the delisting of the consumers' preferred brand found that brand delistings had negative consequences for category sales. Stronger negative results were found when the brands were delisted from product categories with high hedonic levels such as beer.

Reactions to product unavailability depend on the consumer's preference for the unavailable product (Broniarczyk et al., 1998; Campo et al., 2000; Fitzsimons, 2000), with preferred products having more negative consequences. As the study at hand is interested in the impact on category sales when the consumer faces a product discontinuation of a preferred product item, the literature suggests that the discontinuation is likely to elicit a negative response.

Therefore the second proposition is:

P2: Sales at the product category level will be adversely affected by the discontinuation of the product of interest in the short-term.

The explanation for this negative impact on sales is thought to be due to consumers buying less of the substitute product to reduce the risk of a poor choice, or reduce the loss in value due to having to purchase a less preferred product in the category (Campo et al., 2000) or switching to a less specialised and therefore less expensive substitute.

The third proposition relates to the switching choices made within the product category.

3.2.2.3 Switching choice decisions within the product category

FMCG consumers typically choose a product item from a product assortment based on the product's attributes which tend to be tangible and discrete e.g. size, type and flavour (Fader & Hardie, 1996). Brand and flavour being particularly important attributes according to a product assortment reduction study conducted by Boatwright and Nunes (2001). In the situation where all the products in a product category are available then a consumer's switching behaviour generally results from the need for variety or a promotional incentive. This study, on the other hand, is interested in switching choices made by the consumer when the preferred product is permanently no longer available.

Many out-of-stock studies analyse whether or not consumers substitute within the product category, and if substitution does take place, whether the substitute item is the same size or brand. According to Broniarczyk et al. (1998); Campo et al. (2000); Corstjens and Corstjens (1999), switching behaviour depends on the availability of acceptable alternatives, suggesting that consumers tend to switch to substitutes with similar attributes to the unavailable product. Very few studies, however, shed further light on which replacement product will be purchased. The Campo et al. (2003) study recognised that switching behaviour, in response to an out-of-stock, deviates from normal switching behaviour due to the fact that the decision to switch was motivated by a negative driver. They found that out-of-stocks produced disproportionate choice shifts towards items with specific product attributes e.g. brand, flavour and size within the product category. The relative importance of the discrete product attributes was dependent on the product category. For example the type or flavour was the most important attribute in the cereal product category whereas the brand was the most important attribute within the margarine category.

Research conducted by Wiebach and Hildebrandt (2012) investigated consumers' switching behaviour when faced with a brand delisting by taking into account context theory. They found that the negative similarity effect (a similar brand will regain more

market share than a dissimilar alternative) occurred for the removal of different FMCGs i.e. consumers tended to substitute with a similar brand when faced with a preferred brand delisting.

Drawing from the findings of the Campo et al. (2003) and Wiebach and Hildebrandt (2012) studies, and recognising that choices for FMCG are typically attribute-based (Boatwright & Nunes, 2001; Fader & Hardie, 1996; Hoch et al., 1999), the third proposition is:

P3: After the discontinuation of the product of interest, shoppers are more likely to switch to a product with similar attributes to the discontinued product as opposed to a less similar product.

The final proposition is concerned with possible moderators of the consumers' switching behaviour in response to a preferred-product discontinuation.

3.2.2.4 Moderators of the switching behaviour

Factors that influenced the consumer response to product unavailability were a major focus of a large number of the out-of-stock studies (Campo & Gijbrecchts, 2005; Campo et al., 2000, 2003; Corsten & Gruen, 2004; Corstjens & Corstjens, 1999; Emmelhainz et al., 1991; Fitzsimons, 2000; Peckham, 1963; Schary & Christopher, 1979; Sloot et al., 2005; Verbeke et al., 1998; Verhoef & Sloot, 2006; Zinn & Liu, 2001) . From the review of the extant literature in the previous chapter, moderating factors found to be of significance in these out-of-stock response studies tended to be grouped into four categories: product-related, consumer-related, situational and to a lesser extent, store-related.

As this study is primarily concerned with switching behaviour within the product category once the customer has faced a product discontinuation, only moderating factors that influence the specific substitution made within the product category are of interest. Research carried out by Emmelhainz et al. (1991) found that two product related moderators “ repeat brand purchase ” and “product type” significantly influenced the specific substitution action taken, once the decision to substitute was made. Furthermore, the “repeat brand purchase” factor was found to be significant across all product categories. This finding leads us to the final proposition:

P4: Heavy purchasers of the discontinued product will demonstrate a greater propensity to switch to a similar substitute than the moderate or light purchaser after the product discontinuation.

The underlying rationale is that consumers who purchase more of the discontinued product prior to the discontinuation are likely to be more committed to the product in terms of its particular attributes. Therefore, more committed consumers, indicated in this research by higher purchase levels of the discontinued product, will demonstrate a greater propensity to switch to products that are most similar to the discontinued product, in terms of key product attributes, than less committed consumers.

3.3 Chapter summary

This study aims to test the proposed propositions summarised below in order to develop a greater understanding of how consumers respond to different product discontinuations and what kind of impact the response will have on sales in the short-term.

P1: The dominant switching response to the preferred-product discontinuation is that of switching to a substitute within the product category and the stop purchasing response is very low.

P2: Sales at the product category level will be adversely affected by the discontinuation of the product of interest in the short-term.

P3: After the discontinuation of the product of interest, shoppers are more likely to switch to a product with similar attributes to the discontinued product as opposed to a less similar product.

P4: Heavy purchasers of the discontinued product will demonstrate a greater propensity to switch to a similar substitute than the moderate or light purchaser after the product discontinuation.

In the next chapter, the research problems and questions that this study aims to investigate, together with the methodology used to test the propositions, will be discussed in greater detail.

Chapter 4: Research methodology

4.1 Chapter overview

This chapter describes in detail the methodology used to explore the research questions and test the propositions developed in Chapter three. The research follows an inductive approach in which shopper's purchase responses to different types of product discontinuations from three product categories are observed and analysed. Shoppers' responses are assessed based on scanner purchase data gathered from Flybuys customers that have swiped their card when making purchases at New World supermarkets within the larger Auckland region.

The chapter is divided into four sections. The first section presents the overall research problem, objectives and questions of this study. The second section discusses the research design. The third section covers the research methodology by providing a detailed discussion on the data collection and preparation. Section four describes the approach taken for the analysis of the data and a summary concludes the chapter.

4.2 Research problem

The problem this research examines is whether the shopper's response to a preferred-product discontinuation will have an adverse impact on retailers' sales in the short-term (defined as three months), and if shoppers respond differently to different types of product discontinuations. Thus, three types of product discontinuations, each in a different product category are examined by analysing the switching behaviour of three cohorts of shoppers that have faced a preferred-product discontinuation. The study also examines whether shoppers switch to products with similar attributes to the discontinued product and finally, if the shoppers' response to their preferred-product discontinuation is affected by varying purchase levels of the discontinued product.

4.2.1 Research objectives

The primary objective of this research is to explore the relationship between a preferred-product discontinuation and the shoppers' response purchase behaviour. The research objectives developed from the research problem are as follows:

- To determine if the dominant switching response to a preferred-product discontinuation is to substitute within the product category.
- To determine the kind of impact that the shoppers' switching behaviour has on product category sales at the supermarket retail level in the short-term.
- To examine the switching behaviour patterns of shoppers faced with a preferred-product discontinuation and determine if shoppers are more likely to switch to products with similar product attributes to those of the discontinued product than switch to products with dissimilar attributes.
- To determine if varying purchase levels of the discontinued product has a moderating effect on the switching behaviour patterns.
- To examine whether the different types of product discontinuation selected in this study have the same impact on shoppers' responses to the product discontinuation in terms of both switching behaviour and sales.

These research objectives lead to the research questions detailed in the next section.

4.2.2 Research questions

The general question explored by this research is "How do shoppers respond, in terms of switching behaviour, to a preferred-product discontinuation and what is the impact on retailer sales?"

More specifically the following questions are addressed:

- 1) When faced with a preferred-product discontinuation do shoppers respond by substituting within the product category?
- 2) Does the preferred-product discontinuation have an adverse effect on the product category sales for the supermarket retailer in the short-term period of three months?
- 3) Does the replacement product or product range perform as well, in terms of dollar sales, as the discontinued product or range?

- 4) When faced with a preferred-product discontinuation do shoppers switch to products with similar product attributes?
- 5) Is the switching behaviour within the product category moderated by varying purchase levels of the discontinued product e.g. heavy, moderate and light purchasers of the discontinued product?
- 6) Do shoppers' switching responses to the product discontinuation differ depending on the type of product discontinuation experienced by the shopper?
- 7) Do different types of product discontinuations affect product category sales differently in the short-term?

These research questions relate to the four research propositions detailed in chapter three and outlined below:

Questions 1) and 6) relate to proposition one (P1): *The dominant switching response to the preferred-product discontinuation is that of switching to a substitute within the product category and the stop purchasing response is very low.*

Questions 2), 3) and 7) relate to proposition two (P2): *Sales at the product category level will be adversely affected by the discontinuation of the product of interest in the short-term.*

Questions 4), 5) and 6) relate to proposition three (P3): *After the discontinuation of the product of interest, shoppers are more likely to switch to a product with similar attributes to the discontinued product as opposed to a less similar product.*

Question 5) and 6) relates to proposition four (P4): *Heavy purchasers of the discontinued product will demonstrate a greater propensity to switch to a similar substitute than the moderate or light purchaser after the product discontinuation.*

4.3 Research design

4.3.1 The natural experiment

Given the research questions posed and the real-world data available, a natural experiment was deemed the most appropriate research design. Natural experiments are defined by Bryman and Bell (2003) as a type of quasi-experiment involving a “naturally occurring” manipulation of a social setting. The product discontinuations examined in this research are real events that took place within the group of supermarkets. Another

common characteristic of the natural experiment is the non-randomised assignment of subjects to the experimental and control groups. The disadvantage of the absence of random assignment is that the internal validity of the research may be lowered as the groups could be different. However, in this research the absence of random assignment is not a cause for concern due to the initial data sets consisting of all the shoppers that purchased the preferred-product before the discontinuation and the large size of these data sets.

The advantages of the natural experiment relate to external validity. The naturalness of the interventions in the social setting mean high levels of ecological validity (Bryman & Bell, 2003) and results from data collected in a natural setting as opposed to a controlled laboratory environment are more likely to be true to life and not purely technically valid. According to Churchill and Iacobucci (2002), natural experiments allow inferences to be made about causality, but the high external validity of the natural experiment comes at the cost of high internal validity as researchers cannot control the many extraneous factors that occur in a natural setting such as the supermarket. In order to improve the control of the extraneous variables that occur in the natural setting of a supermarket, control groups have been employed for each of the three studies. Another major type of extraneous variable is reflected in the individual differences of the Flybuys customers, therefore this natural experiment adopts a repeated measures design as the same shoppers' purchases are measured prior and post the product discontinuation within each study. Experimentation in natural settings has also been used in prior key consumer response to out-of-stock studies (Emmelhainz et al., 1991; Peckham, 1963; Schary & Christopher, 1979; Zinn & Liu, 2001) and permanent assortment reduction studies (Boatwright & Nunes, 2001, 2004; Borle et al., 2005; Broniarczyk et al., 1998; Dréze et al., 1994; Sloot et al., 2006; Sloot & Verhoef, 2008).

This study is interested in investigating the impact of three different product discontinuation types on shoppers' purchases by uncovering the dominant switching response behaviour and the pattern of within-category choice shifts triggered by the discontinuation. Another question explored is whether or not varying purchase levels of the discontinued product act as a moderator of the within-category choice shifts. The product discontinuation types are thus regarded as the "treatments" or *independent* variables. The choice shifts, as a result of the impact of the discontinuation, measured in terms of dollar sales, are the response variables or *dependent* variables. It was felt that a natural experiment using secondary data collected in the form of scanned

purchases, from the same cohort of shoppers before and after the product discontinuation, would be appropriate to answer the research questions posed.

Behavioural data in the form of scanner data has several advantages over survey based research. Firstly, the validity threats associated with reported purchase intentions and actual behaviour are overcome (Malhotra, Hall, Shaw, & Oppenheim, 2002). Secondly, the risk of consumers overestimating their reaction to a preferred product discontinuation in a survey is eliminated. Thirdly, the scanner data allows for more accurate tracking and analysis of the individual response. The scanner data for this research was collected, through the use of the Flybuys card, for three different groups of shoppers. As each group, or cohort, of shoppers had experienced a different type of preferred-product discontinuation in a different product category, they are treated as separate studies. For each of these “experimental groups” a control group was set up. The control group comprised of shoppers who had purchased from the same product category of interest during a similar period of time as the “experimental group” but who had not purchased the discontinued product.

The independent and dependent variables as well as the moderating variable and control groups used in this natural experiment are expanded upon in the next sections.

4.3.2 Independent variables

4.3.2.1 Types of product discontinuation

Three types of product discontinuation are examined in this research and each is treated as a separate study. The product discontinuation types are categorised as follows:

- No manufacturer replacement product
- A rebranded replacement by the manufacturer
- A new product replacement by the manufacturer

The discontinued products were selected on the basis of three criteria. The first criterion was based upon the extent of the product’s market penetration. Each product needed a wide market penetration. The second criterion was based on the brand possessing a strong brand differential. The third criterion involved the type and date of the discontinuation. Each discontinuation had to be of a different form and needed to occur

within a six month period of the other product discontinuations. The three discontinued products investigated are:

- a) **Anlene 2L milk**. Product discontinuation type: *no manufacturer replacement product*. The Anlene 2L milk was a variant of the Anlene milk range and after the discontinuation of the Anlene milk range the manufacturer did not introduce a replacement product within a three month period after the discontinuation.
- b) **Kellogg's Cocoa Crispix 340g**. Product discontinuation type: *a rebranded product replacement*. When Kellogg's Cocoa Crispix was discontinued consumers could still buy the product as it was rebranded as Kellogg's Coco Pops Chex 340g and became a new variant within the Kellogg's Coco Pops range.
- c) **Bluebird CC's Tasty Cheese 190g**. Product discontinuation type: *a new product replacement*. When Bluebird discontinued the CC's range of corn chips to launch the more internationally recognised Doritos range of corn chips, the CC's Tasty Cheese 190g variant was replaced by two cheese variants within the Doritos range: Cheese Supreme (170g, 300g and an 8 pack) and Nachos Cheese (170g and 300g).

4.3.3 Dependent variables

The primary dependent or response variables of interest are:

- Product category sales
- Product item/product range sales
- Switching behaviour category sales

4.3.3.1 Product category sales, product item/product range sales

This research is interested in the effect of the preferred-product discontinuation on the sales of the defined product category. The variables of interest for each of the three studies are as follows:

- a) The average monthly sales of the defined product category prior and post the product discontinuation.

- b) The average monthly sales for the discontinued product and, if applicable, the product range of interest prior and post the product discontinuation (the expectation is that sales are zero post discontinuation)
- c) The average monthly sales of the replacement products post the product discontinuation.

4.3.3.2 Switching behaviour categories sales

According to a number of both temporary and permanent product unavailability studies (Broniarczyk et al., 1998; Campo et al., 2000; Corstjens & Corstjens, 1999) switching behaviour depends on the availability of acceptable alternatives, suggesting that consumers tend to switch to substitutes with similar attributes to the unavailable product.

In the research at hand, the purchase data of individual shoppers that have experienced a preferred-product discontinuation is examined prior and post the product discontinuation to determine differences in within-product category choices. These within-product category choices are categorised into three switching behaviour categories namely; S1, S2, and S3. The three switching categories relate to the degree of similarity to the discontinued product in terms of product attributes. Following the lead taken by Guadagni and Little (1983) and Fader and Hardie (1996) in their research on the use of stock-keeping-unit (SKU) attributes in choice models, the researcher categorised all product items in the defined product category based on key attributes of the discontinued product. The selected key attributes were based on the attributes of flavour, form and benefits. Switching behaviour category (S1) is defined as a category containing products with *very similar* attributes to the discontinued product, category (S2) is defined as products with *less similar* product attributes and category (S3) represents purchases of products *dissimilar* to the attributes of the discontinued product. The three switching categories are measured in terms of average monthly sales prior and post the product discontinuation.

For each study the average monthly sales variables relate to a period of nine months prior and three months post the product discontinuation. Nine months prior to the product discontinuation provided sufficient data points to establish the purchase behaviour of a shopper given normal patterns of purchase behaviour. A three month period post discontinuation enabled the purchase response to be measured in the short-term.

4.3.4 Moderators of the switching behaviour – Purchase profiles

Research carried out by Emmelhainz et al. (1991) found the product-related factor of “*repeat brand purchase*” significantly influenced the specific substitution action taken, across all product categories.

The “*varying purchase levels*” of the discontinued product in this research can be regarded as similar to the “repeat brand purchase” factor and thus be a moderator of the switching behaviour. Moderators of the switching behaviour affect the strength and/or direction of the relation between the independent variable and the dependent variable (Baron & Kenny, 1986).

The first step needed to establish whether or not different purchase levels of the discontinued product would affect the shopper’s purchase behaviour post product discontinuation was to determine if distinct purchase levels existed. Shoppers’ purchase quantities of the discontinued products were examined to try and identify natural breaks in the data sets. Heavy, moderate and light purchase groups were created based on the quantity of the discontinued product purchased in the nine month period prior to the product discontinuation. In each study the varying purchase levels of the shoppers are represented by the variable ‘*purchase profile*’.

4.3.5 Control groups

Control groups of non-users of the discontinued product were set up for each study to increase the validity of the statistical results (Bryman & Bell, 2003).

Each control group consisted of shoppers who had purchased from the product category of interest within the New World Auckland region stores for a period of three months prior to the product discontinuation date and for a three month period post discontinuation but had not purchased the discontinued product or product range. The use of sales data from a control group, that has been affected by the same price

changes, seasonality and promotional factors, allows one to establish whether or not an event had taken place in the product category of interest that would influence the average monthly sales in the experimental group. The use of a control group thus controls for changes in the marketing mix before and after the discontinuation and the shoppers' responses to these events. The control group increases the internal validity of the statistical results and reduces the chance of spurious conclusions being drawn.

4.4 The Data

4.4.1 Overview of the data

The secondary data, collected for this research, is in the form of scanner data from New World stores within the Auckland region. The New World Auckland region covers four areas namely: Northland, Auckland, Waikato and the Bay of Plenty. Initial data was collected between January 2009 and June 2010 and was provided to the researcher by Datamine, a data mining service provider to the Foodstuffs Auckland region.

Permission to use the data was granted by Rob Chemaly, General Manager of retail at Foodstuffs Auckland region, who was interested in the research study and its findings. The three discontinued products were selected from information provided by Nielsen. The scanner data was collected from shoppers of the New World Auckland region stores that used a Flybuys card when making their purchases. Datamine collected all purchase data from Flybuys' customers that were identified as purchasers of a selected discontinued product and shopped in any of the 48 New World Auckland region stores.

This research involves three studies. Each study focuses on a different type of product discontinuation in a different product category, with three different cohorts of shoppers. The studies are named according to the brand name of the product item or product range that was discontinued and the product category. The three studies are referred to as follows:

- 1) The Anlene milk study – milk product category
- 2) The Kellogg's Cocoa Crispix cereal study – cereal product category
- 3) The Bluebird CC's snack study – savoury snack food category

The variables for the initial data collection for each of the studies are provided in Table 4.1.

Table 4-1: Variables for each study

Variable name	Variable description
Dm_date	Date of transaction
Store_name	Name of the store where the transaction occurred
Dmtransnum	Transaction number
Fbcard	Flybuys number
Department	Department number of the product(s) purchased
Department description	Department description of the product(s) purchased
Itemcode	Item code of the product(s) purchased
Item_description	Item description of the product (s) purchased
Item_size	Item size of the product(s) purchased
Price	Price paid for the product(s) purchased
Qty	Quantity purchased
Discontinued_itemcode	Item code of the relevant discontinued product that the Flybuys customer purchased
Cancelled_item_purchased_flag	Flag to indicate whether the relevant discontinued product was purchased within that transaction

As mentioned previously the three discontinued products were selected based on the criteria that the products were well-known brands of large product categories and therefore had a robust number of purchasers. The selected product's discontinuation date also had to fall within a similar time period.

The 12 month period tracked (nine months prior and three months post product discontinuation) was dependent on the discontinuation date of the product of interest and is as follows:

The Anlene milk study: February 2009 – February 2010

The Kellogg's Cocoa Crispix cereal study: January 2009 – January 2010

The Bluebird CC's snack study: June 2009 – June 2010

The product discontinuation date is essentially the date identified as being the point at which the product was discontinued in most of the stores. There is, however, some variation by store due to stores running out-of stocks on different dates. The variation is accounted for at an individual level.

The initial data sets collected included all purchases made by “qualified” Flybuys’ shoppers from all product categories (known as product departments within Foodstuffs) in any Auckland region New World store. To qualify, the Flybuys shopper had to have purchased the discontinued product for a 12 month period prior to discontinuation. During data preparation the period was reduced to a 9 month period prior to discontinuation as this was deemed a sufficient period of time to establish regular shoppers of the discontinued product. Additional qualifying purchase criteria (outlined in section 4.4.2.2.) were later set to ensure that only regular purchasers of the discontinued product were included in the final studies. As the switching response of purchasing from another product category is an extremely rare response to product unavailability (Sloot et al., 2005) it was decided to narrow the focus of the three studies to purchases made within the product category of interest only. Each initial data set and subsequent study differs in terms of size and characteristics and is discussed separately.

4.4.1.1 The Anlene milk study

The Anlene 2 litre milk was a variant within the Anlene milk range from Fonterra which consisted of a 2 litre (2L) and a 1 litre (1L) variant. Anlene milk was low in fat and formulated for adults who may be lacking in essential bone nutrients. At the time of launch (late 2006), Anlene milk was the only dairy product with added vitamin D and minerals, mainly calcium, scientifically proven to help maintain bones. The Anlene milk range was discontinued in New Zealand from October 2009 (Wallace, 2009). The deletion date identified for the Anlene 2L milk was the 11th November 2009. The brand was not replaced with a new brand by the manufacturer in the three month period following the discontinuation.

4.4.1.1.1 Size of the initial data set

The initial total data set comprised of purchases made (approximately 953 600 sales transactions) within 311 product departments by 701 Flybuys customers, within 48 New World stores. From this initial data set a defined “milk product category” and shopper cohort were created for the Anlene milk study.

4.4.1.1.2 The selection of the control group

The milk control group consisted of 279 shoppers selected from the initial data sets collected. Shoppers were selected on the basis of them having purchased milk products from the defined milk product category for a period of three month period prior to the Anlene 2L discontinuation date. Any shoppers that had purchased the Anlene milk

products were excluded from the control group. Sales were collected for a three month prior and post the product discontinuation.

4.4.1.2 The Kellogg's Cocoa Crispix cereal study

Kellogg's Cocoa Crispix 340g was originally a variant within the Kellogg's Crispix brand range alongside Kellogg's Honey Crispix until it was discontinued in October 2009 and rebranded as Kellogg's Coco Pops Chex. The actual deletion date identified for purposes of data analysis was the 20th of October 2009. The rebranded product then became a variant within the Kellogg's Coco Pops range whilst the Honey Crispix variant continued to be sold unchanged. The Kellogg's Cocoa Crispix brand and the Kellogg's Coco Pops brand range are aimed at the same target market as both are aimed at children who enjoy a chocolate flavoured cereal.

4.4.1.2.1 Size of the initial data set

The initial total data set comprised of purchases made (approximately 1,871 671 sales transactions) within 313 product departments by 852 Flybuys customers' within 48 New World stores. From this initial data set a defined "cereal product category" and shopper cohort was created for the Kellogg's Cocoa Crispix cereal study.

4.4.1.2.2 The selection of the control group

The cereal control group consisted of 228 shoppers selected from the initial data sets. Shoppers were selected on the basis of their having purchased cereal products from the defined cereal product category for a three month period prior to the Kellogg's Cocoa Crispix discontinuation date. Any shoppers that had purchased Kellogg's Crispix were excluded from the control group. Sales were collected for a three month prior and post the product discontinuation.

4.4.1.3 The Bluebird CC's snack study

Bluebird CC's Tasty Cheese 190g was a variant of the Bluebird corn chip brand range called CC's. The other variants in the range included a Mexican Fiesta flavour, a Flame grill BBQ flavour as well as a Tasty Cheese 10's multi-pack 180g variant. The Tasty Cheese 190g variant was discontinued in March 2010 and thereafter the entire range was discontinued. The actual deletion date identified for the purpose of the data analysis was the 17th of March 2010. Bluebird immediately introduced the Doritos corn chip range which consists of ten variants. Bluebird CC's Tasty Cheese 190g variant was

replaced by the following cheese varieties: the Doritos Cheese supreme (170g and 300g) and Doritos Nachos cheese (170g and 300g).

4.4.1.3.1 Size of the initial data set

The initial total data set comprised of purchases made (approximately 1, 257 151 sales transactions) within 311 product departments by 581 Flybuys customers in 49 New World stores. From this initial data set a defined “snack product category” and cohort of shopper was created for the Bluebird CC’s snack study.

4.4.1.3.2 The selection of the control group

The snack control group consisted of 190 shoppers selected from the initial data sets. Shoppers were selected on the basis of them having purchased snack products from the defined snack product category in the three month period prior to the Bluebird CC’s Tasty Cheese discontinuation date. Any shoppers that had purchased from the Bluebird CC’s range were excluded from the control group. Sales were collected for a three month prior and post the product discontinuation.

The next section provides a detailed description of the process involved in preparing the final data sets for analysis.

4.4.2 Data Preparation for analysis

4.4.2.1 Data cleaning of the three initial data sets

The initial data collection for the three studies was imported into SPSS. A brief observation of the data revealed a number of negative values for the “quantity” and “price” variables. These negative values had occurred due to the following scenarios that had taken place at the supermarket till: errors that occur when the wrong price of an item is entered into the cash register, commonly referred to as over-rings, incorrect pricing of the product and promotional product discounts. To resolve this issue of negative values occurring in the data a summation operation was performed using R software. All identical product item codes within the same transaction, date and store were summed together so that the negative and positive values were cancelled out. This operation resulted in rows of zeros which were removed in a second step of the operation.

The next step in preparing the data for analysis involved converting the “Quantity” variable into a more meaningful measurement. The unit of measurement was not

consistent across product categories. In most cases “quantity” referred to the number of units sold, but in some instances quantity could be the mass or volume of a product. For example a 100 gram packet of nuts was shown as a quantity of one; while a 100 grams of weighed nuts from the self-service bins were shown as a quantity of 100. An examination of the data revealed that a shopping transaction never included purchases of 25 or more units of the same product item and so it was decided to use the number 25 as a cut-off point. Using SPSS the “Quantity” variable was transformed into a new variable named “No. of items” and the following transformation rule was used: Any quantities less than 25 remained the same value. All quantities 25 or greater were converted to a value of one.

As part of the cleaning of the initial data sets, descriptive statistics were run on the following four variables to check for anomalies and outliers: Store Name, Flybuys card number, Product Department Name and Product Item purchased. A comparison was made between the frequency count of the “Store Name” variable and a sales ranking of the Auckland region New World stores. A similar comparison was made between the frequency count of the “Product Item” variable and a ranking of the top product sales during the period 2009/2010 provided by Nielsen. No anomalies or outliers were found.

Shoppers’ purchase data of the discontinued product was then examined for outliers. Frequency distributions were run on the total quantity purchased data for each individual Flybuys customer for all three studies. The assumption that 99.3% of the data falls within 2.7 standard deviations of the mean was used as a guideline and any shoppers whose purchases of the discontinued product exceeded the guideline were deemed to be outliers and removed from the data set. The outliers were thought to be shoppers who were buying for smaller stores, restaurants and cafes.

4.4.2.2 Refining the initial data sets

In order to establish clear purchase behaviour patterns of the shoppers and to ensure that shoppers were regular purchasers of the discontinued product a further refinement of the initial data sets was carried out using the following qualifying criteria:

- 1) Shoppers must have purchased at least three units of the discontinued product during the nine month period prior to discontinuation.
- 2) Shoppers must have purchased the discontinued product on at least two separate shopping occasions in the nine month period leading up to the product

discontinuation. If only two shopping occasions occurred then these had to be spread out over at least a three month period.

- 3) The shopper also had to have made purchases of the discontinued product within three months of the final deletion date.
- 4) Shoppers must have purchased from the product category of interest in at least eight of the nine months prior to the product discontinuation.

This refinement of the initial data sets reduced the number of shoppers in the final studies (see Table 4.2).

Table 4-2: Number of shoppers in each study

Final study	Number of shoppers
Anlene milk study	455
Kellogg's Cocoa Crispix cereal study	540
Bluebird CC's snack study	403

The next step conducted was to define the product categories of interest for each study.

4.4.2.3 Defining the product categories of interest

In order to analyse switching behaviour within the product category the New World “product departments” were examined and where necessary redefined to create more meaningful product categories for each study. The three created product categories are described below and summarised in Table 4.3.

4.4.2.3.1 The milk product category

The product department that the Anlene milk range was originally categorised into by New World supermarkets was the milk/cream department - 511. The product department consisted of 139 product lines and included the following sub-classes: milk, cream, flavoured milk and yoghurt. To make the study more meaningful with regards to analysis, a “milk product category” was created for the Anlene milk study and the following sub - classes were excluded: cream, flavoured milk and yoghurt. Further data cleaning of the remaining milk product lines led to the deletion of those product items with a cumulative purchase frequency of less than 1%. These deleted lines were deemed not to contribute much to the product category due to their low sales. The final milk product category consisted of 63 product items.

4.4.2.3.2 The cereal product category

Kellogg's Cocoa Crispix was originally categorised into the cereal department – 50, which included 308 product lines. To create a “cereal product category” for the Kellogg's Cocoa Crispix cereal study all product items within the original cereal product department were included with the exception of those lines with a cumulative purchase frequency of less than 1%. These deleted lines were deemed not to contribute much to the product category due to their low sales. The final “cereal product category” consisted of 245 product items.

4.4.2.3.3 The snack product category

Bluebird CC's was categorised into the snacks - chip/nuts department – 224, which included 521 product lines. To create the “snack product category” for the Bluebird CC's snack study the following product lines were excluded as they could not easily be categorised in terms of the three switching categories and their sales were very low: Pappadums, dip sauces, wasabi and chilli flavoured peas, trail mix and apple crisps. Once again, further cleaning of the snack product category led to the deletion of those product items with a cumulative purchase frequency of less than 1%. The final “snack product category” was still fairly large and consisted of 355 product items.

Table 4-3: Number of product items in each defined product category

Product category	Product items
Anlene milk study	63
Kellogg's Cocoa Crispix cereal study	245
Bluebird CC's snack study	355

4.4.2.4 Aggregation of the sales data

The sales data was collected from individual qualified shoppers on each and every shopping occasion where a Flybuys card was swiped (obviously if the qualified shopper forgot to swipe their Flybuys card at the till then the purchases on that shopping occasion would not be recorded). As this research is concerned with examining patterns of purchase behaviour it was decided to aggregate the sales data to a monthly purchase level. Individual shopper's purchase data for each product item transaction at each store was aggregated to an average monthly level for the nine month period prior to the discontinuation and the three month period post product discontinuation.

Aggregating the data to an average monthly sales level enabled inferences to be made about individual shoppers' purchase patterns and switching behaviour prior and post product discontinuation within the defined product categories of interest. The purchase data was similarly aggregated within the control groups.

4.4.2.5 Switching behaviour categories

Research suggests that when consumers are faced with product unavailability they tend to switch to substitutes with similar attributes to the unavailable product (Boatwright & Nunes, 2004; Campo et al., 2000; Corstjens & Corstjens, 1999). Three switching behaviour categories were created for each of the three studies to represent broad within-product category switching choices made by the shopper both before and after the product discontinuation. The categorisation of the switching behaviour was based on guidelines provided by New World Head Office and the products' similarity towards the discontinued product. Similarity refers to product attributes of flavour, form and benefit provided. The switching behaviour categories for each study are outlined below.

4.4.2.5.1 Anlene milk study

The Anlene milk study focuses on a product discontinuation with no immediate replacement by the manufacturer. The switching behaviour categories for the Anlene milk study were broadly defined as follows:

(S1): Switch to a very similar product: The switching category contains similar specialised milk products to Anlene all enriched with calcium for bone health e.g. Sun Latte milk.

(S2): Switch to a less similar product: The switching category contains milk products with limited health benefit claims such as low fat, organic or soy but no specific calcium benefits e.g. Anchor Milk Lite.

(S3): Switch to a non-similar product: The switching category contains regular or standard milk products with no specific health benefit claims e.g. Anchor Blue Top.

With the exception of Anlene 2L all other product items in the defined "milk product category" were coded to one of the three switching behaviour categories (S1), (S2) and (S3). See Appendix 1A for a full breakdown of the defined "milk product category" and switching categories.

4.4.2.5.2 Kellogg's Cocoa Crispix cereal study

The Kellogg's Cocoa Crispix cereal study investigates a product discontinuation that is rebranded as Kellogg's Coco pops Chex to form part of the popular "Coco Pops" range. The categories for the Kellogg's Coco Crispix cereal study were broadly defined as follows:

(S1): Switch to a very similar product: The switching category contains Honey Crispix and similar chocolate/cocoa flavoured cereals aimed at children e.g. Hubbards Big Bugs 'N Mud.

(S2): Switch to a less similar product: The switching category contains non-chocolate/cocoa flavoured cereals that are aimed at children and families e.g. Kellogg's Fruit Loops and Kellogg's Cornflakes.

(S3): Switch to a non-similar product: The switching category contains cereals aimed at adults e.g. Special K as well as the muesli and oats product lines.

All product items in the defined "cereal product category", with the exception of Kellogg's Cocoa Crispix, were coded to one of the three switching behaviour categories (S1), (S2) and (S3). See Appendix 1B for a full breakdown of the defined "cereal product category" and switching categories.

4.4.2.5.3 The Bluebird CC's snack study

The Bluebird CC's snack study examines a product discontinuation that is immediately replaced by a new product from the manufacturer. When Bluebird discontinued the CC's Tasty Cheese 190g product item and later the entire CC's range, Bluebird immediately launched the Doritos corn chip range with two new cheese flavours. The switching categories for the study were broadly defined as follows:

(S1): Switch to a very similar product: The switching category is comprised of all corn chip product items e.g. Mexicano corn chip cheese variant.

(S2): Switch to a less similar product: The switching category comprises all non-corn chips e.g. Bluebird thin-cut ready salted potato chips.

(S3): Switch to a non-similar product: The switching category comprises all non-chip savoury snack foods e.g. Eta salted peanuts.

The treatment of the categorisation of the product lines within the defined snack product category was very similar to the previous two studies whereby all product items in the defined “snack product category”, with the exception of the Bluebird CC’s Tasty Cheese 190g were coded to one of the three switching categories (S1), (S2) and (S3). See Appendix 1C for the full breakdown of the defined “snack product category” and switching categories.

4.4.2.6 Creating Heavy, Moderate and Light purchase profiles

In order to test whether or not varying purchase levels of the discontinued product moderated the switching behaviour, purchase profiles of the shoppers needed to be created. To create the ‘purchase profile’ variable, the qualified shoppers were categorised into groups depending on the quantities of the discontinued product purchased over the nine month period. A simple visual inspection of the data revealed natural breaks in the purchase quantities of each study suggesting three groups. These three groups are referred to as heavy, moderate and light purchasers of the discontinued product. A more statistical approach was then adopted to define the purchase profiles by applying the following percentile inclusive rule:

0 - 25% inclusive: light purchasers of the discontinued product

26% - 74% inclusive: moderate purchasers of the discontinued product

75% - 100% inclusive: heavy purchasers of the discontinued product

The quantities of the discontinued product purchased and number of shoppers in the heavy, moderate and light purchase profiles for each study is represented in Table 4.4.

Table 4-4: Purchase profiles for Anlene 2L, Kellogg's Cocoa Crispix 340g and Bluebird CC's Tasty Cheese 190g

Purchase profile	Anlene 2L (total 455 shoppers)		Kellogg’s Cocoa Crispix (total 540 shoppers)		Bluebird CCs Tasty Cheese 190g (total 403 shoppers)	
	Units purchased	Shoppers	Units purchased	Shoppers	Units purchased	Shoppers
Light	3-8	115	3-4	140	3-4	168
Moderate	9-22	218	5-10	245	5-7	124
Heavy	23-60	122	11-31	155	8-28	111

4.4.3 Summary of data for the final studies

A summary of the basic characteristics of the three studies upon which the analyses were conducted is provided in Table 4.5.

Table 4-5: Data for the final studies

	Anlene milk study	Kellogg's Cocoa Crispix cereal study	Bluebird CC's snack study
Number of shoppers	455	540	403
Number of product items in product category	63	245	355
Number of stores	48	48	47

4.5 Data analysis

In order to test the proposed propositions of this research a number of data analysis techniques were required. A brief description of the techniques employed and how they are used in this research follows.

4.5.1 Descriptive statistics

At the most basic level of this natural experiment, a comparison is made of the sales purchases before and after the product discontinuation. Comparing both the sales and switching behaviour patterns of shoppers prior and post a preferred-product discontinuation for the three studies allows inferences to be made about the effect that product discontinuations have on shoppers' switching behaviours.

To build an overall picture of the above scenario, descriptive statistics were used to help simplify the data to a more manageable form and to describe the characteristics of the three large data sets more easily.

SPSS was used to calculate the means of the following variables for the nine months prior and three months post discontinuation for each study: total product category, product items and switching categories. As mentioned previously these variables were measured as "average monthly sales" in dollars. The variables analysed for each study are represented in Tables 4.6, 4.7 and 4.8 below.

Table 4-6: Anlene milk study - variables analysed

9 months prior period in sales dollars	3 months post period in sales dollars
Total product category sales (\$)	Total product category sales (\$)
Anlene 2 litre	
S1 (Anlene 1L)	S1
S2	S2
S3	S3

Table 4-7: Kellogg's Cocoa Crispix cereal study - variables analysed

9 months prior period in sales dollars	3 months post period in sales dollars
Total product category sales (\$)	Total product category sales (\$)
Kellogg's Cocoa Crispix 340g	S1
S1	- Kellogg's Coco Pops Chex 340g
- Kellogg's Honey Crispix 310g	- Kellogg's Honey Crispix 310g
- Kellogg's Coco Pops 450g	- Kellogg's Coco Pops 450g
- Kellogg's Coco Pops 735g	- Kellogg's Coco Pops 735g
- Kellogg's Coco Pops Rocks 400g	- Kellogg's Coco Pops Rocks 400g
S2	S2
S3	S3

Table 4-8: Bluebird CC's snack study - variables analysed

9 months prior period in sales dollars	3 months post period in sales dollars
Total product category sales (\$)	Total product category sales (\$)
CC's Tasty Cheese 190g	S1
S1	- Doritos BBQ 170g
- CC's Mex. Fiesta 190g	- Doritos Cheese Supreme 170g
- CC's Flame Grill BBQ 190g	- Doritos Cheese Supreme. 8 pack
- CC's Tasty Cheese 10s 300g	- Doritos Nacho Cheese 170g
S2	- Doritos Original 170g
S3	- Doritos Party Bag Cheese Supreme 300g
	- Doritos Party Bag Nachos Supreme 300g
	- Doritos Party bag Original 300g
	- Doritos Party bag Salsa 300g
	- Doritos Salsa 170g
	S2
	S3

Using the results from the descriptive analysis, excel tables were created for each study to help understand the impact of the product discontinuation on the sales and the broad switching choices made within the product category. The tables contain average

monthly sales and percentage contribution information for the periods before and after the product discontinuation. Product category sales were also broken down by switching category type (S1), (S2) and (S3) as well as by product item. Four separate tables were created for each study showing average monthly sales for the total, heavy, moderate and light purchasers of the discontinued product (See Appendix 2). The data from these tables was also used to test proposition four.

The next step was to run a frequencies count on the Flybuys shoppers' purchases in the product category post the product discontinuation. This step enabled the identification of the percentage of shoppers who stopped purchasing from the product category post product discontinuation. A comparison between the percentage of shoppers who substituted and those shoppers that stopped purchasing within the product category enabled the establishment of the dominant switching response type relating to proposition one.

4.5.2 Statistical tests to compare the means of the dependent variables

This research explores the relationships between the independent variable, which in this case is the event of the discontinued product, and the dependent variables which include total category sales, product item sales and the switching category sales of the shoppers, before and after the product discontinuation. Another area of interest to this research is the possible moderating effect of heavy, moderate and light purchasers of the discontinued product on switching behaviours. The repeat measures design of this study, the nature of the data and the research questions posed indicated that t-tests of difference was an appropriate comparisons of means test to apply. The one-way analysis of variance (ANOVA) was used to explore the moderating effect of the heavy, moderate and light purchase profiles. The percentage switching sales data was examined to test proposition four.

4.5.2.1 T-tests of difference

It was felt that an appropriate approach to compare the purchase behaviour of shoppers prior and post the product discontinuation and thus measure the impact of the discontinued product on product category sales, product item sales and switching category sales was to conduct a series of paired t-tests of differences. The t-test is a type of parametric test commonly used to assess the statistical significance of the difference between two sample means for a single dependent variable (Hair, Black, Babin,

Anderson, & Tatham, 2006) and provides inferences for making statements about the parent populations. T-tests of difference assume that the variables of interest are measured on at least an interval scale and although a normal distribution of the variable is assumed the t-test is also a robust test to use in cases where departures from normality occur (Malhotra et al., 2002). According to an out-of-stock study conducted by Zinn and Liu (2001) t-tests of difference is an appropriate approach to use when examining the relationship between the switching behaviour of the shopper and the independent variable such as a product discontinuation. The sales data collected in this research uses the same group of shoppers prior and post the event for each study and thus can be described as of a repeated-measures design. Repeated-measures design reduces unsystematic variance making it easier to detect systematic variances (Field, 2009).

A series of paired t-tests of difference are conducted on the means of two paired samples of observations (the prior and post discontinuation purchases of the shoppers) to test propositions two and three posed by this research.

The paired t-test is also the statistical technique applied to check for significant differences within the control groups. Average sales for a period of three months prior and three months post the product discontinuation date were compared to ascertain if any significant differences occurred.

4.5.2.2 Analysis of variance (ANOVA)

In addition to understanding the impact of the product discontinuation on the shopper's switching behaviour; this research is also interested in the question: Is there a difference in the switching behaviour of the three groups of shoppers who have purchased varying amounts of the discontinued product, namely the heavy, moderate and light purchasers?

ANOVA is used to explore proposition four which proposes that varying purchase levels of the discontinued product, indicated by the three purchase profiles (heavy, moderate and light), will have a moderating effect on the switching behaviour of the shoppers, with regard to switching category (S1). ANOVA is essentially a statistical technique to determine, on the basis of one dependent measure, whether two or more groups have equal means (Hair et al., 2006). The one-way analysis of variance allows for the examination of differences in the mean values of the dependent variable (switching category (S1) sales) for three categories of a factor (heavy, moderate and

light purchaser of the discontinued product). Being a parametric test the one-way ANOVA shares similar assumptions to a t-test (Kerr, Hall, & Kozub, 2002). An additional assumption that relates particularly to ANOVA concerns group sample sizes. Hair et al. (2006) advise group sizes to be approximately of equal size and to ensure that an adequate sample size (minimum of 20 observations per group) is maintained for all groups.

A more detailed discussion of how the statistical tests and the percentage switch sales data were utilised to explore and test each proposition is provided in Chapter five. The propositions for each study are presented in the next section.

4.5.3 Propositions for each study

This research comprises three separate studies each examining a different type of product discontinuation. The four propositions presented previously have thus been adapted for each study.

4.5.3.1 Anlene milk study

When the Anlene 2L and 1L milk was discontinued, shoppers had the choice of substituting within the milk product category or stop purchasing from the milk product category altogether. If shoppers chose to substitute within the product category they were limited to choosing products from the three switching categories (S1, S2 and S3). Shoppers were categorised as heavy, moderate or light purchasers of Anlene 2L milk. The propositions to be tested for this study are as follows:

P1: The dominant switching response to the discontinuation of Anlene2L milk is that of switching to a substitute within the product category and the stop purchase response is very low.

P2: The milk category sales will be adversely affected by the discontinuation of the Anlene 2L milk in the short-term.

P3: After the discontinuation of Anlene2L milk, shoppers are more likely to switch to a similar specialised milk substitute (S1) as opposed to regular milk (S3).

P4: Heavy purchasers of Anlene 2L milk will demonstrate a greater propensity to switch to a similar milk substitute (S1) than the moderate or light purchaser after the product discontinuation.

4.5.3.2 Kellogg's Cocoa Crispix cereal study

In the case of the Kellogg's Cocoa Crispix discontinuation, the Kellogg's Cocoa Crispix was rebranded as Kellogg's Coco Pops Chex and this meant that the shopper faced a wider choice scenario than a shopper in the Anlene milk study. After the discontinuation the respondent could purchase the rebranded Kellogg's Coco Pops Chex or switch to the Kellogg's Honey Crispix variant or other switching choices (S1, S2, and S3). Shoppers were categorised as heavy, moderate and light purchasers of Kellogg's Cocoa Crispix. The propositions posed for the Kellogg's Cocoa Crispix cereal study are presented below.

P1: The dominant switching response to the discontinuation of Kellogg's Cocoa Crispix is that of switching to a substitute within the product category and the stop purchase response is very low.

P2: The cereal category sales will be adversely affected by the discontinuation of Kellogg's Cocoa Crispix in the short-term. Furthermore:

P2 (i): The rebranded product (Kellogg's Coco Pops Chex) will not make up all the lost sales from the discontinued product (Kellogg's Cocoa Crispix). This proposition suggests greater implications for the manufacturer than the retailer; however, the retailers' sales are also affected.

P3: After the discontinuation of Kellogg's Cocoa Crispix shoppers are more likely to switch to a similar cereal (S1) as opposed to a cereal that is not similar to the product attributes of Kellogg's Cocoa Crispix (S3).

P4: Heavy purchasers of Kellogg's Cocoa Crispix will demonstrate a greater propensity to switch to a similar cereal substitute (S1) than the moderate or light purchaser after the product discontinuation.

4.5.3.3 Bluebird CC's snack study

The discontinuation type for the Bluebird CC's snack study differed again from the other two studies. When the Bluebird CC's Tasty Cheese 190g variant and the CC's range (3 flavours and 4 SKU's) were discontinued, it was effectively replaced by the larger Doritos corn chip range (5 flavours and 10 SKU's). This meant that the shopper who previously purchased the CC's Tasty Cheese 190g variant could switch to a wider assortment of products including the Doritos Cheese Supreme and Nachos Cheese flavours, other variants in the Doritos range as well as the products in the switching categories (S1, S2, and S3). With the above in mind the propositions for the study are:

P1: The dominant switching response to the discontinuation of Bluebird CC's Tasty Cheese 190g is that of switching to a substitute within the product category and the stop purchase response is very low.

P2: The snack category sales will be adversely affected by the discontinuation of the Bluebird CC's Tasty Cheese 190g in the short-term. Furthermore:

P2 (i): The new replacement product range (Doritos Corn Chips) will not make up all the lost sales from the discontinued product range (Bluebird CC's). Unfortunately, a direct comparison cannot be made between the sales of the discontinued Bluebird CC's Tasty Cheese 190g and the new replacement Doritos products due to the different offering.

P3: After the discontinuation of Bluebird CC's Tasty Cheese 190g variant, shoppers are more likely to switch to a similar corn chip substitute (S1) as opposed to snacks that are not similar to the attributes of the Bluebird CC's range (S3).

P4: Heavy purchasers of the Bluebird CC's Tasty Cheese 190g variant will demonstrate a greater propensity to switch to a similar corn chip substitute (S1) than the moderate or light purchaser after the product discontinuation.

4.6 Chapter summary

After identifying the research problem, objectives and questions of this research, the details of the research design and methodology used to test the propositions posed in Chapter three were discussed.

Many studies in the product unavailability literature are survey based or use on-line shopping panels to measure responses to product unavailability, however, in this research study, secondary data in the form of scanner data was collected to examine actual behavioural responses to product unavailability. The process of cleaning and preparing the scanner data for analysis was extensively covered. The final section of this chapter introduced the methods of analysis applied in this research. Descriptive statistics, t-tests of difference, ANOVAs, percentage sales switching data were deemed to be appropriate methods to explore and test the propositions posed. A brief description of how the tests would be employed to meet the objectives of this research followed. The next chapter will present the results of the analyses of the data.

Chapter 5: Results

5.1 Introduction

The purpose of this chapter is to present the results of the analyses conducted on each of the three studies namely; the Anlene milk study, the Kellogg's Cocoa Crispix cereal study and the Bluebird CC's snack study. Each study will be prefaced by a description of the characteristics of the study before the propositions and the results of the analyses are presented.

5.2 The three studies

5.2.1 The Anlene milk study

The Anlene milk range consisted of two variants: Anlene 2L and 1L. Although both variants were discontinued, the study is based on the discontinuation faced by purchasers of the Anlene 2L milk. The discontinuation type has been defined as “no product replacement” as after the discontinuation of the Anlene milk range the manufacturer did not introduce a replacement product. With this type of discontinuation the Anlene milk shopper had only the choice of switching to a substitute milk within the existing product category or stop purchasing from the milk category altogether. In terms of size, the experimental group, control group and the purchase profile groups can be described as large. Table 5.1 presents a summary of the key data characteristics of the study.

Table 5-1: Main data characteristics of the Anlene milk study

Anlene milk study	
Number of shoppers	455
Number of stores	47
Number of product items in product category	63
Switching category (S1)	Similar specialised milks enriched with calcium
Switching category (S2)	Milk products with limited health benefit claims such as low fat, organic or soy but no calcium claims
Switching category (S3)	Regular or standard milk products with no health benefit claims at all
Number of shoppers in control group	279

Purchase profiles	Anlene 2L (total 455 shoppers)	
	Units purchased	Number of Shoppers
Light	3-8	115
Moderate	9-22	218
Heavy	23-60	122

5.2.1.1 Proposition testing

The first proposition relates to the type of switching response to the discontinuation of Anlene 2L milk. The switching response options are either to switch to a substitute within the defined milk product category or not to purchase from the milk product category at all. The first proposition is : *P1: The dominant switching response to the discontinuation of Anlene 2L milk is that of switching to a substitute within the milk product category and the stop purchasing response is very low.*

A frequency analysis was conducted on the variable “sales 3 months after discontinuation”. The results show that of the 455 shoppers who purchased from the milk category before the discontinuation of Anlene 2L milk, 11 shoppers did not purchase from the milk category in the three month period following the discontinuation. *As 97.6% of Anlene 2L milk shoppers substituted within the product category it was found to be the dominant type of switching response.* The results clearly support proposition one.

The second proposition posed is concerned with the adverse impact of the product discontinuation on the dollar sales of the defined milk category and is: *P2: The milk category sales will be adversely affected by the discontinuation of the Anlene 2L milk in the short-term.* A paired samples t-test was conducted to compare the means of the variables “Average monthly sales 9 months prior” and “Average monthly sales 3 months after” for the milk product category.

Table 5.2 presents the t-value and its associated significance. *On average, the Anlene 2L milk shoppers’ monthly spend, in the milk category, showed a statistically significant decrease from \$19.30 prior to the discontinuation to \$16.01 after the discontinuation.* (M=19.30, SE = 0.62) vs. (M= 16.01, SE = 0.61), $t(454) = 9.30$, $p = 0.00$, $r = 0.4$. The results of the paired t-test suggest support for proposition two.

Table 5-2: Paired samples statistics and t-test for proposition two

Paired Samples Statistics				
Variables	Mean	N	Std. Deviation	Std. Error Mean
Avg. monthly sales 9 months prior	19.30	455	13.29	0.62
Avg. monthly sales 3 months after	16.01	455	13.02	0.61

Paired Samples Test						
Variables	Mean	Std. Error Mean	Paired Differences		t	Sig.
			95% Confidence Interval of the Difference			
			Lower	Upper		
Avg. monthly sales 9 months prior – Avg. monthly sales 3m after	3.29	0.35	2.60	3.99	9.30	0.00

The third proposition posits that after the discontinuation of Anlene 2L milk, shoppers are more likely to switch to a similar specialised milk substitute from switching category (S1) as opposed to a regular milk from switching category (S3). To test for P3 a comparison was made of the average monthly sales, prior and post discontinuation, for the three switching categories (S1), (S2) and (S3). A paired-samples t-test was conducted on the following variables:

- Pair 1: Switching category (S1) average monthly sales 9 months prior vs. switching category (S1) average monthly sales 3 months after discontinuation.
- Pair 2: Switching category (S2) average monthly sales 9 months prior vs. switching category (S2) average monthly sales 3 months after discontinuation.
- Pair 3: Switching category (S3) average monthly sales 9 months prior vs. switching category (S3) average monthly sales 3 months after discontinuation.

The results of the paired t-test are displayed in Table 5.3 below. The switching category (S1)'s average monthly sales show a statistically significant increase from \$5.68 prior to

the discontinuation to \$8.27 after the discontinuation, $t(454) = -7.65$, $p = 0.00$, $r = 0.34$. Switching category (S2)'s average monthly sales also showed a significant increase after the discontinuation due to shoppers switching to low fat milk products. By comparison the switching category (S3)'s average monthly sales resulted in no statistically significant difference between the prior average monthly sales of \$1.98 and the post average monthly sales of \$1.95, $t(454) = 0.15$, $p = 0.88$. *The results of the paired t-tests suggest that on average, Anlene 2L milk shoppers will more likely switch to a similar specialised milk substitute (S1) and those with some health benefits (S2) than to a regular milk substitute (S3), thus proposition three is supported.*

Table 5-3: Paired samples statistics and t-test for proposition three

Paired Samples Statistics					
Variables		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	(S1) avg. monthly sales 9 months prior	5.68	455	7.65	0.36
	(S1) avg. monthly sales 3 months after	8.27	455	9.61	0.45
Pair 2	(S2) avg. monthly sales 9 months prior	3.32	455	7.11	0.33
	(S2) avg. monthly sales 3 months after	5.79	455	8.87	0.42
Pair 3	(S3) avg. monthly sales 9 months prior	1.98	455	5.44	0.25
	(S3) avg. monthly sales 3 months after	1.95	455	4.56	0.21

Variables	Paired Samples Test					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
(S1) avg. monthly sales 9 months prior – (S1) avg. monthly sales 3 months after	-2.59	7.23	0.34	-3.26	-1.92	-7.65	454	0.00
(S2) avg. monthly sales 9 months prior – (S2) avg. monthly sales 3 months after	-2.46	6.02	0.28	-3.02	-1.91	-8.72	454	0.00
(S3) avg. monthly sales 9 months prior – (S3) avg. monthly sales 3 months after	0.03	3.80	0.18	-0.32	0.38	0.15	454	0.88

The last proposition for the Anlene milk study is concerned with the possible moderating effect that the three different purchase groups of Anlene 2L milk will have on the switching behaviour. Proposition four is: *P4: Heavy purchasers of Anlene 2L milk will demonstrate a greater propensity to switch to a similar milk substitute (S1) than the moderate or light purchaser after the discontinuation of Anlene 2L milk.*

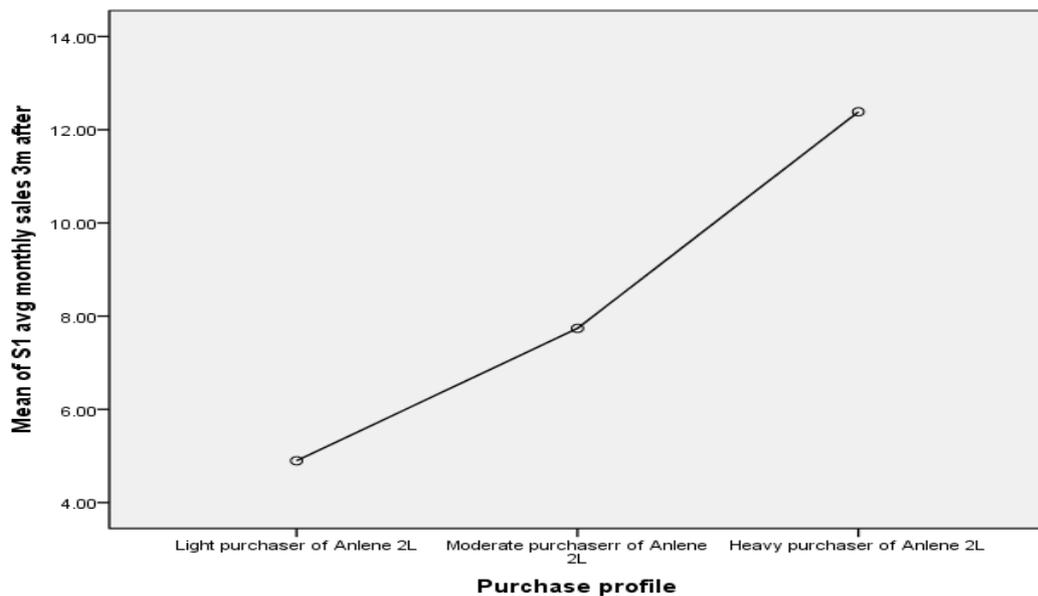
A one-way ANOVA is applied to explore proposition four and thereafter the percentage sales switch figures are analysed to test proposition four. The analysis compared the average monthly sales after the discontinuation of Anlene 2L milk, in switching category (S1) for each of the three purchase groups (light, moderate and heavy) of Anlene 2L milk. The ANOVA results presented in Table 5.4 below show that the means for at least one of the three means was significantly different from the other two, $F(2,452) = 20.17, p = 0.00, r = 0.28$. A graph (see figure 5.1 below) of the means of the three groups was plotted to clearly demonstrate the higher level of spend by the heavy purchaser (\$12.38) of Anlene 2L milk versus the moderate purchaser (\$7.74) and light purchaser (\$4.90). The ANOVA results only suggest that the heavy purchaser will spend more in category (S1) than the moderate or light purchaser of the discontinued brand.

Table 5-4: One way ANOVA to explore proposition four

Descriptives								
(S1) avg. monthly sales 3 months after	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Light purchaser of Anlene 2L	115	4.90	6.94	0.65	3.62	6.18	.00	39.20
Moderate purchaser of Anlene 2L	218	7.74	8.88	0.60	6.55	8.92	.00	55.47
Heavy purchaser of Anlene 2L	122	12.38	11.46	1.04	10.33	14.44	.00	65.88
Total	455	8.27	9.61	0.45	7.38	9.15	.00	65.88

ANOVA					
S1 avg. monthly sales 3m after	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3435.44	2	1717.72	20.17	0.00
Within Groups	38499.02	452	85.18		
Total	41934.47	454			

Figure 5-1 Average monthly spend by light, moderate and heavy purchasers in S1



In order to test proposition four the average monthly spend for each purchase profile for switching category (S1) prior and post discontinuation were examined. Table 5.5 shows the average monthly sales (represented as a percentage of the total for each purchase profile) prior and post discontinuation of Anlene 2L milk by switching category (See appendix 2A for full tables).

Table 5-5: Average monthly sales (expressed in percentages of total sales for each purchase profile) prior and post discontinuation by switching category for each purchase profile

	Heavy purchaser		Moderate purchaser		Light purchaser	
	Prior	Post	Prior	Post	Prior	Post
Anlene 2L	57%		39%		20%	
(S1)Anlene1L	8%		11%		13%	
category(S1)	15%	55%	19%	51%	30%	46%
category(S2)	14%	37%	18%	35%	23%	37%
category(S3)	6%	8%	13%	14%	14%	17%
Total	100%	100%	100%	100%	100%	100%

From the data in Table 5.5 the following percentage switches to category S1 (similar brands), after the discontinuation, were calculated:

Heavy purchaser of Anlene 2L	56%
Moderate purchaser of Anlene 2L	54%
Light purchaser of Anlene 2L	15%

These figures show that heavy purchasers have shifted a higher percentage of their discontinued average monthly sales to (S1) than moderate or light purchasers, suggesting support for proposition four.

5.2.1.2 Control group analysis

A paired samples t-test was employed to test for differences in product category sales for a period of three months prior and post the Anlene 2L milk discontinuation to determine whether or not an event had taken place in the milk product category that would significantly influence the sales and thus the results obtained in the experimental

group. The control group consisted of 279 shoppers who had purchased milk from the defined milk category but had not purchased from the Anlene milk range.

The results, as displayed in Table 5.6, indicate no significant difference in the average spend in the milk product category for the three month period prior ($M=80.33$, $SE = 3.29$) and post the discontinuation of the Anlene 2L milk ($M= 79.43$, $SE = 2.97$), $t(278) = 0.6$, $p = 0.55$. The results of the control group indicate that no major event took place within the product category that would influence the results obtained in the experimental group.

Table 5-6: Paired samples statistics and t-test for the control group

Paired Samples Statistics					
Variables		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Product category sales 3 months prior discontinuation	80.33	279	54.96	3.29
	Product category sales 3 months post discontinuation	79.43	279	49.56	2.97

5.2.2 The Kellogg's Cocoa Crispix cereal study

The Kellogg's Crispix range originally consisted of two variants: Kellogg's Honey Crispix 280g and Kellogg's Cocoa Crispix 340g. The honey variant remained on shelf but the Cocoa variant was discontinued and immediately rebranded as Kellogg's Coco Pops Chex 340g, becoming a new variant within the Kellogg's Coco Pops range. The product discontinuation type is defined as a rebranded product discontinuation. The sample size and product category size are both large as can be seen in Table 5.7 which summarises the main data characteristics of the study.

Table 5-7: Main data characteristics of the Kellogg's Cocoa Crispix cereal study

Kellogg's Cocoa Crispix cereal study	
Number of shoppers	540
Number of stores	48
Number of product items in category	245
Switching category (S1)	Chocolate/cocoa flavoured cereals aimed at children (includes Honey Crispix)
Switching category (S2)	Non-chocolate/cocoa flavoured cereals aimed at children and families
Switching category (S3)	Adults cereals including muesli and oats
Number of shoppers in control group	228

Purchase profiles	Kellogg's Cocoa Crispix 340g (total 540 shoppers)	
	Units purchased	Number of Shoppers
Light	3-4	140
Moderate	5-10	245
Heavy	11-31	155

5.2.2.1 Proposition testing

The first proposition relates to the type of switching response to the discontinuation of Kellogg's Cocoa Crispix. The switching response options to the discontinuation are either to switch to a substitute within the defined cereal product category or not to purchase from the cereal product category. The first proposition is: *P1: The dominant switching response to the discontinuation of Kellogg's Cocoa Crispix is that of switching to a substitute within the cereal product category and the stop purchasing response is very low.*

A frequency analysis was conducted on the variable "sales 3 months after discontinuation". The results show that of the 540 shoppers who purchased from the cereal product category before the discontinuation, 13 shoppers did not purchase any cereals in the three month period following the product discontinuation. As 97.6% of Kellogg's Cocoa Crispix shoppers substituted within the cereal product category and only 2.4% stopped purchasing, the dominant switching response is that of substitution within the product category. The first proposition is therefore supported.

Proposition two suggests that the defined cereal category sales will be adversely affected by the discontinuation of Kellogg's Cocoa Crispix in the short-term. A paired-samples t-test was conducted to compare the means of the variables: "Average monthly sales 9 months prior" and "Average monthly sales 3 months after" for the cereal product category.

On average, the Kellogg's Cocoa Crispix shoppers' monthly spend in the cereal category showed a statistically significant decrease from \$27.82 prior to the discontinuation to \$25.51 after the discontinuation, (M=27.82, SE = 0.72) vs. (M= 25.51, SE = 0.81), $t(539) = 4.64$, $p = 0.00$, $r = 0.20$, (see Table 5.8). The results, therefore, support the second proposition.

Table 5-8: Paired samples statistics and t-test for proposition two

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Avg. monthly sales 9m prior - total category	27.82	540	16.83	0.72
	Avg. monthly sales 3m after - total category	25.51	540	18.89	0.81

Paired Samples Test								
Variables	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Avg. monthly sales 9 months prior (product category) -Avg. monthly sales 3months after (product category)	2.31	11.59	0.50	1.33	3.29	4.64	539	0.00

Proposition two (i) is a subset of proposition two and is concerned with the substitution of Kellogg’s Cocoa Crispix with Kellogg’s Coco Pops Chex (rebranded Kellogg’s Cocoa Crispix) and suggests that in the short term (three month period) Kellogg’s Coco Pops Chex will not be successful in making up all the lost sales of the discontinued Kellogg’s Cocoa Crispix. Proposition two (i) suggests that the average monthly sales of Kellogg’s Coco Pops Chex will be lower than the average monthly sales of Kellogg’s Cocoa Crispix. A paired t-test was employed to test for differences in the average monthly sales for Kellogg’s Cocoa Crispix and Kellogg’s Coco Pops Chex. The average monthly sales of Kellogg’s Coco Pops Chex are \$2.38 which is significantly lower than that of Kellogg’s Coca Crispix at \$4.37, $t(539) = 11.74$, $p = 0.00$, $r = 0.20$ (see Table 5.9), thus proposition two (i) is supported.

Table 5-9: Paired samples statistics and t-test for proposition two (i)

Paired Samples Statistics				
Variables	Mean	N	Std. Deviation	Std. Error Mean
Avg. monthly sales prior Kellogg’s Cocoa Crispix	4.37	540	2.95	0.13
Avg. monthly sales after Kellogg’s Coco Pops Chex	2.38	540	3.94	0.17

Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Avg. monthly sales prior Kellogg's Cocoa Crispix – Avg. monthly sales after Kellogg's Coco Pops Chex	1.99	3.93	0.17	1.65	2.32	11.74	539	0.00

The third proposition posits that after the discontinuation of Kellogg's Cocoa Crispix, shoppers are more likely to switch to a similar cereal (S1) as opposed to a cereal that is not similar (S3) to the product attributes of Kellogg's Cocoa Crispix. To test for P3 a paired-samples t-test was conducted with the following variables:

- Pair 1: switching category (S1) average monthly sales 9 months prior vs. switching category (S1) average monthly sales 3 months after.
- Pair 2: Switching category (S2) average monthly sales 9 months prior vs. switching category (S2) average monthly sales 3 months after.
- Pair 3: Switching category (S3) average monthly sales 9 months prior vs. switching category (S3) average monthly sales 3 months after.

The results of the paired t-test are displayed in Table 5.10 below. The switching category (S1)'s average monthly sales show a statistically significant increase from \$4.84 prior to the discontinuation to \$7.32 after the discontinuation, $t(539) = -9.49$, $p = 0.00$, $r = 0.38$. Switching category (S2)'s average monthly sales resulted in no statistically significant difference between the prior average monthly sales of \$8.07 and the post average monthly sales of \$8.46, $t(539) = -1.51$, $p = 0.13$. In comparison, switching category (S3)'s average monthly sales showed a statistically significant decrease from \$10.54 prior to the discontinuation to \$9.73 after the discontinuation, $t(539) = 2.45$, $p = 0.03$, $r = 0.10$. *The results of the paired t-tests suggest that on average Kellogg's Cocoa Crispix shoppers will more likely switch to a similar cereal substitute (S1) than to a non-similar cereal substitute (S3), thus proposition three is supported.*

Table 5-10: Paired samples statistics and t-test for proposition three

Paired Samples Statistics					
		Mean	N	Std. Dev.	Std. Error Mean
Pair 1	Avg. monthly sales prior S1	4.84	540	5.57	0.24
	Avg. monthly sales after S1	7.32	540	7.07	0.30
Pair 2	Avg. monthly sales prior S2	8.07	540	7.26	0.31
	Avg. monthly sales after S2	8.46	540	8.97	0.39
Pair 3	Avg. monthly sales prior S3	10.54	540	11.62	0.50
	Avg. monthly sales after S3	9.73	540	11.92	0.51

Paired Samples Test									
Variables		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Avg. monthly sales prior S1 – Avg. monthly sales after S1	-2.48	6.08	0.26	-2.99	-1.97	-9.49	539	0.00
Pair 2	Avg. monthly sales prior S2 - Avg. monthly sales after S2	-0.39	5.93	0.26	-0.89	0.12	-1.51	539	0.13
Pair 3	Avg. monthly sales prior S3 – Avg. monthly sales after S3	0.81	7.70	0.33	0.16	1.46	2.45	539	0.02

The fourth proposition is concerned with the possible moderating effect that the three different purchase groups of Kellogg’s Cocoa Crispix will have on the switching behaviour of the shoppers. Proposition four is as follows:

P4: Heavy purchasers of Kellogg’s Cocoa Crispix will demonstrate a greater propensity to switch to a similar cereal substitute (S1) than the moderate or light purchaser after the product discontinuation.

A one-way ANOVA was deemed appropriate to explore proposition four and thereafter the percentage sales switch figures were calculated to test proposition four. An analysis was carried out comparing the means of the average monthly sales after the discontinuation of Kellogg’s Cocoa Crispix, in switching category (S1), for each of the

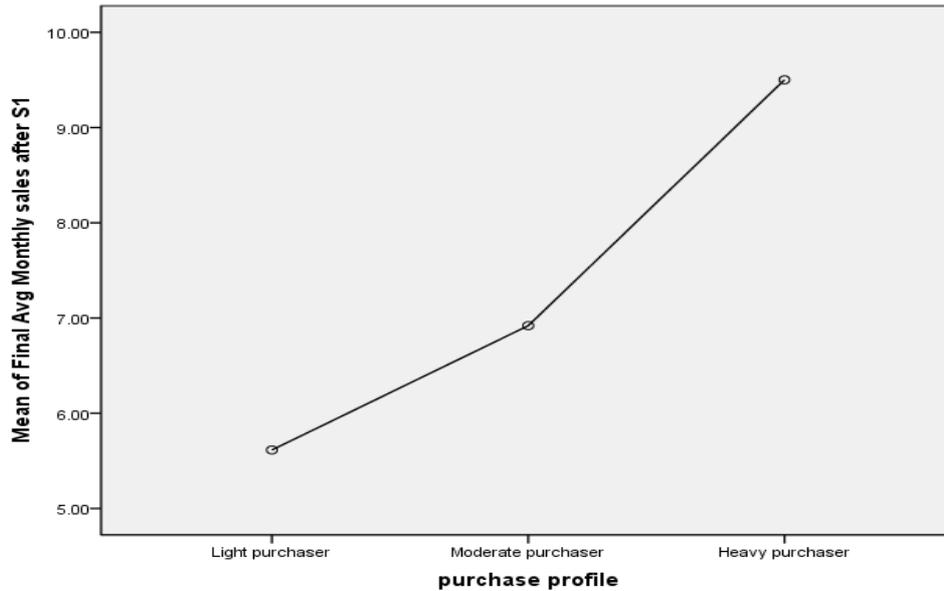
three purchase profile groups (light, moderate and heavy) of Kellogg's Cocoa Crispix. The ANOVA results presented in Table 5.11 show that the means for at least one of the three means was significantly different from the other two, $F(2,537) = 12.35$, $p = 0.00$, $r = 0.2$. The graph (see figure 5.2 below) of the means of the three groups clearly shows the higher level of average monthly spend in category (S1) by the heavy purchaser (\$9.50) versus the moderate purchaser (\$6.92) and light purchaser (\$5.61) purchaser of Kellogg's Cocoa Crispix after the discontinuation. The ANOVA results only suggest that the heavy purchaser will spend more in category (S1) than the moderate or light purchaser of the discontinued brand.

Table 5-11: One way ANOVA for exploring proposition four

Descriptives								
Avg. monthly sales after S1								
	N	Mean	Std. Dev.	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Light purchaser	140	5.61	5.69	0.48	4.66	6.56	0.00	39.40
Moderate purchaser	245	6.92	6.94	0.44	6.05	7.79	0.00	48.91
Heavy purchaser	155	9.50	7.86	0.63	8.26	10.75	0.00	37.50
Total	540	7.32	7.07	0.30	6.72	7.92	0.00	48.91

ANOVA					
Avg. monthly sales after S1					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1184.14	2	592.07	12.35	0.00
Within Groups	25749.95	537	47.95		
Total	26934.08	539			

Figure 5-2 Average monthly spend by light, moderate and heavy purchasers in S1



In order to test proposition four, the average monthly spend for each purchase profile for switching category (S1) prior and post discontinuation were examined. Table 5.12 shows the average monthly sales (represented as a percentage of the total for each purchase profile) prior and post discontinuation by switching category (See appendix 2B for full tables).

Table 5-12: Average monthly sales (expressed in percentages of total sales for each purchase profile) prior and post discontinuation by switching category for each purchase profile

	Heavy		Moderate		Light	
	Prior	Post	Prior	Post	Prior	Post
	% of total					
Kellogg's Cocoa crispix 340g	26.7%		12.8%		6.7%	
(S1)Honey crispix 310g	1.7%	2.6%	1.7%	1.3%	1.7%	1.3%
(S1)Coco pops 450g	1.8%	4.4%	1.8%	3.3%	1.8%	3.4%
(S1)Coco pops 735g	1.3%	2.2%	1.5%	2.9%	1.9%	1.8%
(S1)Coco pops chex 340g	0.3%	15.8%	0.1%	7.6%	0.1%	4.5%
(S1)Coco pops coco rocks 400g	0.6%	0.6%	1.8%	1.1%	1.4%	1.1%
category (S1)	8.7%	9.1%	11.6%	11.4%	12.1%	11.0%
category (S2)	24.4%	29.9%	30.2%	33.9%	32.8%	35.9%
category (S3)	34.5%	35.3%	38.4%	38.5%	41.4%	40.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

From the data in Table 5.12 above, the following percentage switches to category (S1), were calculated for each of the purchase profiles:

Heavy purchaser of Kellogg's Cocoa Crispix	76%
Moderate purchaser of Kellogg's Cocoa Crispix	71%
Light purchaser of Kellogg's Cocoa Crispix	61%

These figures show that heavy purchasers have switched 76% of their discontinued brand average monthly sales to the S1 category, including the replacement brand Kellogg's Coco Chex. Moderate purchasers have shifted 71% of their discontinued brand average monthly sales to the (S1) category, and light purchasers have shifted 61% of their discontinued brand average monthly sales to the (S1) category. The higher percentage switch to the (S1) category by heavy purchasers suggests support for proposition four.

5.2.2.2 Control group analysis

A paired samples t-test was utilised to test for differences in sales in the defined cereal product category before and after the discontinuation of Kellogg’s Cocoa Crispix. Product category sales for a period of three months prior and post the discontinuation were compared to try and establish whether or not an event had taken place in the cereal product category that would influence the sales and thus the results obtained in the experimental group. The control group consisted of 228 shoppers who had purchased cereals in the product category but had not purchased Kellogg’s Cocoa Crispix.

The results as displayed in Table 5.13 indicate no significant difference in the average spend of \$50.12 in the defined cereal product category in the three months prior (M=50.12, SE = 2.74) and the average spend of \$49.90 in the three months post the discontinuation of the Kellogg’s Cocoa Crispix (M= 49.90, SE = 2.67), $t(227) = 0.6$, $p = 0.91$. *These results indicate that no major event occurred in the defined cereal category in the three month period following the discontinuation of Kellogg’s Cocoa Crispix thus suggesting support for the results obtained in the Kellogg’s Cocoa Crispix experimental group.*

Table 5-13: Paired samples statistics and t-test for the control group

Paired Samples Statistics					
Variables		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Sales 3 months prior	50.12	228	41.41	2.74
	Sales 3 months post	49.90	228	40.25	2.67

Paired Samples Test								
Variables	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Sales 3 months prior - Sales 3 months post	0.22	27.82	1.84	-3.41	3.85	0.12	227	0.91

5.2.3 The Bluebird CC's snack study

The Bluebird CC's discontinuation type differed again from the other two studies. When the Bluebird CC's Tasty Cheese 190g variant and eventually the entire Bluebird CC's range (3 flavours and 4 SKU's) were discontinued. Bluebird introduced the Doritos range of corn chips. This new replacement range was larger (5 flavours and 10 SKUs) and meant that the shopper who previously purchased the Bluebird CC's Tasty Cheese 190g variant could switch to a wider assortment of products , the most similar being the Doritos Cheese Supreme 170g and then the Nachos Cheese 170g variant. The product discontinuation type has therefore been defined as a new product replacement. The sample size is again large and the product category of interest contains the largest number of product items of the three studies as can be seen in Table 5.14 which summarises the main data characteristics of the study.

Table 5-14: Main data characteristics of the Bluebird CC's snack study

Bluebird CC's snack study		
Number of shoppers		403
Number of stores		47
Number of product items in category		355
Switching category (S1)		Corn chip snacks
Switching category (S2)		Non-corn chips
Switching category (S3)		Non-chip savoury snacks
Number of shoppers in control group		190
Purchase profiles	Bluebird CCs Tasty Cheese 190g (total 403 shoppers)	
	Units purchased	Number of Shoppers
Light	3-4	168
Moderate	5-7	124
Heavy	8-28	111

5.2.3.1 Proposition testing

The first proposition relates to the type of switching response to the discontinuation of Bluebird CC's Tasty Cheese 190g. The switching response options to the discontinuation are either to switch to a substitute within the defined snack product category or not to purchase from the snack product category. The first proposition is :
P1: The dominant switching response to the discontinuation of Bluebird CC's Tasty Cheese 190g is that of switching to a substitute within the product category and the stop purchasing response is very low.

A frequency analysis was conducted on the variable “sales 3 months after discontinuation”. The results show that of the 403 shoppers who purchased the Tasty Cheese 190g variant before the discontinuation, 10 shoppers did not purchase from the snack category in the three months following the product discontinuation. *The percentage of Bluebird CC’s Tasty Cheese 190g shoppers (97.5%) that substituted within the category substantially exceeded those that stopped purchasing (2.5%) within the product category, thus supporting the first proposition.*

Proposition two suggests that the defined snack category sales will be adversely affected by the discontinuation of Bluebird CC’s Tasty Cheese 190g in the short-term. A paired samples t-test was conducted to compare the means of the variables “Average monthly sales 9 months prior” and the “Average monthly sales 3 months after” for the snack product category. On average, the Bluebird CC’s Tasty Cheese 190g shopper’s monthly spend in the total snack category showed a statistically significant decrease from \$25.48 prior to the discontinuation to \$23.48 after the discontinuation, (M=25.48, SE = 0.88) vs. (M= 23.48, SE = 0.91), $t(402) = 2.99$, $p = 0.003$, $r = 0.15$ (see Table 5.15 below). The results of the t-test show support for proposition two.

Table 5-15: Paired samples statistics and t-test for proposition two

Paired Samples Statistics					
Variables		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Average monthly sales 9 months prior	25.48	403	17.61	0.88
	Average monthly sales 3 months after	23.48	403	18.27	0.91

Paired Samples Test								
Variables	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Avg. monthly sales 9 months prior – Avg. monthly sales 3 months after	1.99	13.39	0.67	0.68	3.30	2.99	402	0.00

Proposition two (i) is a subset of proposition two and relates to the substitution of the Bluebird CC's range with the Doritos range (new replacement product). Unfortunately the Bluebird CC's Tasty Cheese 190g cannot be directly compared with a Doritos variant as Doritos introduced two cheese flavours: Cheese Supreme and Nachos Cheese. Instead of comparing one variant against another as in the cereal study, *proposition two (i) proposes that in the short-term the Doritos range will not be successful in making up all the lost sales of the Bluebird CC's range.* A paired t-test was employed to test for differences in the average monthly sales for the following variables: "Average monthly sales 9 months prior for the Bluebird CC's range" vs. "Average monthly sales 3 months after for the Doritos range".

The results of the t-test as presented in Table 5.16 do not support proposition two (i) *as the average monthly sales of \$2.56 for the Doritos range for the three month period after the discontinuation of the Bluebird CC's Tasty Cheese 190g, is not significantly lower than the average monthly sales of \$2.59 for the Bluebird CC's range in the nine month period prior to the discontinuation, $t(402) = 0.16, p = 0.87.$*

Table 5-16: Paired samples statistics and t-test for proposition two (i)

Paired Samples Statistics				
Variables	Mean	N	Std. Deviation	Std. Error Mean
Avg. monthly sales of the Bluebird CC's range	2.59	403	2.58	0.13
Avg. monthly sales of the Doritos range	2.56	403	4.08	0.20

Paired Samples Test								
Variables	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Avg. monthly sales Bluebird CC's range – Avg. monthly sales Doritos range	0.03	4.07	0.20	-0.37	0.43	0.16	402	0.87

The third proposition proposes that after the discontinuation of Bluebird CC's Tasty Cheese 190g, shoppers are more likely to switch to a similar corn-chip snack (S1) as opposed to snacks that are dissimilar (S3) to the attributes of Bluebird CC's Tasty Cheese 190g. To test for P3 a paired samples t-test was conducted on the following pairs of variables:

- Pair 1: Average monthly sales 9 months prior for switching category (S1) vs. Average monthly sales 3 months after for switching category (S1).
- Pair 2: Average monthly sales 9 months prior for switching category (S2) vs. Average monthly sales 3 months after for switching category (S2).
- Pair 3: Average monthly sales 9 months prior for switching category (S3) vs. Average monthly sales 3 months after for switching category (S3).

The results of the paired t-test are displayed in Table 5.18 below. The average monthly sales for switching category (S1) show a statistically significant increase from \$2.79 prior to the discontinuation to \$3.87 after the discontinuation, (M=2.79, SE=0.15) vs. (M=3.87, SE= 0.24), $t(402) = -5.16$, $p=0.000$, $r = 0.25$. By comparison the average monthly sales for the switching category (S2), which consists of non-corn chips, resulted in a statistically significant decrease from \$16.25 prior to the discontinuation to \$14.99 after the discontinuation, (M=16.25, SE=0.70) vs. (M=14.99, SE= 0.70), $t(402) = 2.43$, $p = 0.02$, $r = 0.12$. There was no significant difference in the average monthly sales for switching category (S3) which consisted of non-chip snacks. Average monthly sales prior to the discontinuation were \$4.78 versus \$4.50 after the discontinuation, (M=4.78, SE=0.24) vs. (M=4.50, SE=0.27), $t(402) = 1.41$, $p = 0.16$.

The results suggest that on average Bluebird CC's Tasty Cheese 190g shoppers are more likely switch to a similar corn chip substitute (S1) than to a non-corn chip snack substitute as found in switching category (S3), thus proposition three is supported.

Table 5-17: Paired samples statistics and t-test for proposition three

Paired Samples Statistics					
Variables		Mean	N	Std. Dev.	Std. Error Mean
Pair 1	Avg. monthly sales 9m prior S1	2.79	403	2.94	0.15
	Avg. monthly sales 3m after S1	3.87	403	4.73	0.24
Pair 2	Avg. monthly sales 9m prior S2	16.25	403	14.14	0.70
	Avg. monthly sales 3m after S2	14.99	403	14.05	0.70
Pair 3	Avg. monthly sales 9m prior S3	4.78	403	4.87	0.24
	Avg. monthly sales 3m after S3	4.50	403	5.40	0.27

Paired Samples Test								
Variables	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Avg. monthly sales 9m prior S1 - Avg. monthly sales 3m after S1	-1.08	4.22	0.21	-1.50	-0.67	-5.16	402	0.00
Avg. monthly sales 9m prior S2 - Avg. monthly sales 3m after S2	1.26	10.44	0.52	0.24	2.29	2.43	402	0.02
Avg. monthly sales 9m prior S3 - Avg. monthly sales 3m after S3	0.28	4.00	0.20	-0.01	0.67	1.41	402	0.16

The fourth proposition concerns the possible moderating effect that the three different purchase profile groups of Bluebird CC’s Tasty Cheese 190g will have on the switching behaviour of the shoppers and is posed as follows:

P4: Heavy purchasers of Bluebird CC’s Tasty Cheese 190g will demonstrate a greater propensity to switch to a similar corn chip substitute (S1) than the moderate or light purchaser after the product discontinuation.

A one-way ANOVA was deemed appropriate to explore proposition four and thereafter the percentage sales switch figures were calculated to test proposition four. An analysis was carried out comparing the average monthly sales after the discontinuation of

Bluebird CC's Tasty Cheese 190g, in switching category (S1), which consisted of corn-chip brands, for each of the three purchase profile groups (light, moderate and heavy).

The results presented in Table 5.18 show that the means for at least one of the three means was significantly different from the other two, $F(2,400) = 7.51, p = 0.00, r = 0.19$.

Table 5-18: One way ANOVA to explore proposition four

Descriptives								
Avg. monthly sales 3m after for S1								
	N	Mean	Std. Dev.	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Light purchasers	168	3.34	4.10	0.32	2.71	3.96	0.00	30.25
Moderate purchasers	124	3.57	3.71	0.33	2.92	4.23	0.00	19.07
Heavy purchasers	111	5.46	6.28	0.60	4.28	6.64	0.00	45.16
Total	403	3.99	4.78	0.24	3.53	4.46	0.00	45.16

ANOVA					
Avg. monthly sales 3m after for S1					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	331.75	2	165.87	7.51	.00
Within Groups	8838.42	400	22.10		
Total	9170.16	402			

Figure 5-3 Average monthly spend by light, moderate and heavy purchasers in S1

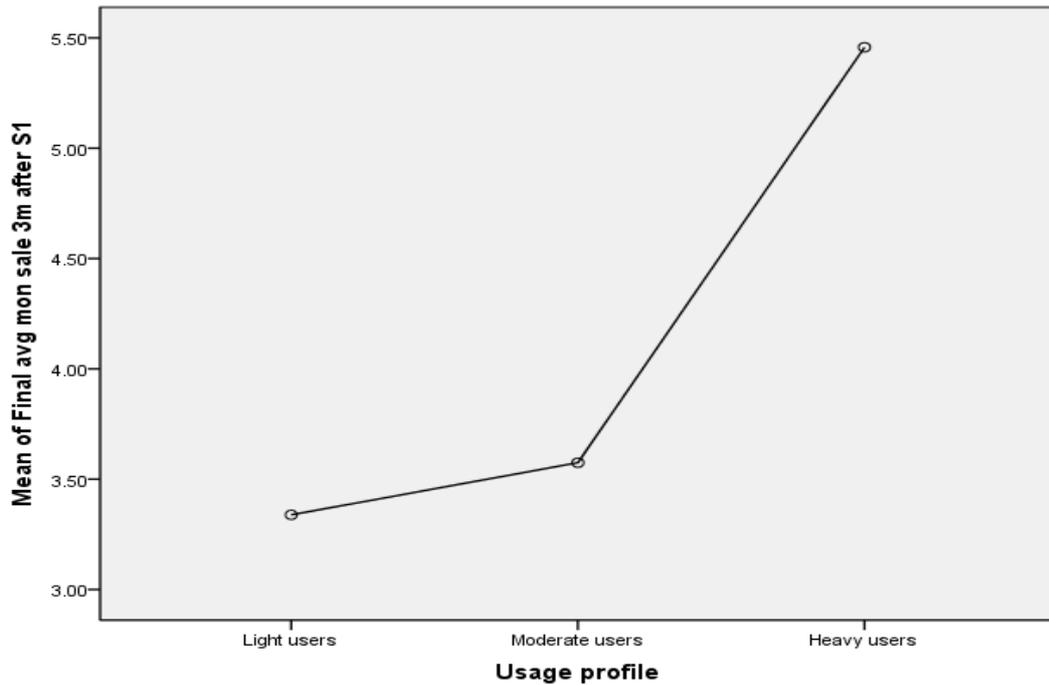


Figure 5.3 graphs the means of the three purchase groups and shows a higher level of average monthly spend in category (S1) by the heavy purchaser (\$5.46) versus the moderate purchaser (\$3.57) and light purchaser (\$3.34) of Bluebird CC's Tasty Cheese 190g after the discontinuation. The ANOVA results only suggest that there was a higher amount of spend by the heavy purchasers in the (S1) category after the discontinuation.

In order to test proposition four, the average monthly spend for the heavy, moderate and light purchaser of Bluebird CC's Tasty Cheese 190g by switching category was examined prior and post discontinuation . Table 5.19 below shows the average monthly sales (expressed as a percentage of the total for each purchase profile) prior and post discontinuation by switching category and by brand for the heavy moderate and light purchaser of Bluebird's CC's Tasty Cheese 190g (See appendix 2C for the full tables).

Table 5-19: Average monthly sales (expressed in percentages of total sales for each purchase profile) prior and post discontinuation by switching category for each purchase profile

	Heavy		Moderate		Light	
	Prior	Post	Prior	Post	Prior	Post
	% of total					
CC's Tasty cheese 190g	9.4%		6.0%		3.9%	
(S1)CC's Flame grill BBQ 190g	1.9%		1.0%		0.8%	
(S1)CC's Mex. fiesta 190g	0.7%		0.4%		0.6%	
(S1)CC's Tasty cheese 10s 300g	1.9%	0.6%	1.8%	0.6%	1.9%	0.4%
Bluebird CC's range	13.9%		9.3%		7.1%	
D/BBQ 170g		1.1%		1.0%		0.7%
D/Cheese Sup. 170g		1.4%		1.9%		1.3%
D/Cheese Sup. 8 pk		0.4%		1.2%		0.9%
D/Nacho Cheese 170g		2.9%		1.9%		1.4%
D/Orig. 170g		0.8%		0.3%		0.6%
D/Party bag Cheese Supreme 300g		1.6%		1.2%		1.2%
D/Party bag Nacho Cheese 300g		2.0%		2.0%		1.2%
D/Party bag orig. 300g		0.5%		0.2%		0.2%
D/Party bag Salsa 300g		0.8%		0.4%		0.7%
D/Salsa 170g		1.1%		0.7%		1.1%
(S1)Doritos range		12.7%		11.0%		9.1%
category(S1)	5.6%	4.8%	8.2%	5.1%	8.2%	6.8%
category(S2)	62.8%	64.8%	64.4%	64.0%	64.3%	62.8%
category (S3)	17.7%	17.2%	18.2%	19.3%	20.4%	20.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

From the data in Table 5.19 above, the following percentage switches to category (S1), were calculated for each of the purchase profiles:

Heavy purchaser of Bluebird CC's Tasty Cheese 190g	84%
Moderate purchaser of Bluebird CC's Tasty Cheese 190g	88%
Light purchaser of Bluebird CC's Tasty Cheese 190g	122%

These figures show that heavy purchasers have switched 84% of their discontinued brand average monthly sales to the S1 category, including the replacement brand range, Doritos. Moderate purchasers have shifted 88% of their discontinued brand average monthly sales to the (S1) category, and light purchasers have shifted 122% of their discontinued brand average monthly sales to the (S1) category. The higher percentage switch to the (S1) category by the moderate and light purchasers of Bluebird CC's Tasty Cheese 190g does not suggest support for proposition four.

5.2.3.2 Control group analysis

A paired samples t-test was employed to test for differences in dollar sales in the defined snack product category before and after the discontinuation of Bluebird CC's Tasty Cheese 190g. Product category sales for a period of three months prior and post the discontinuation were compared to try and establish whether or not an event had taken place in the snack food product category that would influence the sales and thus the results obtained in the experimental group. The control group consisted of 190 shoppers who had purchased snacks from the defined snack category but had not purchased from the Bluebird CC's range.

The results displayed in Table 5.20 below indicate no significant difference in the average spend in the snack product category for the three month period prior to the discontinuation (\$32.04) and post the discontinuation (\$30.11) of the Bluebird CC's Tasty Cheese 190g, (M=32.04, SE = 2.24) vs. (M= 30.11, SE = 2.35), $t(189) = 1.28$, $p = 0.20$. *These results indicate that no major event occurred in the defined snack food category in the three month period following the discontinuation of the Bluebirds CC's Tasty Cheese 190g, thus suggesting support for the results obtained in the Bluebird CC's Tasty Cheese 190g experimental group.*

Table 5-20: Paired samples statistics and t-test for the control group

Paired Samples Statistics				
Variables	Mean	N	Std. Dev.	Std. Error Mean
Product category sales 3 months prior	32.04	190	30.93	2.24
Product category sales 3 months post	30.11	190	32.37	2.35

Paired Samples Test								
Variables	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Product category sales 3 months prior - Product category sales 3 months post	1.93	20.88	1.51	-1.06	4.92	1.28	189	0.20

5.3 Chapter summary

This chapter presented the results of the three studies. Although a statistical comparison cannot be made between the three studies, the similarities and differences between the studies can be examined. An analysis of the data reveals the following observations:

- 1- The dominant response to the product discontinuation in all three studies was to substitute within the product category rather than to stop purchasing from the defined product category.
- 2- In all three studies the discontinuation of a preferred product led to an adverse impact on dollar sales for the defined product category in the three month period following the discontinuation.
- 3- When faced with a preferred-product discontinuation, shoppers from all three studies were more likely to switch to products within the product category that shared similar attributes (switching category S1) to that of the discontinued product.

- 4- In both the Anlene milk and Kellogg's cereal study the heavy purchasers of the discontinued product showed a greater propensity to switch to category (S1) suggesting that varying purchase levels (heavy, moderate and light) of the discontinued product are moderators of the switching behaviour.

These key results and their implications are discussed further in the next chapter.

Chapter 6: Discussion

6.1 Chapter overview

This chapter concludes the thesis by discussing and interpreting the results reported in Chapter five and addressing the managerial and academic implications of the research. Limitations of this study are addressed and suggestions made for future research.

6.2 Discussion and interpretation of results

This research focuses on consumer responses to a product discontinuation carried out by the manufacturer. Three separate studies were examined, each one involving a different product discontinuation type: no product replacement, a rebranded replacement and a new product replacement. Each product discontinuation occurs in a different product category (milk, cereal and snacks). In this section the results presented in Chapter five will be interpreted in relation to the objectives and propositions outlined in Chapter three.

6.2.1 Dominant switching response

The first objective of this research as stated in Chapter three, section 3.2.1 is related to the type of switching response behaviour of the consumer faced with a preferred-product discontinuation. The discontinuation was implemented by the manufacturer which meant that the consumer could no longer defer their purchase temporarily or purchase their preferred product at another supermarket chain. The only response options available to the consumer were to substitute within the product category of interest, stop purchasing from the product category or the very rare response of switching purchases to another product category (Sloot et al., 2005). The first objective was, therefore, to determine the dominant switching response to a preferred-product discontinuation. Past research examining temporary product unavailability found that product substitution was generally the dominant behavioural consumer response to an out-of stock situation whilst the stop purchasing (cancellation response) response was very low (Emmelhainz et al., 1991; Sloot et al., 2005; Walter & Grabner, 1975; Zinn & Liu, 2001).

The first objective was explored through the testing of *proposition one which proposed that the dominant switching response to the preferred-product discontinuation is that of*

switching within the product category and that the stop purchasing response within the product category is very low. The results from all three studies analysed in this research supported the proposition as the dominant switching response to a preferred-product discontinuation was indeed substitution within the product category. Across all three studies approximately 98% of shoppers substituted within the category compared to approximately 2% of shoppers who ceased purchasing in the product category for the three month period following the product discontinuation.

The substitution percentages are very high compared to substitution response percentages in past product unavailability studies (both temporary and permanent product unavailability). This result can be explained by the fact that the products in this research were discontinued by the manufacturer and therefore the consumers' response options were more limited than in an out-of-stock or retailer product delisting situation. The consumer could no longer purchase their preferred product at a later date or in another store.

As discussed in Chapter three, section 3.2.2.1, the discontinuation of a preferred item may drive some consumers to purchase an item from a different product category. Although this switching behaviour response was beyond the scope of this study, the out-of-stock research carried out by Sloot et al. (2005) found switching to a different product category to be a very rare response.

The results were similar across the different product discontinuation types and within the three product categories, therefore supporting the proposition that the dominant switching response to a preferred-product discontinuation is to substitute within the product category.

6.2.2 Impact on sales

The second objective of this research was to determine if the consumers' switching behaviour response to the preferred-product discontinuation has a negative impact on product category sales at the retail level in the short-term (three month period following the discontinuation). The rationale behind this objective was based on the results of the Campo (2003) study that found that consumers bought smaller quantities of the substitute products when faced with an out-of-stock situation. Possible reasons put forward for the purchase of smaller quantities include: limiting the risk of buying a less familiar product or reducing the loss of utility of a less preferred item. Obviously

purchasing smaller quantities of the substitute product will result in a more serious loss for the retailer than if the consumer purchases similar quantities of the substitute product.

This objective was explored through testing *proposition two*, which proposes that sales at the product category level will be adversely affected by the discontinuation of the product of interest in the short-term.

The results from all three studies show that product category sales decreased in the three month period following the product discontinuation and therefore support proposition two.

Product category sales were found to decrease by 7.8% (Bluebird CC's snack study), 8.3% (Kellogg's Cocoa Crispix cereal study) and 17% (Anlene milk study).

Differences in the product category sales losses can be explained by a number of factors. Firstly, the availability of acceptable alternatives or perceived attractiveness of alternatives in the product category can reduce the perceived risk and significantly increase brand substitution responses (Broniarczyk et al., 1998; Campo et al., 2000; Fitzsimons, 2000). The lower sales loss of 7.8% in the Bluebird snack study could thus be explained by the fact that the replacement brand, Doritos, was perceived as appealing by some of the purchasers of the discontinued brand. The Anlene milk discontinuation, which did not have an obvious replacement, suffered the greatest sales losses (17%) of the three studies. Secondly, product category sales responses can vary depending on the product category involved. For example, in a product category such as snacks, where consumers exhibit high variety seeking behaviour, sales are not as severely affected when unavailability occurs as shoppers do not perceive a high level of risk associated with substitution. Thirdly, sales losses can be affected by the level of preference for the discontinued product. If the product category comprises a large number of consumers with high levels of preference for the discontinued product then sales losses will be greater (Campo et al., 2003).

The sales loss results from all three studies are higher than previous product unavailability studies investigating sales losses. For example, only a 2.0 % loss was found in the Campo et al. (2003) out-of-stock study. The less severe impact in the Campo et al. (2003) study can be explained by the fact that the out-of-stock item was not necessarily the consumers' preferred choice and the product unavailability was only temporary. Within the permanent product unavailability literature, the Sloot and

Verhoef (2008) study also found that brand delistings implied a sales loss at a category level, however, this loss was not quantified and the experiments were based on hypothetical brand delistings so the extent to which they can be generalised to a real-world shopping scenario is limited.

For the Kellogg's Cocoa Crispix cereal study and the Bluebird CC's snack study proposition two also included a sub-proposition regarding sales of the replacement products. The sub-propositions and their results are treated separately below.

Kellogg's Cocoa Crispix cereal study:

Proposition two (i) relates to the substitution of Kellogg's Cocoa Crispix with Kellogg's Coco Pops Chex (rebranded Kellogg's Cocoa Crispix) and *proposes that in the short-term (three month period), Kellogg's Coco Pops Chex will not be successful in making up all the lost sales of the discontinued Kellogg's Cocoa Crispix.*

As the average monthly sales of \$2.38 for Kellogg's Coco Pops Chex is significantly lower than that of Kellogg's Cocoa Crispix (\$4.37), the replacement rebranded Kellogg's Coco Pops Chex was not successful in making up all the lost sales of the discontinued Kellogg's Cocoa Crispix in the short-term, thus proposition two (i) is supported.

Bluebird CC's snack study:

In a similar vein to the Kellogg's cereal study, *proposition two (i) suggests that sales from the new Doritos range will not make up all the lost sales from the discontinued Bluebird CC's range in the short-term.*

The result did not support proposition two (i) as the average monthly sales of \$2.56 for the Doritos range for the three month period after the discontinuation was not significantly less than the average monthly sales of \$2.59 for the Bluebird CC's range.

The similar sales results could be explained by the fact that the new Doritos range consists of more variants (five flavours and 10 SKUs) than the Bluebird CC's range (three flavours and 4 SKUs). Furthermore, Doritos is an internationally recognised brand and would be perceived by some purchasers as an attractive alternative to the Bluebird CC's range.

6.2.3 Switch to products with similar attributes to the discontinued product

Many previous temporary and permanent product unavailability studies focused on analysing whether consumers switched to another product item or not (type of switching behaviour) and, if substitution took place, whether or not the substitute item was of the same size or brand (Broniarczyk et al. (1998); (Campo et al., 2000; Corstjens & Corstjens, 1999). Very few studies, however, shed any light on which replacement products were purchased. This observation led to the next objective of this research.

The third objective was to examine the switching behaviour patterns of consumers faced with a preferred-product discontinuation and determine if consumers were more likely to switch to products with similar product attributes in terms of flavour, form or benefit to those of the discontinued product than switch to products with dissimilar attributes. This objective was explored through *proposition three which proposed that after the discontinuation of the preferred product, consumers are more likely to switch to a product with similar attributes (S1) to the discontinued product as opposed to a less similar product (S3).*

The results for each of the three studies showed that, on average, shoppers of the discontinued product are more likely to switch to a similar product category (S1) than to a dissimilar product category (S3) after the discontinuation. Therefore, proposition three was supported.

These results are in line with the findings of the Campo et al. (2003) and Wiebach and Hildebrandt (2012) studies outlined below, and the fact that consumer choices for groceries are typically attribute-based (Boatwright & Nunes, 2001; Fader & Hardie, 1996; Hoch et al., 1999).

The Campo et al. (2003) study found that out-of-stocks produced disproportionate choice shifts towards items with specific product attributes such as brand, flavour and size within the product category. The relative importance of the discrete product attributes was dependent on the product category of interest. For example flavour was found to be more important in the cereal category than in the margarine product category.

Research conducted by Wiebach and Hildebrandt (2012), using context theory to explain the switching behaviour of consumers faced with a preferred-brand (FMCG)

delisting, found that consumers tended to substitute with a product with similar product attributes.

6.2.4 Moderators of the switching behaviour

Moderating factors that influence the consumer response to product unavailability were a major focus of a large number of the out-of-stock studies (Campo & Gijsbrechts, 2005; Campo et al., 2000, 2003; Corsten & Gruen, 2004; Corstjens & Corstjens, 1999; Emmelhainz et al., 1991; Fitzsimons, 2000; Peckham, 1963; Schary & Christopher, 1979; Sloot et al., 2005; Verbeke et al., 1998; Verhoef & Sloot, 2006; Zinn & Liu, 2001). These studies tended to examine a number of moderating factors which were grouped into four categories: product-related, consumer-related, situation-related and store-related. As this study is interested in moderating factors that influence the specific substitution made within the product category, the next objective was to determine if varying purchase levels (heavy, moderate and light) of the discontinued product had a moderating effect on the switching behaviour of the shoppers. This objective was explored through testing *proposition four, which proposes that after the product discontinuation, heavy purchasers of the discontinued product will demonstrate a greater propensity to switch to a substitute with similar product attributes (S1) than the moderate or light purchaser.*

The results in both the Anlene milk and the Kellogg's cereal study suggest that the heavy purchasers of the discontinued product showed a greater propensity to switch to a substitute with similar product attributes (S1). The results of Bluebird snack study did not suggest support and thus proposition four is not fully supported.

The findings of the Anlene milk and the Kellogg's cereal study are in line with the Emmelhainz et al. (1991) study on consumer responses to out-of-stocks. Their study examined moderating factors of the consumer response and found that the product-related factor "repeat brand purchase" significantly influenced the specific substitution action taken across all product categories investigated. The findings of the Bluebird study can possibly be explained by the fact that the moderate and light purchasers of the discontinued CC's Tasty Cheese 190g found the new replacement range, Doritos, to be more appealing than the heavy (more loyal) purchasers.

6.2.5 An examination of the results from the three studies

The final objective of this research was to assess whether or not the three different types of product discontinuations selected in this study (no replacement, rebranded replacement or new product replacement) have the same impact on the consumer response to the product discontinuation in terms of switching behaviour and sales. Although a statistical comparison between the three studies cannot be made the results from each study can be examined.

6.2.5.1 Switching behaviour

Firstly, the dominant switching response of substitution within the category was similar (approximately 98% of shoppers) across all three studies. *The results therefore suggest that the type of product discontinuation did not affect the main switching response type.*

Secondly, the average monthly sales in switching category (S1) showed a statistically significant increase after the product discontinuation for all three studies. This result meant that in each study, shoppers were more likely to switch to substitutes with product attributes that are similar (S1) to the discontinued product than to switch to products with dissimilar product attributes (S3). *Therefore, irrespective of the type of discontinuation that took place, shoppers faced with a preferred-product discontinuation switched to products with similar attributes as opposed to dissimilar attributes.*

Thirdly, in each study the varying purchase levels (heavy, moderate and light) of the discontinued product were examined to find out whether or not different purchase levels moderated the switching response to switch to a product with similar attributes (S1).

The results in both the Anlene milk and the Kellogg's cereal study suggested that heavy purchasers of the discontinued product demonstrated a greater propensity to switch to a similar substitute (S1) than the moderate or light purchaser after the discontinuation. Furthermore, the switching to (S1) appeared to be more likely when there was no manufacturer replacement product introduced as in the case of the Anlene milk study. The Bluebird snack study's results suggested that moderate and light purchasers of the discontinued product were more likely to purchase from the (S1) category after the discontinuation. This difference in results may be explained by

the fact that the (S1) category post discontinuation included the new and larger Doritos range of corn chips.

6.2.5.2 Impact on product category sales

In each study the average monthly sales for the product category were compared for the nine month period prior to the product discontinuation and the three month period following the discontinuation.

The results from all three studies show that product category sales were adversely affected by the product discontinuation in the three month period following the discontinuation. Furthermore, the product category sales decrease post discontinuation appeared greater when there was no manufacturer replacement product introduced as in the case of the Anlene milk study.

The differences in product category sales' losses between the three studies could also be influenced by the nature of the product categories (Campo et al., 2003; Sloot & Verhoef, 2008) or the number of acceptable alternatives available in the product category (Broniarczyk et al., 1998; Campo et al., 2000; Corstjens & Corstjens, 1999) and therefore this warrants further study.

6.2.6 Managerial implications

The findings of this research have both managerial (retailers and manufacturers) and academic implications. In the past, attention has been focussed on consumer responses to out-of-stock situations, permanent assortment reductions and to a lesser extent product delistings by the retailer. Although these events significantly affect consumers' behavioural intentions, practitioners and academics need to pay attention to the impact that a product discontinuation, conducted by the manufacturer, has on the consumer's purchase behaviour and on retail sales.

6.2.6.1 Retailers

Past studies of consumer responses to out-of-stock situations indicate that the predominate response to the out-of-stock is to switch to a substitute within the product category and therefore it is the manufacturer and not the retailer that sustains a substantial loss in sales (Campo et al., 2000; Corstjens & Corstjens, 1999; Peckham, 1963; Schary & Christopher, 1979; Walter & Grabner, 1975).

The findings of this research show that although approximately 98% of the shoppers faced with a preferred-product discontinuation do indeed substitute within the product category, the retailer's sales are adversely affected by a reduction in spend. Once shoppers have faced a preferred-product discontinuation they tend to spend less in the product category for the following three month period. Across the three studies, product category sales decreased between 8 to 17 %. As can be seen in Table 6.1 below, the greatest product category sales decrease occurred in the Anlene study where product category sales dropped by 17%. This large decrease in sales can be explained by the fact that the Anlene milk discontinuation was not immediately followed by a replacement product by the manufacturer. This would imply that retailers, when faced with a manufacturer product discontinuation, should establish whether or not the discontinued product will be replaced with a new product.

Table 6-1: Average monthly spends in the product category prior and post discontinuation

	Average monthly (\$) spend in product category		
	Prior to discontinuation	Post discontinuation	% change
Anlene milk study	\$19.30	\$16.01	-17%
Kellogg's Cocoa Crispix cereal study	\$27.82	\$25.51	-8.3%
Bluebird CC's snack study	\$25.48	\$23.48	-7.8%

Another finding of the research is that when shoppers are faced with a product discontinuation they tend to substitute with products that have similar product attributes in terms of flavour, form or benefit provided. The implication for retailers wishing to mitigate their sales losses in the face of a product discontinuation is therefore to highlight similar product alternatives to the shoppers. The focus of the retailer's efforts should be directed at the heavy purchasers of the discontinued product as the research results indicated that these shoppers were found to have the highest propensity to switch to products with similar product attributes.

6.2.6.2 Manufacturers

Although the focus of this research was aimed at the retailer it is also important to note that the discontinuation of a product in order to launch a new product can be a risky strategy for the manufacturer at least in the short-term. This point is clearly illustrated in both the Kellogg's Cocoa Crispix cereal study and the Bluebird CC's snack study where the average monthly product category sales decreased by 8.3 % and 7.3 % respectively in the three month period following the discontinuation.

In the Kellogg's Cocoa Crispix cereal study the replacement product, the rebranded Kellogg's Coco Pops Chex, was not successful in picking up the lost sales of the discontinued Kellogg's Cocoa Crispix. In fact, the average monthly sales of the new Kellogg's Coco Pops Chex was \$2.38, which was significantly lower (46% less) than that of Kellogg's Coca Crispix at \$4.37.

As explained in section 5.2.3.1 of Chapter five, a direct comparison of the sales between the Bluebird CC's Tasty Cheese 190g variant and the new Doritos Cheese variants cannot be made. If one compares the new Doritos range (10 SKUs), with the more limited offering of the Bluebird CC's range (four SKU's), the average monthly sales of the new Doritos range (\$2.56) was approximately the same as the average monthly sales of the Bluebird CC's range (\$2.59) in the short-term period. So the manufacturer needs to ensure that the replacement products are perceived as superior by the consumers of the discontinued product in order to mitigate sales decreases in the short-term.

As this research only examines the before and after sales of the same cohort of shoppers it is possible that the rebranded Kellogg's Coco Pops Chex and the Doritos corn chip range attracted new consumers whose purchases would not be reflected in the sales results of the three studies.

6.2.7 Academic implications

This research and its findings have contributed to the product unavailability literature on consumer response behaviour. Although a few studies have investigated product delistings carried out by the retailer (Sloot & Verhoef, 2008; Wiebach & Hildebrandt, 2012), none to date have examined consumers' switching behaviour to a product discontinuation carried out by the manufacturer. Furthermore, the methodology of the brand delisting studies to date utilise consumers' switching intentions or stated reactions to often manipulated rather than true product category changes by using survey analysis

or laboratory experiments. Both methods could result in respondents overstating their effect as the consumers' attention is artificially drawn to the changes (Campo & Gijsbrechts, 2005). The scanner data collected in this research reveals actual as opposed to intended or stated behaviour and thus presents a more realistic view of sales losses felt by the retailer as a result of product discontinuations.

The understanding of the consumer response to different types of product discontinuations within a supermarket setting is improved. Across all three studies the shoppers facing a preferred-product discontinuation spent less in the product category for the three month period following the discontinuation. The predominant response was to switch to products with similar attributes of flavour, form or benefit within the product category. Lastly, heavy purchasers of two of the three discontinued products showed a greater propensity to switch to products with similar attributes than the moderate or light purchasers.

The size of the studies and the similar findings from the three types of product discontinuations, each in a different product category, suggest that the results of this study are robust.

6.3 Limitations of the research

A major limitation of this research is that the results are based on existing markets. The purchase behaviour of the same cohort of shoppers is examined both prior and post the product discontinuation and thus new shoppers purchasing in the three months following the discontinuation are not included in the sales data. This limitation implies that the post product discontinuation sales results could be spurious.

Another limitation of this study is due to the purchase environment. As this research was conducted in a real purchase environment many factors are not accounted for in the simple statistical tests employed. The natural environment means that the impact of the discontinuation event could be confounded by the effects of product display, shelf space allocation or location on shelf. This research obviously only had access to purchase data and not the cognitive data.

Price is another confounding factor. The prices of the product items in the categories were not held constant over the 12 month period but varied as a result of promotional

activity and price increases. It must be said, however, that control groups were employed in each of the three studies to reduce the risk of unaccounted events influencing sales in the product categories.

The data collection method employed is a further limitation of the research. The fact that the data for the studies was self-selected and consisted of shoppers of New World Auckland region stores, that used a Flybuys card when making purchases, limits the generalisation of the results.

Lastly, only three product categories are analysed and the analysis is conducted within a product category and not across product categories.

6.4 Future research directions

This research examines the short-term impact of a product discontinuation on product category sales but what happens to sales in the longer term? Do consumers tend to adapt to the selection offered by a retailer, as adoption theory suggests (Bawa, Landwehr, & Krishna, 1989)?

As mentioned previously consumers may respond differently to different product categories and types of product discontinuations so this research could be extended by investigating more product categories and types of product discontinuations. Further insights are also needed into the category-specific characteristics driving switching behaviour to counteract their negative effects.

This study purposely examines buyers of the discontinued product. It would therefore be interesting to investigate non-buyers of the discontinued product and their responses in similar scenarios to new product introductions. Another potential area for further research is to examine the purchases of the new consumers coming into the product category post the product discontinuation and thus further explore the effect of different types of product discontinuations on retailers' sales.

Finally, there is great value in conducting qualitative research which will underpin the behavioural responses of this research and further the understanding of consumers' responses to a preferred-product discontinuation.

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Appendices

Appendix 1: List of defined product categories and switching categories

A) The Anlene milk study

Defined milk product category and switching categories					
Dept.	dept. description	item code	item description	item size	Cat.
511	MILK/CREAM	9412731	ANCHOR BLUE TOP PL	1LT	S3
511	MILK/CREAM	9415221	ANCHOR BLUE TOP PL	2L	S3
511	MILK/CREAM	9414171	ANCHOR M/MILK ULT MODIFIE	2LT	S1
511	MILK/CREAM	941526225002	ANCHOR MILK LITE CTN	1L	S2
511	MILK/CREAM	9416051	ANCHOR MILK LITE PL	2L	S2
511	MILK/CREAM	9412734	ANCHOR MILK LITE PL	1LT	S2
511	MILK/CREAM	9414817	ANCHOR MILK MEGA BTL	1L	S1
511	MILK/CREAM	9415462	ANCHOR MILK SUPER BLUE	1L	S1
511	MILK/CREAM	9415461	ANCHOR MILK SUPER BLUE	2L	S1
511	MILK/CREAM	9415463	ANCHOR MILK SUPER BLUE	3L	S1
511	MILK/CREAM	9416056	ANCHOR MILK SUPER TRIM PL	2L	S1
511	MILK/CREAM	9412733	ANCHOR MILK SUPER TRIM PL	1LT	S1
511	MILK/CREAM	9415246	ANCHOR MILK TRIM PL	2L	S2
511	MILK/CREAM	9414815	ANCHOR MILK TRIM PL	1LT	S2
511	MILK/CREAM	941526205160	ANCHOR MILK XTRA CTN	1LT	S1
511	MILK/CREAM	9413661	ANCHOR MILK XTRA PL	1LT	S1
511	MILK/CREAM	9414100	ANCHOR MILK XTRA PL	2LT	S1
511	MILK/CREAM	9414263	ANCHOR SOYLIFE LITE	1l	S2
511	MILK/CREAM	9413656	ANCHOR SOYLIFE MILK	1L	S2
511	MILK/CREAM	941526203060	ANCHOR THE MILK CTN	1L	S3
511	MILK/CREAM	941526203070	ANCHOR THE MILK CTN	300ML	S3
511	MILK/CREAM	941526203064	ANCHOR THE MILK CTN	600ML	S3
511	MILK/CREAM	941526264670	ANCHOR VITAL TETRA	1l	S2
511	MILK/CREAM	941526200632	ANLENE MILK	2l	
511	MILK/CREAM	9414262	ANLENE MILK PLASTIC	1l	S1
511	MILK/CREAM	941507703378	BUDGET MILK EXTRA SLIM	2L	S2
511	MILK/CREAM	941507703377	BUDGET MILK LITE	2L	S2
511	MILK/CREAM	941507703388	BUDGET MILK REDUCED FAT	3L	S2
511	MILK/CREAM	941507703376	BUDGET MILK STANDARD	2L	S3
511	MILK/CREAM	941507703387	BUDGET MILK STANDARD	3L	S3
511	MILK/CREAM	941410415525	DAIRY DALE STD MLK SACHET	1l	S3
511	MILK/CREAM	941410415526	DAIRY DALE TRM MLK	1l	S2

			SACHET		
511	MILK/CREAM	941409087540	M/F MILK CALCI STRONG PLS	2L	S1
511	MILK/CREAM	941409087545	M/F MILK CALCI STRONG PLS	1L	S1
511	MILK/CREAM	941409087530	M/F MILK CALCI TRIM	2LT	S1
511	MILK/CREAM	941409087525	M/F MILK CALCI TRIM	1L PL	S1
511	MILK/CREAM	941409087520	M/F MILK CALCI TRIM CTN	1L	S1
511	MILK/CREAM	941409084518	M/F MILK CALCI TRIM CTN	600ML	S1
511	MILK/CREAM	941409087490	M/F MILK FARMHOUSE CTN	1L	S3
511	MILK/CREAM	941483287541	M/F MILK JUNIOR PLS	2L	S2
511	MILK/CREAM	941409087515	M/F MILK LITE PLS	2L	S2
511	MILK/CREAM	941409087510	M/F MILK LITE PLS	1L	S2
511	MILK/CREAM	941483288068	M/F MILK ORGANIC TRIM PLS	2L	S2
511	MILK/CREAM	941483288072	M/F MILK ORGANIC TRIM PLS	1L	S2
511	MILK/CREAM	9413839	M/F MILK ORIGINAL PLS	1L	S3
511	MILK/CREAM	9415500	M/F MILK ORIGINAL PLS	2L	S3
511	MILK/CREAM	941409087474	M/F MILK PRE-BIO PLS	1L	S2
511	MILK/CREAM	941409086483	M/F MILK PRE-BIO PLS	2L	S2
511	MILK/CREAM	9412509	M/F MILK TRIM PLS	1L	S2
511	MILK/CREAM	9415510	M/F MILK TRIM PLS	2L	S2
511	MILK/CREAM	941409088046	N/LEA MILK ORGANIC	1LT	S2
511	MILK/CREAM	9415078	PAMS MILK EXTRA SLIM	2L	S2
511	MILK/CREAM	941507701660	PAMS MILK SLIM RED/FAT	1L	S2
511	MILK/CREAM	9415077	PAMS MILK SLIM RED/FAT	2L	S2
511	MILK/CREAM	9415076	PAMS MILK STANDARD	2L	S3
511	MILK/CREAM	9413303	PAMS MILK STANDARD	1L	S3
511	MILK/CREAM	942101597004	RIDGE A2 BLUE ORGANIC MLK	2l	S2
511	MILK/CREAM	942101597002	RIDGE A2 LITE MILK	2l	S2
511	MILK/CREAM	942101597015	RIDGE A2 SUPER LITE MILK	2l	S2
511	MILK/CREAM	9414169	SIMPLY ORGANIC LOW FAT	1LT	S2
511	MILK/CREAM	9414168	SIMPLY ORGANIC STANDARD	1LT	S2
511	MILK/CREAM	942100845003	SUN LATTE MILK	2L	S1
511	MILK/CREAM	942100845001	SUN LATTE MILK PRO ACTIVE	1LT	S1

B) The Kellogg's Cocoa Crispix cereal study

Defined cereal product category and switching categories					
Dept.	dept. description	item code	item description	item size	Cat.
50	BREAKFAST CEREALS	941605071026	A/HOLST CEREAL R/SHINE	350G	S3
50	BREAKFAST CEREALS	941605000307	A/HOLST MUESLI DEC/DELGHT	665G	S3
50	BREAKFAST CEREALS	941605071024	A/HOLST MUESLI HON/TSTD	700G	S3
50	BREAKFAST CEREALS	941605071025	A/HOLST MUESLI NAT HARV	700G	S3
50	BREAKFAST CEREALS	932684700034	B/FARM TSTD MACADM MUESLI	500g	S3
50	BREAKFAST CEREALS	932684700037	B/FARM TSTD MACADM MUESLI	1.5k	S3
50	BREAKFAST CEREALS	941507741080	BUDGET COCOA PUFFS	600g	S1
50	BREAKFAST CEREALS	941464202210	BUDGET CORNFLAKES	500g	S2
50	BREAKFAST CEREALS	941507705106	BUDGET CORNFLAKES	500g	S2
50	BREAKFAST CEREALS	941507703298	BUDGET TROPICAL MUESLI	750g	S3
50	BREAKFAST CEREALS	941574800324	CERES ORG APR/ALMD MUESLI	700G	S3
50	BREAKFAST CEREALS	941574800338	CERES ORG GL/CRNCH MUESLI	700G	S3
50	BREAKFAST CEREALS	941574800323	CERES ORG HNY TSTD MUESLI	800g	S3
50	BREAKFAST CEREALS	941764299256	DELISH CHOCO POPS	255G	S1
50	BREAKFAST CEREALS	941449219054	FLEMINGS MILK OATIES	850G	S3
50	BREAKFAST CEREALS	941449219060	FLEMINGS ROLLED OATS	800G	S3
50	BREAKFAST CEREALS	941491707391	GRAIN TOASTED MUESLI	1kg	S3
50	BREAKFAST CEREALS	941472777782	H/WAY ORGANIC ROLLED OATS	800g	S3
50	BREAKFAST CEREALS	941472777775	HARRAWAYS ROLLED OATS	800g	S3
50	BREAKFAST CEREALS	941472777789	HARRAWAYS ROLLED OATS	1.5kg	S3
50	BREAKFAST CEREALS	941472755553	HARRAWAYS SCOTCH OATS	850g	S3
50	BREAKFAST CEREALS	941472788976	HARRAWAYS W/GRAIN OATS	1kg	S3

50	BREAKFAST CEREALS	940009703753	HRIES BIRCHER DELUXE	420g	S3
50	BREAKFAST CEREALS	940009703632	HRIES MUESLI BERRYBIRCHER	500G	S3
50	BREAKFAST CEREALS	940009703458	HRIES MUESLI BIRCHER	595G	S3
50	BREAKFAST CEREALS	940009703803	HRIES SIMPLE BRRY LT CERL	320G	S3
50	BREAKFAST CEREALS	931186822696	A/EARTH PUFFED MILLET ORG	170g	S3
50	BREAKFAST CEREALS	941476300181	HUB BERRY NICE OAT SACHET	400g	S3
50	BREAKFAST CEREALS	941476300187	HUB BIG BRKFST TSTD MUSLI	500g	S3
50	BREAKFAST CEREALS	941476300148	HUB C/MEL CSHW CRNCH MSLI	600g	S3
50	BREAKFAST CEREALS	941476300175	HUB CURI CRN CLSTR BERRY	475g	S3
50	BREAKFAST CEREALS	941476300169	HUB FEIJOA LITE MUESLI	625g	S3
50	BREAKFAST CEREALS	941476300200	HUB FRTFUL BFAST TS MSLI	700g	S3
50	BREAKFAST CEREALS	941476300135	HUB FRTFUL FLKE BL/BERRY	500g	S3
50	BREAKFAST CEREALS	941476300162	HUB LGT&RGHT BLACKCURRANT	500g	S3
50	BREAKFAST CEREALS	941476300163	HUB OUTWARD BOUND ORIG	500g	S3
50	BREAKFAST CEREALS	941476300185	HUB OUTWARD BOUND POWER8	350g	S3
50	BREAKFAST CEREALS	941476300177	HUB SIMPLY TOASTED APRCOT	650g	S3
50	BREAKFAST CEREALS	941476300176	HUB SIMPLY TOASTED ORIG	650g	S3
50	BREAKFAST CEREALS	941476300190	HUB TK/GD GLU FREE COC/PF	400g	S3
50	BREAKFAST CEREALS	941476300154	HUB TK/GD GLU FREE ORIG	500g	S3
50	BREAKFAST CEREALS	941476300161	HUBBARDS BERRY BERRY GOOD	350g	S2
50	BREAKFAST CEREALS	941476300116	HUBBARDS BERRY BERRY LITE	675g	S3
50	BREAKFAST CEREALS	941476300147	HUBBARDS BERRY BERRY NICE	675g	S3
50	BREAKFAST CEREALS	941476300201	HUBBARDS BERRY BERRY NICE	650g	S3
50	BREAKFAST CEREALS	941476300186	HUBBARDS BIG BUGS N MUD	400g	S1
50	BREAKFAST CEREALS	941476300156	HUBBARDS BRAN & APRICOT	475g	S3
50	BREAKFAST CEREALS	941476300168	HUBBARDS BRAN & BERRIES	450g	S3

50	BREAKFAST CEREALS	941476300160	HUBBARDS BRAN & PLUM	475g	S3
50	BREAKFAST CEREALS	941476300145	HUBBARDS FRTFUL PORRIDGE	750g	S3
50	BREAKFAST CEREALS	941476300141	HUBBARDS FRUITFUL BRKFAST	725g	S3
50	BREAKFAST CEREALS	941476300140	HUBBARDS FRUITFUL LITE	675g	S3
50	BREAKFAST CEREALS	941476300158	HUBBARDS HONEY BEE GOOD	350g	S2
50	BREAKFAST CEREALS	941476300157	HUBBARDS HONEY BUMBLES	300g	S2
50	BREAKFAST CEREALS	941476300150	HUBBARDS LGT&RGHT APRICOT	500g	S3
50	BREAKFAST CEREALS	941476300153	HUBBARDS LGT&RGHT BERRY	500g	S3
50	BREAKFAST CEREALS	941476300151	HUBBARDS LGT&RGHT FEIJOA	500g	S3
50	BREAKFAST CEREALS	941476300199	HUBBARDS LGT&RGHT KIWIFRT	500g	S3
50	BREAKFAST CEREALS	941476300096	HUBBARDS OAT BRAN MUESLI	675g	S3
50	BREAKFAST CEREALS	941476300112	HUBBARDS VERY FRTFL FLAKE	525g	S3
50	BREAKFAST CEREALS	941476300142	HUBBARDS YOURS FRUITFULLY	650g	S3
50	BREAKFAST CEREALS	931005534064	KEL ALL BRAN HONEY ALMOND	505g	S3
50	BREAKFAST CEREALS	931005533568	KEL ALL BRAN WHEAT FLAKE	420g	S3
50	BREAKFAST CEREALS	931005542510	KEL COCO POPS COCO ROCKS	400g	S1
50	BREAKFAST CEREALS	931005515655	KEL CRUNCHY NUT C/FLAKES	430g	S3
50	BREAKFAST CEREALS	931005536131	KEL CRUNCHY NUT CLUSTERS	540g	S3
50	BREAKFAST CEREALS	931005548757	KEL CRUNCHY NUT NUTTY	500g	S3
50	BREAKFAST CEREALS	931005545552	KEL JST RGHT FRT&NUT MSLI	410g	S3
50	BREAKFAST CEREALS	931005545553	KEL JUST RGHT TSTD MUESLI	460g	S3
50	BREAKFAST CEREALS	931005548853	KEL JUST RIGHT ANTIOX	560g	S3
50	BREAKFAST CEREALS	931005528598	KEL JUST RIGHT TROPICAL	575g	S3
50	BREAKFAST CEREALS	931005528601	KEL MINIWHEATS BLK/CURRT	360g	S2
50	BREAKFAST CEREALS	931005544761	KEL SPECIAL K & CHOC FLK	400g	S3
50	BREAKFAST CEREALS	931005538723	KEL SPECIAL K ADVANTAGE	375g	S3

50	BREAKFAST CEREALS	931005540917	KEL SPECIAL K FORST BERRY	440g	S3
50	BREAKFAST CEREALS	931005531647	KEL SPECIAL K HONEY ALMD	510g	S3
50	BREAKFAST CEREALS	931005528611	KEL SULTANA BRAN CRUNCH	580g	S3
50	BREAKFAST CEREALS	931005515408	KELL COCOA CRISPIX	340g	
50	BREAKFAST CEREALS	931005515555	KELL CORNFLAKES	310G	S2
50	BREAKFAST CEREALS	931005515676	KELL CORNFLAKES	525G	S2
50	BREAKFAST CEREALS	931005537091	KELL MINI WHEATS GLDN HNY	370g	S2
50	BREAKFAST CEREALS	931005513206	KELL SPEC K	630G	S3
50	BREAKFAST CEREALS	931005505602	KELLOGGS 8 VARIETY PK	275g	S2
50	BREAKFAST CEREALS	931005512299	KELLOGGS ALL BRAN	350g	S3
50	BREAKFAST CEREALS	931005512301	KELLOGGS ALL BRAN	655g	S3
50	BREAKFAST CEREALS	931005513770	KELLOGGS COCO POPS	450g	S1
50	BREAKFAST CEREALS	931005536533	KELLOGGS COCO POPS	735g	S1
50	BREAKFAST CEREALS	931005548852	KELLOGGS COCO POPS CHEX	340g	S1
50	BREAKFAST CEREALS	931005541674	KELLOGGS CORN FLAKES	460g	S2
50	BREAKFAST CEREALS	931005545173	KELLOGGS CORN FLAKES	280g	S2
50	BREAKFAST CEREALS	931005515611	KELLOGGS FROOT LOOPS	340g	S2
50	BREAKFAST CEREALS	931005515571	KELLOGGS FROSTIES	430g	S2
50	BREAKFAST CEREALS	931005515404	KELLOGGS HONEY CRISPIX	310g	S1
50	BREAKFAST CEREALS	931005516585	KELLOGGS JUST RIGHT	560g	S3
50	BREAKFAST CEREALS	931005536539	KELLOGGS JUST RIGHT	890g	S3
50	BREAKFAST CEREALS	931005515554	KELLOGGS NUTRI GRAIN	345g	S2
50	BREAKFAST CEREALS	931005536529	KELLOGGS NUTRI GRAIN	560g	S2
50	BREAKFAST CEREALS	931005513748	KELLOGGS RICE BUBBLES	300g	S2
50	BREAKFAST CEREALS	931005513203	KELLOGGS SPECIAL K	360g	S3
50	BREAKFAST CEREALS	931005541595	KELLOGGS SPECIAL K	600g	S3

50	BREAKFAST CEREALS	931005515558	KELLOGGS SULTANA BRAN	500g	S3
50	BREAKFAST CEREALS	931005536531	KELLOGGS SULTANA BRAN	820g	S3
50	BREAKFAST CEREALS	931005516580	KELLOGGS SUSTAIN	575g	S3
50	BREAKFAST CEREALS	931059800034	LOWANS COCOA BOMBS	350G	S1
50	BREAKFAST CEREALS	5844977007	N/PATH MILLET RC FLK W/F	375G	S3
50	BREAKFAST CEREALS	5844960057	N/PATH ORGANIC CORNFLAKES	300g	S3
50	BREAKFAST CEREALS	480036133428	NESQUIK BREAKFAST CEREAL	350g	S1
50	BREAKFAST CEREALS	930060500862	NESTLE CHEERIOS CEREAL	375g	S2
50	BREAKFAST CEREALS	930060503886	NESTLE CHEERIOS CEREAL	640g	S2
50	BREAKFAST CEREALS	930060500259	NESTLE MILO CEREAL	350g	S1
50	BREAKFAST CEREALS	930060503825	NESTLE MILO CEREAL	650g	S1
50	BREAKFAST CEREALS	930060505112	NESTLE MILO CEREAL	580g	S1
50	BREAKFAST CEREALS	930060504070	NESTLE MILO DUO CEREAL	340g	S1
50	BREAKFAST CEREALS	941610752172	OATMORES INST HOT OAT APC	50g	S3
50	BREAKFAST CEREALS	941610752171	OATMORES INST HOT OAT APL	50g	S3
50	BREAKFAST CEREALS	941507702364	PAMS BRAN & SULTANA	500g	S3
50	BREAKFAST CEREALS	941507740634	PAMS COCO SNAPS	375g	S1
50	BREAKFAST CEREALS	941507701535	PAMS CORN FLAKES	300g	S2
50	BREAKFAST CEREALS	941507740907	PAMS CORN FLAKES	500g	S2
50	BREAKFAST CEREALS	941507703937	PAMS FRT & FIBRE FRTY NUT	595g	S3
50	BREAKFAST CEREALS	941507702915	PAMS HONEY SNAPS	250g	S2
50	BREAKFAST CEREALS	941507703791	PAMS LITE & FRTY APRICOT	550g	S3
50	BREAKFAST CEREALS	941507705053	PAMS LITE & FRTY APRICOT	500g	S3
50	BREAKFAST CEREALS	941507703936	PAMS LITE & FRTY TROPICAL	525g	S3
50	BREAKFAST CEREALS	941507705051	PAMS LITE & FRTY TROPICAL	500g	S3
50	BREAKFAST CEREALS	941507703790	PAMS LTE & FRTY MXD BERRY	525g	S3

50	BREAKFAST CEREALS	941507701370	PAMS MACOATIES	850g	S3
50	BREAKFAST CEREALS	941507740906	PAMS MUESLI NATURAL	750g	S3
50	BREAKFAST CEREALS	941507740903	PAMS MUESLI TOASTED	750g	S3
50	BREAKFAST CEREALS	941507703938	PAMS NUTTY CRUNCH FLAKES	430g	S3
50	BREAKFAST CEREALS	941507704246	PAMS RDCD FAT TSTD MUESLI	750g	S3
50	BREAKFAST CEREALS	941464202209	PAMS RICE SNAPS	500g	S2
50	BREAKFAST CEREALS	941507701536	PAMS RICE SNAPS	300g	S2
50	BREAKFAST CEREALS	941507704138	PAMS RICE SNAPS	500g	S2
50	BREAKFAST CEREALS	941507701524	PAMS ROLLED OATS	1.5kg	S3
50	BREAKFAST CEREALS	941561200255	PAMS ROLLED OATS	750g	S3
50	BREAKFAST CEREALS	941507703792	PAMS VANILL ALMOND FLAKES	430g	S3
50	BREAKFAST CEREALS	941507740888	PAMS WHEAT BISKITS	750g	S2
50	BREAKFAST CEREALS	941507740889	PAMS WHEAT BISKITS	1kg	S2
50	BREAKFAST CEREALS	941526200290	PRIMO EXTREMO BERRY LQ/FD	3pk	S3
50	BREAKFAST CEREALS	941526200286	PRIMO EXTREMO CHOC LQD FD	250ml	S3
50	BREAKFAST CEREALS	941526200289	PRIMO EXTREMO CHOC LQD/FD	3pk	S3
50	BREAKFAST CEREALS	941526200292	PRIMO EXTREMO LIQ CHOC	6PK	S3
50	BREAKFAST CEREALS	941526200288	PRIMO EXTREMO VANL LQD FD	250ml	S3
50	BREAKFAST CEREALS	941526200291	PRIMO EXTREMO VANL LQD/FD	3pk	S3
50	BREAKFAST CEREALS	941494280097	SAN CLUSTER CRISP T/BERRY	475g	S3
50	BREAKFAST CEREALS	941494280100	SAN CLUSTER CRISP V/ALMD	475g	S3
50	BREAKFAST CEREALS	941494280070	SAN DOUBLE CRUNCH APL/CIN	400g	S3
50	BREAKFAST CEREALS	941494280071	SAN DOUBLE CRUNCH APRICOT	425g	S3
50	BREAKFAST CEREALS	941494280194	SAN DOUBLE CRUNCH BERRY	425g	S3
50	BREAKFAST CEREALS	941494280115	SAN FIB LFE BRAN OAT/BRRY	400g	S3
50	BREAKFAST CEREALS	941494280117	SAN FIB LFE BRAN SULT APP	425g	S3

50	BREAKFAST CEREALS	941494201349	SAN LGT&TASTY APRICOT	800g	S3
50	BREAKFAST CEREALS	941494201350	SAN LGT&TASTY APRICOT	525g	S3
50	BREAKFAST CEREALS	941494201354	SAN LGT&TASTY BERRY	500g	S3
50	BREAKFAST CEREALS	941494201499	SAN LGT&TASTY PLUM ALMOND	475g	S3
50	BREAKFAST CEREALS	941494280087	SAN LGT&TSTY MNK/DATE/NUT	500g	S3
50	BREAKFAST CEREALS	941494201450	SAN MUES CLUSTER VAN/ALMD	500g	S3
50	BREAKFAST CEREALS	941494280016	SAN MUESL L/TSTD OATS/FRT	500g	S3
50	BREAKFAST CEREALS	941494280119	SAN MUESLI CRNBRY ALMOND	650g	S3
50	BREAKFAST CEREALS	941494280012	SAN MUESLI DLX AP/CIN/RSN	500g	S3
50	BREAKFAST CEREALS	941494280013	SAN MUESLI DLX BRRY-YOG	500g	S3
50	BREAKFAST CEREALS	941494280017	SAN MUESLI NAT FRT/5GRAIN	650g	S3
50	BREAKFAST CEREALS	941494280027	SAN MUESLI TSTD FRT MEDLY	650g	S3
50	BREAKFAST CEREALS	941494280015	SAN MUESLI TSTD GLD OATS	700g	S3
50	BREAKFAST CEREALS	941494205530	SAN RICIES	300G	S2
50	BREAKFAST CEREALS	941494205550	SAN RICIES	500G	S2
50	BREAKFAST CEREALS	941494203030	SAN SKIPPY CORN FLAKES	300g	S2
50	BREAKFAST CEREALS	941494203050	SAN SKIPPY CORN FLAKES	500g	S2
50	BREAKFAST CEREALS	930065200173	SAN UP&GO BANANA	3X250	S3
50	BREAKFAST CEREALS	930065200265	SAN UP&GO BANANA	250ml	S3
50	BREAKFAST CEREALS	930065201493	SAN UP&GO BANANA HONEY	3x250	S3
50	BREAKFAST CEREALS	930065200171	SAN UP&GO CHOC ICE	3X250	S3
50	BREAKFAST CEREALS	930065200264	SAN UP&GO CHOC ICE	250ml	S3
50	BREAKFAST CEREALS	930065200930	SAN UP&GO CHOC ICE	6X250	S3
50	BREAKFAST CEREALS	930065201345	SAN UP&GO ENERGIZE CHOC	3X350	S3
50	BREAKFAST CEREALS	930065280062	SAN UP&GO ENERGIZE MOCHA	3x350	S3
50	BREAKFAST CEREALS	930065201477	SAN UP&GO ENERGIZE VANILL	3x350	S3

50	BREAKFAST CEREALS	930065200351	SAN UP&GO STRAWBERRY	3X250	S3
50	BREAKFAST CEREALS	930065201021	SAN UP&GO STRAWBERRY	6x250	S3
50	BREAKFAST CEREALS	930065201057	SAN UP&GO VANILLA	3X250	S3
50	BREAKFAST CEREALS	930065201058	SAN UP&GO VANILLA ICE	250ml	S3
50	BREAKFAST CEREALS	930065201139	SAN UP&GO VANILLA ICE	6X250	S3
50	BREAKFAST CEREALS	930065280129	SAN WEETBIX APRICOT BITES	500g	S2
50	BREAKFAST CEREALS	930065280130	SAN WEETBIX CNCH HNY BITE	510g	S2
50	BREAKFAST CEREALS	930065201107	SAN WEETBIX CRUNCH	500G	S2
50	BREAKFAST CEREALS	930065201519	SAN WEETBIX FRTY SLTNA	500g	S3
50	BREAKFAST CEREALS	941494201466	SAN WEETBIX HI BRAN	750g	S3
50	BREAKFAST CEREALS	930065201439	SAN WEETBIX MULTIGRAIN	575g	S3
50	BREAKFAST CEREALS	941494202250	SAN WEETBIX OAT BRAN	500g	S3
50	BREAKFAST CEREALS	930065280128	SAN WEETBIX W/BERRY BITES	500g	S2
50	BREAKFAST CEREALS	941494201340	SANITARIUM BRAN & SULTANA	525g	S3
50	BREAKFAST CEREALS	941494201337	SANITARIUM BRAN BIX	375g	S3
50	BREAKFAST CEREALS	941494201341	SANITARIUM BRAN FLAKES	420g	S3
50	BREAKFAST CEREALS	941494200120	SANITARIUM BREAKFAST PACK	265g	S2
50	BREAKFAST CEREALS	941494201342	SANITARIUM HONEY PUFFS	250g	S2
50	BREAKFAST CEREALS	941494201356	SANITARIUM HONEY PUFFS	425g	S2
50	BREAKFAST CEREALS	941494201353	SANITARIUM PUFFED WHEAT	215g	S2
50	BREAKFAST CEREALS	941494280127	SANITARIUM RICIES	275g	S2
50	BREAKFAST CEREALS	941494280144	SANITARIUM RICIES	460g	S2
50	BREAKFAST CEREALS	941491702037	SANITARIUM VITA-BRITS	375g	S3
50	BREAKFAST CEREALS	941491702075	SANITARIUM VITA-BRITS	750g	S3
50	BREAKFAST CEREALS	941494201037	SANITARIUM WEETBIX	375g	S2
50	BREAKFAST CEREALS	941494201075	SANITARIUM WEETBIX	750g	S2

50	BREAKFAST CEREALS	941494201091	SANITARIUM WEETBIX	1kg	S2
50	BREAKFAST CEREALS	941494280069	SANITARIUM WEETIES	525g	S3
50	BREAKFAST CEREALS	941494201385	SANT L/TASTY APPLE/CRNBRY	500gm	S3
50	BREAKFAST CEREALS	940311004964	TASTI BLUEBERRY MORNING	450g	S3
50	BREAKFAST CEREALS	940311004968	TASTI NUT CRUNCH	450g	S3
50	BREAKFAST CEREALS	940311004969	TASTI SUNRISE APRICOT	450g	S3
50	BREAKFAST CEREALS	940311004965	TASTI TROPICANA SUNRISE	450g	S3
50	BREAKFAST CEREALS	940055601073	U/T MILK OATIES	1kg	S3
50	BREAKFAST CEREALS	931006040099	U/T OATS APP/SUL/HONEY	480G	S3
50	BREAKFAST CEREALS	930060504880	U/T OATS QUICK APL/CIMMMN	420g	S3
50	BREAKFAST CEREALS	930060503930	U/T OATS QUICK BR/SUG/CNM	12pk	S3
50	BREAKFAST CEREALS	930060503372	U/T OATS QUICK CRMY HONEY	12pk	S3
50	BREAKFAST CEREALS	931006040369	U/T OATS QUICK SACHET10S	340g	S3
50	BREAKFAST CEREALS	930060503371	U/T OATS QUICK VARIETY PK	450g	S3
50	BREAKFAST CEREALS	931006040368	U/T OATS SO TASTY VRTY	360G	S3
50	BREAKFAST CEREALS	931006040365	U/T OATS TASTY HONEY	360G	S3
50	BREAKFAST CEREALS	930060504886	U/T ROLLED OATS	1.3kg	S3
50	BREAKFAST CEREALS	940055601064	U/T ROLLED OATS	1kg	S3
50	BREAKFAST CEREALS	930060504881	U/T TEMPT APL/SULT/HONEY	400g	S3
50	BREAKFAST CEREALS	930060504857	U/T TEMPT W/BRY BASKET	350g	S3
50	BREAKFAST CEREALS	930060504879	U/T TEMPTATIONS SELECT PK	385g	S3
50	BREAKFAST CEREALS	930060505049	U/TOBY PLUS ANTIOX LIFT	460G	S3
50	BREAKFAST CEREALS	930060504068	U/TOBY PLUS ANTIOXIDANT	500g	S3
50	BREAKFAST CEREALS	931006005033	U/TOBY PLUS FIBRE MIX	525g	S3
50	BREAKFAST CEREALS	940055601063	UNCLE TOBYS MILK OATIES	500g	S3
50	BREAKFAST CEREALS	940055601061	UNCLE TOBYS ROLLED OATS	575g	S3

50	BREAKFAST CEREALS	942102117004	VOGELS GLDN CRUNCH MUESLI	500g	S3
50	BREAKFAST CEREALS	940311004995	W/W NUTTY MUESLI	495g	S3
50	BREAKFAST CEREALS	940311004942	W/W BERRY FLAKES	525g	S3
50	BREAKFAST CEREALS	940311004990	W/W BERRY FLAKES	405g	S3
50	BREAKFAST CEREALS	940311004945	W/W BLK FOREST MUESLI	500g	S3
50	BREAKFAST CEREALS	940311004993	W/W BRAN APCT/SULT FLAKES	450g	S3
50	BREAKFAST CEREALS	940311004940	W/W FRUIT & FIBRE	525g	S3
50	BREAKFAST CEREALS	940311004943	W/W FRUITY MUESLI	595g	S3
50	BREAKFAST CEREALS	940311004994	W/W FRUITY MUESLI	495g	S3
50	BREAKFAST CEREALS	940311004947	W/W SUPERFRUIT MUESLI	525g	S3
50	BREAKFAST CEREALS	940311004941	W/W TROPICAL BREAKFAST	525g	S3
50	BREAKFAST CEREALS	940311004991	W/W TROPICAL BREAKFAST	405g	S3
50	BREAKFAST CEREALS	930065201437	WEETBIX FRUITY APRICOT	525g	S3
50	BREAKFAST CEREALS	930065201431	WEETBIX FRUITY WILDBERRY	525g	S3
50	BREAKFAST CEREALS	930065280121	WEETBIX MULTIGRAIN BITES	500g	S2

C) The Bluebird CC's snack study

Defined snack product category and switching categories					
dept.	dept. description	item code	item description	item size	Cat.
224	SNACK FOODS-CHIP/NUT	7027308204	SHULTZ PRETZELS MINI	226G	S3
224	SNACK FOODS-CHIP/NUT	942100185720	ABES BAGEL BITE R/GARLIC	M/P	S3
224	SNACK FOODS-CHIP/NUT	942100185710	ABES BAGEL BITE RCK SALT	M/P	S3
224	SNACK FOODS-CHIP/NUT	942100185155	ABES BAGEL CRISPS GARLIC	150g	S3
224	SNACK FOODS-CHIP/NUT	942100185115	ABES BAGEL CRISPS NATURAL	150G	S3
224	SNACK FOODS-CHIP/NUT	942100185165	ABES BAGEL CRISPS RK/SALT	150g	S3
224	SNACK FOODS-CHIP/NUT	7615047309	ACT11 M/W P/CRN BUTTER 3S	297G	S3
224	SNACK FOODS-CHIP/NUT	7615047310	ACT11 M/W PCN BTR/LVRS 3S	297G	S3
224	SNACK FOODS-CHIP/NUT	7615047307	ACT11 M/W PCN LGHT BTR 3S	255g	S3
224	SNACK FOODS-CHIP/NUT	7615020219	ACTII M/W P/CRN LIGHT BTR	99G	S3
224	SNACK FOODS-CHIP/NUT	890151250040	ACTII M/W PCRN BTR LOVERS	99G	S3
224	SNACK FOODS-CHIP/NUT	890151250020	ACTII M/W POPCORN BUTTER	99G	S3
224	SNACK FOODS-CHIP/NUT	7615060138	ACTII M/W POPCORN KETTLE	99G	S3
224	SNACK FOODS-CHIP/NUT	7615060141	ACTII M/W POPCORN SALTED	99G	S3
224	SNACK FOODS-CHIP/NUT	941459700506	AZTEC C/CHIPS M/O CHSE	360g	S1
224	SNACK FOODS-CHIP/NUT	941459700507	AZTEC C/CHIPS M/O SALSA	360g	S1
224	SNACK FOODS-CHIP/NUT	940056600566	B/B BURGER RINGS	10pk	S2
224	SNACK FOODS-CHIP/NUT	940056600433	B/B CCS FLAMEGRILL BBQ	190g	S1
224	SNACK FOODS-CHIP/NUT	940056600434	B/B CCS MEXICAN FIESTA	190g	S1
224	SNACK FOODS-CHIP/NUT	940056600432	B/B CCS TASTY CHEESE	190g	
224	SNACK FOODS-CHIP/NUT	940056600565	B/B CHEESE COMBO	18pk	S2
224	SNACK FOODS-CHIP/NUT	940056600553	B/B CHIPS READY SALTED	10pk	S2
224	SNACK FOODS-CHIP/NUT	940056600560	B/B COMBO CHEESE	10pk	S2

224	SNACK FOODS-CHIP/NUT	940056600486	B/B G/WAVES SWEET CHILLI	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600564	B/B GRAIN WAVES	18pk	S2
224	SNACK FOODS-CHIP/NUT	940056600549	B/B HEALTH PLUS SEA SALT	10pk	S2
224	SNACK FOODS-CHIP/NUT	940056600519	B/B MURPHYS T/CUT CRM/CHV	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600517	B/B MURPHYS T/CUT SALTED	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600518	B/B MURPHYS T/CUT SLT/VGR	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600559	B/B ORIG COMBO	10pk	S2
224	SNACK FOODS-CHIP/NUT	940056600501	B/B ORIG CUT BBQ BACON	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600499	B/B ORIG CUT CHICKEN	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600506	B/B ORIG CUT CHICKEN	40g	S2
224	SNACK FOODS-CHIP/NUT	940056600551	B/B ORIG CUT CHICKEN	10pk	S2
224	SNACK FOODS-CHIP/NUT	940056600563	B/B ORIG CUT COMBO	18pk	S2
224	SNACK FOODS-CHIP/NUT	940056600500	B/B ORIG CUT GREEN ONION	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600496	B/B ORIG CUT READY SALTED	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600502	B/B ORIG CUT READY SALTED	40g	S2
224	SNACK FOODS-CHIP/NUT	940056600498	B/B ORIG CUT S/CRM CHIVES	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600497	B/B ORIG CUT SALT VINEGAR	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600503	B/B ORIG CUT SALT/VINEGAR	40g	S2
224	SNACK FOODS-CHIP/NUT	940056600552	B/B ORIG CUT SALT/VINEGAR	10pk	S2
224	SNACK FOODS-CHIP/NUT	940056600489	B/B PARTY NACHO CHEESE	360g	S1
224	SNACK FOODS-CHIP/NUT	940056600488	B/B PARTY NACHO DB CHEESE	360g	S1
224	SNACK FOODS-CHIP/NUT	940056600492	B/B PARTY NACHO MEX SALSA	360g	S1
224	SNACK FOODS-CHIP/NUT	940056600491	B/B PARTY NACHO TASTY CHS	360g	S1
224	SNACK FOODS-CHIP/NUT	940056600562	B/B READY SLTD STAR COMBO	18pk	S2
224	SNACK FOODS-CHIP/NUT	940056600531	B/B THIN CUT CHICKEN	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600525	B/B THIN CUT READY SALTED	150g	S2

224	SNACK FOODS-CHIP/NUT	940056600526	B/B THIN CUT SALT VINEGAR	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600527	B/B THIN CUT SR CRM CHIVE	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600558	B/B TWISTIES	10pk	S2
224	SNACK FOODS-CHIP/NUT	940056621060	B/B TWISTIES	60G	S2
224	SNACK FOODS-CHIP/NUT	940056600561	B/B VARIETY COMBO	18pk	S2
224	SNACK FOODS-CHIP/NUT	940056600644	B/B VARIETY COMBO	18pk	S2
224	SNACK FOODS-CHIP/NUT	940056600599	BB BIGUNS CHEESE	180G	S2
224	SNACK FOODS-CHIP/NUT	940056626207	BB BIGUNS CHEESE	200G	S2
224	SNACK FOODS-CHIP/NUT	940056600600	BB BIGUNS CHEESE & BACON	180G	S2
224	SNACK FOODS-CHIP/NUT	940056626206	BB BIGUNS CHEESE & BACON	200G	S2
224	SNACK FOODS-CHIP/NUT	940056628150	BB BIGUNS TANGY	200G	S2
224	SNACK FOODS-CHIP/NUT	940056600601	BB BIGUNS TANGY TOMATO	160G	S2
224	SNACK FOODS-CHIP/NUT	940056632130	BB BURGER RINGS	130G	S2
224	SNACK FOODS-CHIP/NUT	940056653795	BB CCS TASTY CHEESE 10S	180G	S1
224	SNACK FOODS-CHIP/NUT	940056631150	BB CHEEZELS	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600629	BB DELISIO CML ONON/VINGR	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600376	BB DELISIO FETA & GARLIC	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600374	BB DELISIO FINE SEA SALT	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600377	BB DELISIO GREEK TZATZIKI	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600567	BB DELISIO LIME/CORIANDER	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600590	BB DELISIO LMN MOROC CHKN	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600535	BB DELISIO SWT CHILI RLSH	150g	S2
224	SNACK FOODS-CHIP/NUT	940056653793	BB G/WAVES CHEDDAR 10S	180G	S2
224	SNACK FOODS-CHIP/NUT	940056600441	BB G/WAVES FLAMEGRILL BBQ	150g	S2
224	SNACK FOODS-CHIP/NUT	940056651751	BB G/WAVES GOLDEN CHEDDAR	150G	S2
224	SNACK FOODS-CHIP/NUT	940056653779	BB G/WAVES HONEY MUSTARD	150G	S2

224	SNACK FOODS-CHIP/NUT	940056653753	BB G/WAVES SALSA	150G	S2
224	SNACK FOODS-CHIP/NUT	940056653794	BB G/WAVES SCR/CHIVES 10S	180G	S2
224	SNACK FOODS-CHIP/NUT	940056653752	BB G/WAVES SR CRM/CHIVES	150G	S2
224	SNACK FOODS-CHIP/NUT	940056691101	BB HEALTH PLUS SEA SALT	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600586	BB KIWI AS KIWI DIP	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600588	BB KIWI AS M/L TASTY CHSE	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600587	BB KIWI AS TOMATO SCE/PIE	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600589	BB KRISPA POPPAJACKS 10S	120G	S2
224	SNACK FOODS-CHIP/NUT	940056600615	BB LIGHT PLUS CHICKEN	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600614	BB LIGHT PLUS SALT/VINEGR	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600613	BB LIGHT PLUS SEA SALT	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600618	BB LIGHT PLUS SEA SALT	10PK	S2
224	SNACK FOODS-CHIP/NUT	940056600612	BB LIGHT PLUS SR CRM/CHVS	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600616	BB LIGHT PLUS SR CRM/CHVS	10PK	S2
224	SNACK FOODS-CHIP/NUT	940056600617	BB LIGHT PLUS VG S/C/CHVS	10PK	S2
224	SNACK FOODS-CHIP/NUT	940056600620	BB MULTI PACK BOX	30S	S2
224	SNACK FOODS-CHIP/NUT	940056600624	BB NATIONS CHIPS	100G	S2
224	SNACK FOODS-CHIP/NUT	940056600583	BB ORIG MEGA CHICKEN	250G	S2
224	SNACK FOODS-CHIP/NUT	940056600585	BB ORIG MEGA GREEN ONION	250G	S2
224	SNACK FOODS-CHIP/NUT	940056600582	BB ORIG MEGA READY SALTED	250G	S2
224	SNACK FOODS-CHIP/NUT	940056600584	BB ORIG MEGA SALT/VINEGAR	250G	S2
224	SNACK FOODS-CHIP/NUT	940056622150	BB RASHUNS	150G	S2
224	SNACK FOODS-CHIP/NUT	940056621150	BB TWISTIES	150G	S2
224	SNACK FOODS-CHIP/NUT	941605090010	BCS NUTS DELUXE ROAST	150G	S3
224	SNACK FOODS-CHIP/NUT	940056600557	BLUE BIRD RASHINS	10pk	S2
224	SNACK FOODS-CHIP/NUT	940056600456	C/KETTLE CHIPS CHK/LEM/TM	150g	S2

224	SNACK FOODS-CHIP/NUT	940056600621	C/KETTLE CHIPS HONEY SOY	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600455	C/KETTLE CHIPS LIME B/PEP	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600448	C/KETTLE CHIPS S/SALT/VIN	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600447	C/KETTLE CHIPS SEA SALT	150g	S2
224	SNACK FOODS-CHIP/NUT	940056600622	C/KETTLE CHIPS VNTGE CHED	150G	S2
224	SNACK FOODS-CHIP/NUT	940056600454	C/KETTLE CHIPS W/FIRD BBQ	150g	S2
224	SNACK FOODS-CHIP/NUT	941574800365	CERES ORG RCE CHPS TAMARI	105G	S3
224	SNACK FOODS-CHIP/NUT	940056600453	COPPER KETTLE SEA SALT	40G	S2
224	SNACK FOODS-CHIP/NUT	941545978851	DANNYS PITA CRSPS GAR/SES	150G	S3
224	SNACK FOODS-CHIP/NUT	941545978852	DANNYS PITA CRSPS ON/POPP	150G	S3
224	SNACK FOODS-CHIP/NUT	940056600634	DORITOS BBQ	170G	S1
224	SNACK FOODS-CHIP/NUT	940056600630	DORITOS CHEESE SUPREME	170G	S1
224	SNACK FOODS-CHIP/NUT	940056600645	DORITOS CHEESE SUPREME	8PK	S1
224	SNACK FOODS-CHIP/NUT	940056600631	DORITOS NACHO CHEESE	170G	S1
224	SNACK FOODS-CHIP/NUT	940056600632	DORITOS ORIGINAL	170G	S1
224	SNACK FOODS-CHIP/NUT	940056600635	DORITOS PRY BAG CHS SPRM	300G	S1
224	SNACK FOODS-CHIP/NUT	940056600636	DORITOS PRY BAG NACH/CHS	300G	S1
224	SNACK FOODS-CHIP/NUT	940056600637	DORITOS PRY BAG ORIGINAL	300G	S1
224	SNACK FOODS-CHIP/NUT	940056600638	DORITOS PRY BAG SALSA	300G	S1
224	SNACK FOODS-CHIP/NUT	940056600633	DORITOS SALSA	170G	S1
224	SNACK FOODS-CHIP/NUT	941488207374	ETA CHEESE BALLS	180g	S2
224	SNACK FOODS-CHIP/NUT	941488243313	ETA CHEESE MIX M/P	10pk	S2
224	SNACK FOODS-CHIP/NUT	941488244065	ETA CRAVER MIX	10PK	S3
224	SNACK FOODS-CHIP/NUT	941488244066	ETA FUN MIX	10PK	S2
224	SNACK FOODS-CHIP/NUT	941488243314	ETA FUN MIX M/P	10pk	S2
224	SNACK FOODS-CHIP/NUT	941488242838	ETA KETTLES BBQ	150g	S2

224	SNACK FOODS-CHIP/NUT	941488242836	ETA KETTLES READY SALTED	150g	S2
224	SNACK FOODS-CHIP/NUT	941488242837	ETA KETTLES SALT & VINEGR	150g	S2
224	SNACK FOODS-CHIP/NUT	941488243034	ETA M/PACK RIPPLES MX 10S	180g	S2
224	SNACK FOODS-CHIP/NUT	941488243035	ETA M/PCK MUNCHOS MIX 10S	140g	S2
224	SNACK FOODS-CHIP/NUT	941488242940	ETA MUNCHOS CHEES & ONION	120g	S2
224	SNACK FOODS-CHIP/NUT	941488242941	ETA MUNCHOS SPICY TOMATO	120g	S2
224	SNACK FOODS-CHIP/NUT	941488243036	ETA MUNCHOS SPICY TOMATO	10s	S2
224	SNACK FOODS-CHIP/NUT	941488243184	ETA NUTS & RAISINS	200g	S3
224	SNACK FOODS-CHIP/NUT	941488243231	ETA NUTS & RAISINS 8 PKS	160g	S3
224	SNACK FOODS-CHIP/NUT	941488243316	ETA ORYANS MIX M/P	10pk	S2
224	SNACK FOODS-CHIP/NUT	941488242830	ETA ORYANS READY SALTED	170g	S2
224	SNACK FOODS-CHIP/NUT	941488242831	ETA ORYANS S/CRM/ONION	170G	S2
224	SNACK FOODS-CHIP/NUT	941488243185	ETA PEANUTS DRY ROASTED	200g	S3
224	SNACK FOODS-CHIP/NUT	941488243188	ETA PEANUTS HONEY ROASTED	200g	S3
224	SNACK FOODS-CHIP/NUT	941488243315	ETA POTATO MIX M/P	10pk	S2
224	SNACK FOODS-CHIP/NUT	941488243032	ETA RIPPLE RDY/SALT 10S	180g	S2
224	SNACK FOODS-CHIP/NUT	941488242824	ETA RIPPLES CHEESE/ONION	150g	S2
224	SNACK FOODS-CHIP/NUT	941488242823	ETA RIPPLES CHICKEN	150g	S2
224	SNACK FOODS-CHIP/NUT	941488242821	ETA RIPPLES READY SALTED	150g	S2
224	SNACK FOODS-CHIP/NUT	941488242822	ETA RIPPLES SALT & VINEGR	150g	S2
224	SNACK FOODS-CHIP/NUT	941488205061	ETA RIPPLES SALT & VINEGAR	45G	S2
224	SNACK FOODS-CHIP/NUT	941488242825	ETA RIPPLES SPRING ONION	150G	S2
224	SNACK FOODS-CHIP/NUT	941488242827	ETA RIPPLES SR CRM & CHVS	150g	S2
224	SNACK FOODS-CHIP/NUT	941488242826	ETA RIPPLES THE WORKS	150g	S2
224	SNACK FOODS-CHIP/NUT	941488243153	ETA SALTED CASHEWS	175g	S3
224	SNACK FOODS-CHIP/NUT	941488243161	ETA SALTED CASHEWS	6pk	S3

224	SNACK FOODS-CHIP/NUT	941488243187	ETA SALTED CASHEWS	100g	S3
224	SNACK FOODS-CHIP/NUT	941488243160	ETA SALTED PEANUTS	100g	S3
224	SNACK FOODS-CHIP/NUT	941488243178	ETA SALTED PEANUTS	500g	S3
224	SNACK FOODS-CHIP/NUT	941488243186	ETA SALTED PEANUTS	200g	S3
224	SNACK FOODS-CHIP/NUT	941488243232	ETA SALTED PEANUTS 8 PKS	160g	S3
224	SNACK FOODS-CHIP/NUT	941488243598	ETA SANCHO C/C CHEESE	350g	S1
224	SNACK FOODS-CHIP/NUT	941488243599	ETA SANCHO C/C MEX SALSA	350g	S1
224	SNACK FOODS-CHIP/NUT	941488243600	ETA SANCHO C/C NACHO CHSE	350g	S1
224	SNACK FOODS-CHIP/NUT	941488243860	ETA SKOF CHEESE	10PK	S2
224	SNACK FOODS-CHIP/NUT	941488243852	ETA SKOF CHSY CHEESEBALLS	160G	S2
224	SNACK FOODS-CHIP/NUT	941488243847	ETA SKOF CORN CHEESE	10PK	S1
224	SNACK FOODS-CHIP/NUT	941488244063	ETA SKOF CORN FIERY RANCH	175G	S1
224	SNACK FOODS-CHIP/NUT	941488243846	ETA SKOF CORN TASTY CHSE	175G	S1
224	SNACK FOODS-CHIP/NUT	941488243848	ETA SKOF MUNCHOS	10PK	S2
224	SNACK FOODS-CHIP/NUT	941488243851	ETA SKOF MUNCHOS CHSE/ON	100G	S2
224	SNACK FOODS-CHIP/NUT	941488243850	ETA SKOF MUNCHOS SPCY TOM	100G	S2
224	SNACK FOODS-CHIP/NUT	941488243845	ETA SKOF TRIPODS	10PK	S2
224	SNACK FOODS-CHIP/NUT	941488243841	ETA SKOF TRIPODS BBQ	120G	S2
224	SNACK FOODS-CHIP/NUT	941488243842	ETA SKOF TRIPODS CHICKEN	120G	S2
224	SNACK FOODS-CHIP/NUT	941488243840	ETA SKOF TRIPODS SLT/VNGR	120G	S2
224	SNACK FOODS-CHIP/NUT	941488244061	ETA SKOF TRIPODS T/CHEESE	120G	S2
224	SNACK FOODS-CHIP/NUT	941488243968	ETA SPUDS RIPPLE CHICKEN	10PK	S2
224	SNACK FOODS-CHIP/NUT	941488243977	ETA SPUDS RIPPLE CHICKEN	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243965	ETA SPUDS RIPPLE MIX	10PK	S2
224	SNACK FOODS-CHIP/NUT	941488243966	ETA SPUDS RIPPLE RDY SLTD	10PK	S2
224	SNACK FOODS-CHIP/NUT	941488243978	ETA SPUDS RIPPLE RDY SLTD	150G	S2

224	SNACK FOODS-CHIP/NUT	941488243975	ETA SPUDS RIPPLE S/CRM/CH	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243976	ETA SPUDS RIPPLE SLT&VNGR	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243973	ETA SPUDS RIPPLE SP/ONION	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243974	ETA SPUDS RIPPLE T/WORKS	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243980	ETA SPUDS THICK RDY SALTD	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243979	ETA SPUDS THICK SR/CRM/ON	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243963	ETA SPUDS THIN CHICKEN	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243967	ETA SPUDS THIN CUT MIX	10PK	S2
224	SNACK FOODS-CHIP/NUT	941488243964	ETA SPUDS THIN RDY SALTED	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243962	ETA SPUDS THIN SALT&VINGR	150G	S2
224	SNACK FOODS-CHIP/NUT	941488242732	ETA U/C CHILLI/SOUR CREAM	150g	S2
224	SNACK FOODS-CHIP/NUT	941488243102	ETA U/C CORN NACHO/CHEESE	175g	S1
224	SNACK FOODS-CHIP/NUT	941488243104	ETA U/C CORN SR CRM/SALSA	175g	S1
224	SNACK FOODS-CHIP/NUT	941488243262	ETA U/C CORN TAPA FTA/GLC	150g	S1
224	SNACK FOODS-CHIP/NUT	941488243263	ETA U/C CORN TAPA POP/CHD	150g	S1
224	SNACK FOODS-CHIP/NUT	941488220590	ETA U/C CROSTINI FT/GL/HB	150g	S3
224	SNACK FOODS-CHIP/NUT	941488220592	ETA U/C CROSTINI S/SALT	150g	S3
224	SNACK FOODS-CHIP/NUT	941488242365	ETA U/C HONEY SOY CHICKEN	150g	S2
224	SNACK FOODS-CHIP/NUT	941488242730	ETA U/C ROAST LAMB & MINT	150g	S2
224	SNACK FOODS-CHIP/NUT	941488242731	ETA U/C SEA SALT/HRB	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243242	ETA U/C VEG CR SR/CRM CHV	125g	S2
224	SNACK FOODS-CHIP/NUT	941488243243	ETA U/C VEG CR TOM/MOZZAR	125g	S2
224	SNACK FOODS-CHIP/NUT	941488243244	ETA U/C VEGE CRSP G/AIOLI	125g	S2
224	SNACK FOODS-CHIP/NUT	941488242906	ETA UPPERCUT LIME/PEPPER	150g	S2
224	SNACK FOODS-CHIP/NUT	941956702897	EZIPOP MW POPCRN EX/BUTT	85g	S3
224	SNACK FOODS-CHIP/NUT	941956702831	EZIPOP MW POPCRN LGHT BUT	85g	S3

224	SNACK FOODS-CHIP/NUT	940009703831	HRIES K/C R/RND CHS/BCN8S	200G	S3
224	SNACK FOODS-CHIP/NUT	940009703832	HRIES K/C RICE RND BBQ 8S	200G	S3
224	SNACK FOODS-CHIP/NUT	940009703839	HRIES K/C RICE RND ORIG8S	200G	S3
224	SNACK FOODS-CHIP/NUT	940009703834	HRIES K/C STIX CHICKEN	160G	S3
224	SNACK FOODS-CHIP/NUT	940009703835	HRIES K/C STIX RST POTATO	160G	S3
224	SNACK FOODS-CHIP/NUT	940009703808	HRIES K/C STIX SALT/VINGR	160G	S3
224	SNACK FOODS-CHIP/NUT	940009703854	HRIES KIDS BURG RICE WHLS	180g	S3
224	SNACK FOODS-CHIP/NUT	942101344030	J/LINKS BEEF JERKY ORIGNL	25g	S3
224	SNACK FOODS-CHIP/NUT	942101344127	J/LINKS BEEF STICK ORIGNL	15g	S3
224	SNACK FOODS-CHIP/NUT	942101344133	J/LINKS BF STICK PEP/RONI	15g	S3
224	SNACK FOODS-CHIP/NUT	942101344019	J/LINKS STEAK BAR BBQ	25g	S3
224	SNACK FOODS-CHIP/NUT	940009703627	K/CARE R/WHEEL BBQ 10S	180g	S3
224	SNACK FOODS-CHIP/NUT	940009703628	K/CARE R/WHEEL CHEESE 10S	180g	S3
224	SNACK FOODS-CHIP/NUT	940009703629	K/CARE R/WHL SCR/CHVE 10S	180g	S3
224	SNACK FOODS-CHIP/NUT	941490231002	KRISPA CORN CHIPS CHICKEN	100g	S1
224	SNACK FOODS-CHIP/NUT	941490240251	KRISPA POPPAJACKS REGULAR	25g	S2
224	SNACK FOODS-CHIP/NUT	941490241251	KRISPA POPPAJACKS REGULAR	125g	S2
224	SNACK FOODS-CHIP/NUT	941605090144	M/EARTH ALMONDS NATURAL	150g	S3
224	SNACK FOODS-CHIP/NUT	941605090143	M/EARTH ALMONDS ROASTED	150g	S3
224	SNACK FOODS-CHIP/NUT	941605090149	M/EARTH ALMONDS ROASTED	325g	S3
224	SNACK FOODS-CHIP/NUT	941605090141	M/EARTH CASHEW RST L/SALT	150g	S3
224	SNACK FOODS-CHIP/NUT	941605090147	M/EARTH CASHEW RST L/SALT	325g	S3
224	SNACK FOODS-CHIP/NUT	941605090142	M/EARTH CASHEW RST UNSALT	150g	S3
224	SNACK FOODS-CHIP/NUT	941605090148	M/EARTH CASHEW RST UNSALT	325g	S3
224	SNACK FOODS-CHIP/NUT	941605090146	M/EARTH DELUXE MIX NAT	150g	S3
224	SNACK FOODS-CHIP/NUT	941605090145	M/EARTH DELUXE RST L/SALT	150g	S3

224	SNACK FOODS-CHIP/NUT	941605090150	M/EARTH PEANUTS RST L/SLT	325g	S3
224	SNACK FOODS-CHIP/NUT	941605090151	M/EARTH RST PEANUT/RAISIN	325g	S3
224	SNACK FOODS-CHIP/NUT	1472900004	M/FARMS PCORN BUTTER MW	100G	S3
224	SNACK FOODS-CHIP/NUT	1472900001	M/FARMS PCORN NAT MW	100G	S3
224	SNACK FOODS-CHIP/NUT	941568402001	MEXICANO C/CHIP CHEESE	200G	S1
224	SNACK FOODS-CHIP/NUT	941568402002	MEXICANO C/CHIP JALAPO	200G	S1
224	SNACK FOODS-CHIP/NUT	941568408113	MEXICANO C/CHIP NATURAL	350G	S1
224	SNACK FOODS-CHIP/NUT	941568408111	MEXICANO CORN CHIP CHEESE	350G	S1
224	SNACK FOODS-CHIP/NUT	941568408112	MEXICANO CORN CHIP J/PENO	350G	S1
224	SNACK FOODS-CHIP/NUT	941535912029	P N GOOD BUTTER MAX	200G	S3
224	SNACK FOODS-CHIP/NUT	941535910120	P N GOOD POPCORN CAMEL	150G	S3
224	SNACK FOODS-CHIP/NUT	941535910116	P N GOOD POPCORN FRUITTI	150G	S3
224	SNACK FOODS-CHIP/NUT	941507703533	PAM F/CUT CHIP FTA/GLC/HB	150g	S2
224	SNACK FOODS-CHIP/NUT	941507705336	PAMS ALMONDS RSTD UNSALTD	150g	S3
224	SNACK FOODS-CHIP/NUT	941507705335	PAMS CASHEWS RSTD SALTED	200g	S3
224	SNACK FOODS-CHIP/NUT	941507702288	PAMS CASHEWS SALTED	200G	S3
224	SNACK FOODS-CHIP/NUT	941507702094	PAMS CHIPS BARBECUE +	150g	S2
224	SNACK FOODS-CHIP/NUT	941507702089	PAMS CHIPS CHEESE/ONION +	150G	S2
224	SNACK FOODS-CHIP/NUT	941507702090	PAMS CHIPS CHICKEN +	150g	S2
224	SNACK FOODS-CHIP/NUT	941507702091	PAMS CHIPS GREEN ONION +	150G	S2
224	SNACK FOODS-CHIP/NUT	941507702092	PAMS CHIPS READY SALTED +	150G	S2
224	SNACK FOODS-CHIP/NUT	941507702095	PAMS CHIPS S/CREAM/CHIVE+	150G	S2
224	SNACK FOODS-CHIP/NUT	941507702093	PAMS CHIPS SALT/VINEGAR +	150G	S2
224	SNACK FOODS-CHIP/NUT	941507705441	PAMS CORN CHIP DBL CHEESE	360g	S1
224	SNACK FOODS-CHIP/NUT	941507702143	PAMS CORN CHIPS BBQ	400G	S1
224	SNACK FOODS-CHIP/NUT	941507702144	PAMS CORN CHIPS CHEESE	400G	S1

224	SNACK FOODS-CHIP/NUT	941507705439	PAMS CORN CHIPS CHEESE	360g	S1
224	SNACK FOODS-CHIP/NUT	941507702145	PAMS CORN CHIPS DBL CHEES	400G	S1
224	SNACK FOODS-CHIP/NUT	941507702147	PAMS CORN CHIPS SALSA	400G	S1
224	SNACK FOODS-CHIP/NUT	941507703385	PAMS DELUXE NUT MIX	150g	S3
224	SNACK FOODS-CHIP/NUT	941507705333	PAMS DLXE NUTS RSTD SALTD	150g	S3
224	SNACK FOODS-CHIP/NUT	941507703531	PAMS F/CUT CHIP CHED/ONON	150g	S2
224	SNACK FOODS-CHIP/NUT	941507703532	PAMS F/CUT CHIP CHK TYAKI	150g	S2
224	SNACK FOODS-CHIP/NUT	941507703534	PAMS F/CUT CHIP S/SALT	150g	S2
224	SNACK FOODS-CHIP/NUT	941507741617	PAMS M/PACK CHIPS CHICKEN	216G	S2
224	SNACK FOODS-CHIP/NUT	941507741615	PAMS M/PACK CHIPS R/SALTD	216G	S2
224	SNACK FOODS-CHIP/NUT	941507741616	PAMS M/PACK CHIPS SLT/VIN	216G	S2
224	SNACK FOODS-CHIP/NUT	941507702500	PAMS M/PACK GREEN ONION	216g	S2
224	SNACK FOODS-CHIP/NUT	941507703337	PAMS MINI R/CRKR SEAWEED	12PK	S3
224	SNACK FOODS-CHIP/NUT	941507703340	PAMS MINI R/CRKR BBQ CHKN	12PK	S3
224	SNACK FOODS-CHIP/NUT	941507703338	PAMS MINI R/CRKR ORIGINAL	12PK	S3
224	SNACK FOODS-CHIP/NUT	941507703339	PAMS MINI R/CRKRS BBQ M/P	12PK	S3
224	SNACK FOODS-CHIP/NUT	941507701954	PAMS PEANUTS CHILLI LIME	200g	S3
224	SNACK FOODS-CHIP/NUT	941507701955	PAMS PEANUTS SWEET/SALTY	200g	S3
224	SNACK FOODS-CHIP/NUT	941507701724	PAMS POPCORN BUTTER 3S	300G	S3
224	SNACK FOODS-CHIP/NUT	941507701721	PAMS POPCORN BUTTER SNGL	100g	S3
224	SNACK FOODS-CHIP/NUT	941507701722	PAMS POPCORN EXT/BUT SNGL	100G	S3
224	SNACK FOODS-CHIP/NUT	941507701725	PAMS POPCORN EXT/BUTTR 3S	100G	S3
224	SNACK FOODS-CHIP/NUT	941507701726	PAMS POPCORN NATURAL 3S	100G	S3
224	SNACK FOODS-CHIP/NUT	941507701723	PAMS POPCORN NATURAL SNGL	100G	S3
224	SNACK FOODS-CHIP/NUT	941507703439	PAMS SALTED PEANUTS	8x25g	S3
224	SNACK FOODS-CHIP/NUT	941507701583	PAMS SPICY BHUJA MIX	250g	S3

224	SNACK FOODS-CHIP/NUT	941507705498	PAMS THE BIG BAG RDY SLTD	250g	S3
224	SNACK FOODS-CHIP/NUT	941507705499	PAMS THE BIG BAG SLT VING	250g	S3
224	SNACK FOODS-CHIP/NUT	941507703386	PAMS UNSALTED ALMONDS	150g	S3
224	SNACK FOODS-CHIP/NUT	501130819916	PATAK MINI PAPPADUMS PL	75G	S3
224	SNACK FOODS-CHIP/NUT	941605090006	PISTACHIO BCS	150G	S3
224	SNACK FOODS-CHIP/NUT	941535912068	PNG HONEY LUNCH PKS 12S	180G	S3
224	SNACK FOODS-CHIP/NUT	941535910165	PNG L/PK LGTNBUTT 12S	144G	S3
224	SNACK FOODS-CHIP/NUT	941535912051	PNG SENS CHOC/CARAMEL	65g	S3
224	SNACK FOODS-CHIP/NUT	941535912052	PNG SENS CRML/CSHW P/CORN	65g	S3
224	SNACK FOODS-CHIP/NUT	941535912054	PNG SENS HONEY P/CORN	65g	S3
224	SNACK FOODS-CHIP/NUT	941535912110	POP CHIPS CHICKEN	120G	S2
224	SNACK FOODS-CHIP/NUT	941535912108	POP CHIPS READY SALTED	120G	S2
224	SNACK FOODS-CHIP/NUT	941535912109	POP CHIPS SALT & VINEGAR	120G	S2
224	SNACK FOODS-CHIP/NUT	941535912111	POP CHIPS SOUR CRM/CHIVES	120G	S2
224	SNACK FOODS-CHIP/NUT	941535910113	POPNGOOD LGTNBUTTERY	200g	S3
224	SNACK FOODS-CHIP/NUT	941535912026	POPNGOOD POPPNG CRN BAG	500G	S3
224	SNACK FOODS-CHIP/NUT	541007604864	PRINGLES CHICKEN	170G	S2
224	SNACK FOODS-CHIP/NUT	541007602770	PRINGLES CHIPS ORIGINAL	165G	S2
224	SNACK FOODS-CHIP/NUT	541007603070	PRINGLES CHIPS ORIGINAL	43G	S2
224	SNACK FOODS-CHIP/NUT	541007606765	PRINGLES CHIPS ORIGINAL	40G	S2
224	SNACK FOODS-CHIP/NUT	541007606806	PRINGLES CHIPS ORIGINAL	165G	S2
224	SNACK FOODS-CHIP/NUT	541007602907	PRINGLES CHIPS S/CR ONION	165g	S2
224	SNACK FOODS-CHIP/NUT	541007603073	PRINGLES CHIPS S/CR ONION	43G	S2
224	SNACK FOODS-CHIP/NUT	541007606809	PRINGLES CHIPS S/CR ONION	165g	S2
224	SNACK FOODS-CHIP/NUT	541007603005	PRINGLES CHIPS SALT/VINGR	165G	S2
224	SNACK FOODS-CHIP/NUT	541007603076	PRINGLES CHIPS SALT/VINGR	43G	S2

224	SNACK FOODS-CHIP/NUT	541007606783	PRINGLES CHIPS SALT/VINGR	40G	S2
224	SNACK FOODS-CHIP/NUT	541007606833	PRINGLES CHIPS SALT/VINGR	165G	S2
224	SNACK FOODS-CHIP/NUT	541314977518	PRINGLES CHIPS SR/CRM/ON	40G	S2
224	SNACK FOODS-CHIP/NUT	541007602999	PRINGLES CHIPS TEXAS BBQ	165G	S2
224	SNACK FOODS-CHIP/NUT	940056104743	S/VALLEY POPPING CORN	500G	S3
224	SNACK FOODS-CHIP/NUT	7027312204	SHULTZ PRETZEL MINI SNAK	280g	S3
224	SNACK FOODS-CHIP/NUT	7027312508	SHULTZ PRETZELS RODS	340G	S3
224	SNACK FOODS-CHIP/NUT	7027308405	SHULTZ PRETZELS STICKS	226G	S3
224	SNACK FOODS-CHIP/NUT	942190027666	SNACK HQ RST PEANTS HONEY	350G	S3
224	SNACK FOODS-CHIP/NUT	941488243581	SOLAY M/G CRISP FTA/HRB/G	150g	S2
224	SNACK FOODS-CHIP/NUT	941488243579	SOLAY M/G CRISP SR/CREAM	150g	S2
224	SNACK FOODS-CHIP/NUT	941488243580	SOLAY M/GRAIN CRISP SALSA	150g	S2
224	SNACK FOODS-CHIP/NUT	941488243576	SOLAY MULTI GRAIN CRISPS	180g	S2
224	SNACK FOODS-CHIP/NUT	941488243586	SOLAY POT/CRISP S/CRM/CHV	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243585	SOLAY POT/CRISP SEA SALT	150G	S2
224	SNACK FOODS-CHIP/NUT	941488243587	SOLAY POT/CRISP TZATZIKI	150G	S2
224	SNACK FOODS-CHIP/NUT	941488244094	SOLAY POT/CRISPS SEA SALT	10PK	S2
224	SNACK FOODS-CHIP/NUT	941488244093	SOLAY POT/CRISPS SR/C/CHV	10PK	S2
224	SNACK FOODS-CHIP/NUT	941488243582	SOLAY POTATO CRISPS	180g	S2
224	SNACK FOODS-CHIP/NUT	940056105213	T/VALUE CASHEW RST SALTED	200G	S3
224	SNACK FOODS-CHIP/NUT	941605090049	V/P DELUXE RS/SALTED NUTS	350G	S3
224	SNACK FOODS-CHIP/NUT	941605090046	V/PACK ALMONDS RST/UNSALT	350G	S3
224	SNACK FOODS-CHIP/NUT	941605070311	V/PACK CARAMELCORN HONEY	200G	S3
224	SNACK FOODS-CHIP/NUT	941605070983	V/PACK CASHEWS RST/SALTED	175G	S3
224	SNACK FOODS-CHIP/NUT	941605080052	V/PACK CASHEWS RST/SALTED	500G	S3
224	SNACK FOODS-CHIP/NUT	941605090045	V/PACK CASHEWS RST/UNSALT	500G	S3

224	SNACK FOODS-CHIP/NUT	941605090050	V/PACK NATURAL ALMONDS	350g	S3
224	SNACK FOODS-CHIP/NUT	941605046100	V/PACK NUTS & RAISINS	400G	S3
224	SNACK FOODS-CHIP/NUT	941605071041	V/PACK PEANUTS	750G	S3
224	SNACK FOODS-CHIP/NUT	941605049030	V/PACK PEANUTS RST/SALTED	400G	S3
224	SNACK FOODS-CHIP/NUT	941605090047	V/PACK PISTACHIOS RST/SLT	400G	S3
224	SNACK FOODS-CHIP/NUT	941605074061	V/PACK POPPING CORN	300G	S3
224	SNACK FOODS-CHIP/NUT	941605071020	V/PACK PRETZEL BOWS	300G	S3
224	SNACK FOODS-CHIP/NUT	941605090058	V/PACK PRETZEL STICKS	300g	S3
224	SNACK FOODS-CHIP/NUT	941605070994	V/PACK PRETZELS BOWS	150G	S3
224	SNACK FOODS-CHIP/NUT	941605070989	VALUE PACK HNY RST PEANUT	390G	S3
224	SNACK FOODS-CHIP/NUT	942102117023	VOGELS PITA CRISP SEASLT	150g	S3
224	SNACK FOODS-CHIP/NUT	942102117024	VOGELS PITA CRISPS GAR/PM	150g	S3
224	SNACK FOODS-CHIP/NUT	932532900058	W/THINS SAV STRAWS CHEESE	110g	S3
224	SNACK FOODS-CHIP/NUT	932532900118	W/THINS TWSTS CHEDDAR	110G	S3
224	SNACK FOODS-CHIP/NUT	932532900337	W/THINS TWSTS FETA/OLIVE	110g	S3
224	SNACK FOODS-CHIP/NUT	932532900338	W/THINS TWSTS PARMNSN/GRLC	110G	S3
224	SNACK FOODS-CHIP/NUT	933792500069	W/W CRNKL CRSPS CHS/ONION	120G	S2
224	SNACK FOODS-CHIP/NUT	933792500071	W/W CRNKL CRSPS RST CHCKN	120G	S2
224	SNACK FOODS-CHIP/NUT	933792500056	W/W POTATO BAKE LGHT/SALT	120G	S2
224	SNACK FOODS-CHIP/NUT	933792500075	W/W POTATO BAKE SR/CRM/CH	120G	S2

Appendix 2: Average sales (\$) for the total, heavy, moderate and light purchasers

A) Anlene milk study

Anlene milk study - Total purchasers (\$)

	9 MONTHS PRIOR			3 MONTHS POST		
N = 455	Average 9 months sales	Average monthly sales	Percentage of total	Average 3 months sales	Average monthly sales	Percentage of total
Anlene 2L	74.86	8.32	43.1%			
(S1)Anlene 1L	17.52	1.95	10.1%			
Category (S1)	33.57	3.73	19.3%	24.8	8.27	52.6%
Category (S2)	29.9	3.32	17.2%	17.36	5.79	36.2%
Category (S3)	17.83	1.98	10.3%	5.86	1.95	12.2%
Total	\$ 173.68	\$ 19.30	100.0%	\$ 48.02	\$ 16.01	100.0%

Anlene milk study - Heavy purchasers (\$)

	9 MONTHS PRIOR			3 MONTHS POST		
N =122	Average 9 months sales	Average monthly sales	Percentage of total	Average 3 months sales	Average monthly sales	Percentage of total
Anlene 2L	143.07	15.90	57.2%			
(S1)Anlene 1L	19.94	2.22	8.0%			
Category (S1)	37.11	4.12	15.8%	37.15	12.38	55.4%
Category (S2)	36.05	4.01	14.4%	24.49	8.16	37.5%
Category (S3)	13.86	1.54	6.5%	5.43	1.81	8.1%
Total	\$ 250.03	\$ 27.78	100.0%	\$ 67.07	\$ 22.36	100.0%

A) Anlene milk study (continued)

Anlene milk study - Moderate purchasers (\$)

	9 MONTHS PRIOR			3 MONTHS POST		
N = 218	Average 9 months sales	Average monthly sales	Percentage of total	Average 3 months sales	Average monthly sales	Percentage of total
Anlene 2L	63.85	7.09	39.4%			
(S1)Anlene 1L	17.8	1.98	11.0%			
Category (S1)	30.87	3.43	19.0%	23.22	7.74	50.7%
Category (S2)	28.51	3.17	17.6%	16.21	5.40	35.4%
Category (S3)	21.05	2.34	13.0%	6.39	2.13	13.9%
Total	\$ 162.08	\$ 18.01	100.0%	\$ 45.82	\$ 15.27	100.0%

Anlene milk study - Light purchasers (\$)

	9 MONTHS PRIOR			3 MONTHS POST		
N = 115	Average 9 months sales	Average monthly sales	Percentage of total	Average 3 months sales	Average monthly sales	Percentage of total
Anlene 2L	23.37	2.60	20.4%			
(S1)Anlene 1L	14.42	1.60	12.6%			
Category (S1)	34.91	3.88	30.4%	14.69	4.90	45.9%
Category (S2)	26.03	2.89	22.7%	11.96	3.99	37.4%
Category (S3)	15.92	1.77	13.9%	5.32	1.77	16.6%
Total	\$ 114.65	\$ 12.74	100.0%	\$ 31.97	\$ 10.66	100.0%

B) Kellogg's Cocoa Crispix cereal study

Kellogg's Cocoa Crispix cereal study - Total purchasers(\$)

	9 MONTHS PRIOR			3 MONTHS POST		
	Average 9 months sales	Average monthly sales	% of total	Average 3 months sales	Average monthly sales	% of total
N = 540						
Kellogg's						
Cocoa Crispix 340g	39.33	4.37	15.7%			
(S1)Honey Crispix 310g	4.27	0.47	1.7%	1.31	0.44	1.7%
(S1)Coco pops 450g	4.53	0.50	1.8%	2.8	0.93	3.7%
(S1)Coco pops 735g	3.87	0.43	1.5%	1.83	0.61	2.4%
(S1)Coco pops Chex 340g	0.45	0.05	0.2%	7.15	2.38	9.3%
(S1)Coco pops coco rocks 400g	3.35	0.37	1.3%	0.74	0.25	1.0%
category(S1)	27.08	3.01	10.8%	8.14	2.71	10.6%
category (S2)	72.66	8.07	29.0%	25.37	8.46	33.2%
category (S3)	94.85	10.54	37.9%	29.18	9.73	38.1%
Total	250.39	27.82	100%	76.52	25.51	100%

Kellogg's Cocoa Crispix cereal study - Heavy purchasers (\$)

	9 MONTHS PRIOR			3 MONTHS POST		
	Average 9 months sales	Average monthly sales	% of total	Average 3 months sales	Average monthly sales	% of total
N = 155						
Kellogg's						
Cocoa Crispix 340g	73.76	8.20	26.7%			
(S1)Honey Crispix 310g	4.77	0.53	1.7%	2.12	0.71	2.6%
(S1)Coco pops 450g	4.87	0.54	1.8%	3.57	1.19	4.4%
(S1)Coco pops 735g	3.53	0.39	1.3%	1.84	0.61	2.2%
(S1)Coco pops Chex 340g	0.87	0.10	0.3%	12.96	4.32	15.8%
(S1)Coco pops coco rocks 400g	1.56	0.17	0.6%	0.53	0.18	0.6%
category(S1)	24.1	2.68	8.7%	7.49	2.50	9.1%
category(S2)	67.63	7.51	24.4%	24.51	8.17	29.9%
category (S3)	95.56	10.62	34.5%	28.98	9.66	35.3%
Total	276.66	30.74	100%	82.00	27.33	100%

B) Kellogg's Cocoa Crispix cereal study(continued)

Kellogg's Cocoa Crispix cereal study - Moderate purchasers (\$)

	9 MONTHS PRIOR			3 MONTHS POST		
N = 245	Average 9 months sales	Average monthly sales	% of total	Average 3 months sales	Average monthly sales	% of total
Kellogg's						
Cocoa Crispix 340g	31.03	3.45	12.8%			
(S1)Honey Crispix 310g	4.14	0.46	1.7%	1.00	0.33	1.3%
(S1)Coco pops 450g	4.41	0.49	1.8%	2.48	0.83	3.3%
(S1)Coco pops 735g	3.69	0.41	1.5%	2.15	0.72	2.9%
(S1)Coco pops Chex 340g	0.31	0.03	0.1%	5.69	1.90	7.6%
(S1)Coco pops coco rocks 400g	4.47	0.50	1.8%	0.84	0.28	1.1%
Category (S1)	28.14	3.13	11.6%	8.61	2.87	11.4%
Category (S2)	73.28	8.14	30.2%	25.51	8.50	33.9%
Category (S3)	93.01	10.33	38.4%	29.00	9.67	38.5%
Total	242.48	26.94	100%	75.27	25.09	100%

Kellogg's Cocoa Crispix cereal study - Light purchasers (\$)

	9 MONTHS PRIOR			3 MONTHS POST		
N = 140	Average 9 months sales	Average monthly sales	% of total	Average 3 months sales	Average monthly sales	% of total
Kellogg's						
Cocoa Crispix 340g	15.74	1.75	6.7%			
(S1)Honey Crispix 310g	3.95	0.44	1.7%	0.97	0.32	1.3%
(S1)Coco pops 450g	4.34	0.48	1.8%	2.5	0.83	3.4%
(S1)Coco pops 735g	4.58	0.51	1.9%	1.28	0.43	1.8%
(S1)Coco pops Chex 340g	0.25	0.03	0.1%	3.27	1.09	4.5%
(S1)Coco pops coco rocks 400g	3.35	0.37	1.4%	0.8	0.27	1.1%
Category (S1)	28.52	3.17	12.1%	8.03	2.68	11.0%
Category (S2)	77.15	8.57	32.8%	26.09	8.70	35.9%
Category (S3)	97.27	10.81	41.4%	29.73	9.91	40.9%
Total	235.14	26.13	100%	72.67	24.22	100%

C) Bluebird CC's snack study

Bluebird CC's snack study - Total purchasers (\$)

	9 MONTHS PRIOR			3 MONTHS POST		
N = 403	Average 9 months sales	Average monthly sales	% of total	Average 3 months sales	Average monthly sales	% of total
Bluebird CC's range						
Tasty cheese 190g	14.85	1.65	6.5%			
(S1)Flamegrill bbq 190g	2.95	0.33	1.3%			
(S1)Mex. fiesta 190g	1.26	0.14	0.5%			
(S1)Tasty cheese 10s 300g	4.25	0.47	1.9%	0.36	0.12	0.5%
Bluebird CC's range	23.31	2.59	10.2%			
D/Bbq 170g				0.66	0.22	0.9%
D/Cheese Sup. 170g				1.05	0.35	1.5%
D/Cheese Sup. 8 pack				0.57	0.19	0.8%
D/Nacho Cheese 170g				1.46	0.49	2.1%
D/Orig. 170g				0.39	0.13	0.6%
D/Party bag c/s 300g				0.93	0.31	1.3%
D/Party bag n/c 300g				1.21	0.40	1.7%
D/Party bag orig.300g				0.22	0.07	0.3%
D/Party bag salsa 300g				0.47	0.16	0.7%
D/Salsa 170g				0.7	0.23	1.0%
(S1)Doritos range				7.66	2.55	10.9%
category (S1)	16.66	1.85	7.3%	3.95	1.32	5.6%
category (S2)	146.27	16.25	63.8%	44.96	14.99	63.8%
category (S3)	43.05	4.78	18.8%	13.5	4.50	19.2%
Total	229.29	25.48	100%	70.45	23.48	100%

C) Bluebird CC's snack study (continued)

Bluebird CC's snack study - heavy purchasers (\$)

	9 MONTHS PRIOR			3 MONTHS POST		
N = 111	Average 9 months sales	Average monthly sales	% of total	Average 3 months sales	Average monthly sales	% of total
Bluebird CC's range						
Tasty cheese 190g	28.25	3.14	9.4%			
(S1)Flamegrill bbq 190g	5.78	0.64	1.9%			
(S1)Mex. fiesta 190g	1.96	0.22	0.7%			
(S1)Tasty cheese 10s 300g	5.64	0.63	1.9%	0.51	0.17	0.6%
Bluebird CC's range	41.63	4.63	13.9%			
D/Bbq 170g				1.01	0.34	1.1%
D/Cheese Sup. 170g				1.26	0.42	1.4%
D/Cheese Sup. 8 pack				0.39	0.13	0.4%
D/Nacho Cheese 170g				2.62	0.87	2.9%
D/Orig. 170g				0.69	0.23	0.8%
D/Party bag c/s 300g				1.44	0.48	1.6%
D/Party bag n/c 300g				1.84	0.61	2.0%
D/Party bag orig.300g				0.45	0.15	0.5%
D/Party bag salsa. 300g				0.77	0.26	0.8%
D/Salsa 170g				1.04	0.35	1.1%
(S1)Doritos range				11.51	3.84	12.7%
category (S1)	16.78	1.86	5.6%	4.36	1.45	4.8%
category (S2)	188.17	20.91	62.8%	58.93	19.64	64.8%
category (S3)	52.87	5.87	17.7%	15.67	5.22	17.2%
Total	299.46	33.27	100%	90.97	30.32	100%

C) Bluebird CC's snack study (continued)

Bluebird CC's snack study - moderate purchasers (\$)

	9 MONTHS PRIOR			3 MONTHS POST		
	Average 9 months sales	Average monthly sales	% of total	Average 3 months sales	Average monthly sales	% of total
N=124						
Bluebird CC's range						
Tasty cheese 190g	12.71	1.41	6.0%			
(S1)Flamegrill bbq 190g	2.19	0.24	1.0%			
(S1)Mex. fiesta 190g	0.83	0.09	0.4%			
(S1)Tasty cheese 10s 300g	3.75	0.42	1.8%	0.4	0.13	0.6%
Bluebird CC's range	19.48	2.16	9.3%			
D/Bbq 170g				0.62	0.21	1.0%
D/Cheese Sup. 170g				1.24	0.41	1.9%
D/Cheese Sup. 8 pack				0.79	0.26	1.2%
D/Nacho Cheese 170g				1.24	0.41	1.9%
D/Orig. 170g				0.19	0.06	0.3%
D/Party bag c/s 300g				0.75	0.25	1.2%
D/Party bag n/c 300g				1.31	0.44	2.0%
D/Party bag orig.300g				0.16	0.05	0.2%
D/Party bag salsa. 300g				0.27	0.09	0.4%
D/Salsa 170g				0.47	0.16	0.7%
(S1)Doritos range				7.04	2.35	11.0%
category (S1)	17.19	1.91	8.2%	3.29	1.10	5.1%
category (S2)	135.58	15.06	64.4%	41.13	13.71	64.0%
category (S3)	38.22	4.25	18.2%	12.43	4.14	19.3%
Total	210.46	23.38	100%	64.28	21.43	100%

C) Bluebird CC's snack study (continued)

Bluebird CC's snack study - light purchasers (\$)						
	9 MONTHS PRIOR			3 MONTHS POST		
N = 168	Average 9 months sales	Average monthly sales	% of total	Average 3 months sales	Average monthly sales	% of total
Bluebird CC's range						
Tasty cheese 190g	7.58	0.84	3.9%			
(S1)Flamegrill BBQ 190g	1.63	0.18	0.8%	0.01	0.00	0.0%
(S1)Mex. fiesta 190g	1.12	0.12	0.6%			
(S1)Tasty cheese 10s 300g	3.71	0.41	1.9%	0.24	0.08	0.4%
Bluebird CC's range	14.04	1.56	7.1%			
D/BBQ 170g				0.45	0.15	0.7%
D/Cheese Sup. 170g				0.77	0.26	1.3%
D/Cheese Sup. 8 pack				0.53	0.18	0.9%
D/Nacho Cheese 170g				0.86	0.29	1.4%
D/Orig. 170g				0.35	0.12	0.6%
D/Party bag c/s 300g				0.73	0.24	1.2%
D/Party bag n/c 300g				0.72	0.24	1.2%
D/Party bag orig.300g				0.12	0.04	0.2%
D/Party bag salsa 300g				0.42	0.14	0.7%
D/Salsa 170g				0.65	0.22	1.1%
(S1)Doritos range				5.6	1.87	9.1%
category (S1)	16.20	1.80	8.2%	4.16	1.39	6.8%
category (S2)	126.49	14.05	64.3%	38.57	12.86	62.8%
category (S3)	40.12	4.46	20.4%	12.87	4.29	20.9%
Total	196.84	21.87	100%	61.45	20.48	100%