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Exploring the role of the retailer marketing mix in stimulating consumer demand for sugar-free vs sugar-sweetened beverage variants

by

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ABSTRACT

Concerns about obesity are becoming as prevalent as under-nutrion. Obesity is associated with a host of health and economic problems, and as such is becoming a prevelant topic for discussion among academics and the public in general, and is therefore of particular concern to the business world. There is a strong focus on reducing sugar consumption, ans with the announcement of the implementation of a sugar tax in South Africa, retailers have been identified as a crucial element in the value chain in providing healthier alternatives to consumers. They have the ability to utilise elements of the marketing mix to influence consumers' in-store purchase decisions and respond to the demand for healthier, sugar-free products.

This study focuses on the effectiveness of price, placement and assortment as levers of the marketing mix with which retailers can drive demand. Quasi-experimental and experimental event-based time series studies were conducted with a focus on carbonated soft drinks. Quantitative price and sales units data were gathered from a prominent South African retailer. Two separate studies were conducted, one to understand the impact of the presence of promotional pricing as well as the depth of discount, and the second to understand the impact of a shelf format on consumer demand for sugar-free products. Data were analysed using multiple regression analysis in order to gain insights into the impact of changes of the marketing mix on consumer demand.

Key findings of these studies are summarised in a framework that outlines the priority of marketing mix elements for retailers to utilise in order to drive demand for sugar-free products. Assortment was found to be the first requirement, ensuring there is availability of sugar-free variants to meet purchase motivations. Secondly, the presence of a pricing promotion was key, followed by the depth of the promotional discount. It was established that consumers within the CSD category were attuned to pricing promotions, and if retailers take the decision to drive sugar-free products, these products should be prioritised for pricing investment over sugar-sweetened alternatives. Results showed that merchandising the shelf according to sugar content (shelf format) had no impact on the demand for sugar-free products.

The findings of this research built on the literature around marketing mix elements within retail, as well as studies around influencing consumers to purchase and consumer healthier products.

KEYWORDS

Retailing marketing mix, sugar-free carbonated soft drinks, path to purchase, consumer demand

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Jo-Anne Clemitson

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LIST OF ABBREVIATIONS

- BMI - Body mass index
- SSB - Sugar sweetened beverages
- CSD - Carbonated soft drink
- SFB - Sugar-free beverages
- SSCSD - Sugar sweetened carbonated soft drink
- SFCSD - Sugar-free carbonated soft drink
- 4Ps - Marketing mix as defined by McCarthy (1964). Elements of the mix are price, promotion, place, product
- AIC - Akaike Information Criterion

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CHAPTER ONE: INTRODUCTION TO THE RESEARCH PROBLEM

1.1. INTRODUCTION

The increased prevalence of obesity has become the focus of many studies, mainly because of its severe impact on the health of individuals and on society as a whole. The World Health Organisation (2016) has identified the detrimental effects of obesity, including adverse metabolic effects on blood pressure, increased cholesterol, triglycerides and insulin resistance and risks of coronary heart disease, ischemic stroke and type 2 diabetes mellitus. The increase in the numbers of overweight individuals and the growing incidence of childhood obesity has led to concerns in many countries regarding the spread of this epidemic.

The problem is that, despite increased awareness regarding the negative effects of having a high body-mass index, the number of people suffering from the condition is increasing. Lopez, Murray and Emmanuela (2014) found that between 1980 and 2013 the number of adult men who were considered overweight (with a BMI of 25 kg/m^2 or higher) increased from 28·8% to 36·9%, and from 29·8% to 38·0% in women. “If recent trends continue, by 2030 up to 57.8% of the world's adult population (3.3 billion people) could be either overweight or obese” (Kelly, Yang, Chen, Reynolds, & He, 2008, p. 1435). This puts a considerable strain on national economies due to the increasing demand for government spending to treat the many illnesses linked to high BMI.

As urbanisation increases globally, so does the level of obesity, which is becoming as prevalent as under-nutrition (Malik, Willett, & Hu, 2013). This is a serious concern for South Africa, which is already classified as the world’s third-fattest nation. A study by Birrell (2014) revealed that nearly two-thirds of the South African population is overweight. For a country with the poor global competitive ranking of 128 out of 144 countries for its health sector, as measured in the Global Competitive Index report (2015), this is a key challenge that must be addressed. The effect of a nation with such a large portion of overweight individuals is enormous in terms of human loss and heavy costs to public health systems, besides its negative effect on the overall productivity of the population and on individuals during their productive years.

The consumption of sugar has been linked directly to an increase in obesity and its related illnesses. “An array of meta-analyses have shown a powerful relationship between sugar consumption in beverages and obesity, diabetes, the metabolic syndrome, and cardiovascular disease” (Bray & Popkin, 2014, p. 950). In order to try to curb the number of citizens living with high BMIs, and their related health issues, the South African Minister of Finance announced that a tax on all sugar-sweetened beverages (SSBs) will be introduced in April 2017. The aim of this initiative is to reduce excessive sugar intake among the South African population. “Taxes/levies can play a key role in correcting for market failures and act as a price signal that could influence purchasing decisions of consumers” (The National Treasury Department - Republic of South Africa, 2016, p. 2).

Total sugar intake includes consumption of what are known as complex sugars, which are found in carbohydrates such as brown rice and other whole grains. A study done by Hill and Prentice (1995) found that diets high in sugar, when considering total sugar intake, were not as likely to cause obesity as diets high in fat. However, there is a significant difference between sugar intake from healthy sources such as whole grains and an increased consumption of sugar-sweetened foods such as sugar-sweetened beverages (SSBs). A recent study, based on controlled trials, focused specifically on the consumption of added sugars and SSBs. It showed that an increase in the consumption of sugar as a result of increased consumption of sugar-sweetened foods is associated with an increase in the body weight of adults (Te Morenga, Mallard, & Mann, 2013).

These findings have implications for the manufacturers and retailers of sugar-sweetened, carbonated soft drinks (SSCSDs) such as Coke, because these products are known to have a high sugar and calorie content and to provide little nutritional value; consumption of these beverages means imbibing ‘empty calories’. In USA in the late 1970s, sugar-sweetened beverages made up 3.9% of the average daily calorie intake; by 2001 that had risen to about 9.2% (Nielsen & Popkin, 2004). In South Africa, as children reach teenage years, they usually increase their consumption of sugar-rich foods, especially SSBs. This leads to an increase in the contribution of sugar-rich foods from 16% of energy requirements per day at the age of ten to 20% by the age of 13 (MacKeown, Pedro, & Norris, 2007). This increase in the consumption of SSBs is likely to cause weight gain and the diseases linked to it. In a study by Malik, Popkin, Bray, Despres, Willett and Hu (2010), it was proved that individuals who consumed SSBs regularly had an increased risk of developing type 2 diabetes; a disease commonly known to be linked to obesity.

1.2. BACKGROUND TO THE RESEARCH PROBLEM

1.2.1. The retailers' responsibilities

The association of urbanisation with increased obesity rates is believed to be linked to supermarkets; ultimately, the products that they offer become increasingly available to consumers.

> The modern supermarket is the source of thousands of highly processed foods… From the retailers' perspective, greater choice has led to greater profits. For the health professional, the domination of thousands of 'ultra-processed' foods (defined as including the snack items, biscuits, cakes, soft drinks, confectionery, sauces and packaged ready meals) lining most aisles of the modern supermarket has played a major role in increasing consumption and contributed to obesity (Stanton, 2015, p. 55).

Due to an increasing focus on the negative effects of sugar in South Africa, officials and consumers have begun to look to retailers to drive healthier offerings and make it progressively easier to for shoppers to choose healthier options in stores. Many Retailers are pressurised by both governmental authorities as well as consumers themselves to promote healthier food options(Sigurdsson, Larsen, & Gunnarsson, 2011). It is likely that retailers will need to increase the focus on sugar-free foods and to look at ways to market them rather than, or along with, their less healthy alternatives. This will become an important factor in remaining competitive in a changing social climate, and it will be necessary to focus on the best way to create a demand in a diverse society such as South Africa, with many different consumer triggers.

The introduction of the sugar tax on SSBs is aimed at reducing the demand and drive a move towards healthier choices; however, the impact of this tax is dependent on the degree to which the price increase is passed on to consumers. Sharkey, Dean and Nalty (2012) discussed the introduction of a policy to drive healthier options, pointing out that policies overlook the marketing that happens in-store, which is one of the key influences on consumer behaviour. The ultimate price decision is in the hands of the retailers, who set final prices in-store. It is therefore key for retailers to understand the role that they play in stimulating the demand for healthier options such as sugar-free CSDs. The key to stimulating demand, therefore, does not lie with one stakeholder, but with stakeholders across the value chain, and this includes retailers. Schmitt, Wagner and Kirch (2007)

found that retailers, along with other players in the industry, under-utilised, to a great extent, their potential to promote goods that support healthier lifestyles. There are a variety of levers that retailers can utilise to support healthier decisions: these are commonly known as 'the marketing mix'.

1.2.2. Elements of the marketing mix

The marketing mix was originally made up of twelve elements, as defined by Borden (1965). These were then reworked and grouped together to create a simpler set of four elements, commonly known as the four Ps, by McCarthy (1964): price, promotion, place and product. "The essence of the marketing mix concept is, therefore, the idea of a set of controllable variables…at the disposal of marketing management which can be used to influence customers" (Rafiq & Ahmed, 1995, p. 4).

The retail shelf has been identified as one of the most important value chain links: it is where a manufacturers products are ultimately made available to the consumer. "It is where pricing and promotions take place. It is where supply meets demand, in the most tangible way" (Taylor & Tedesco, 2012, p. 1). In a recent study, it was found that retailers had the opportunity to shape consumption practices even more than peer influence (Tsarenko, Ferraro, Sands, & McLeod, 2013). While this study focused on retailers stimulating consumers to make environmental choices, they could play an important role in driving consumers to make healthier choices by leveraging the same marketing mix elements.

The diagram below (Figure 1) illustrates the path to purchase as identified by Nielsen (cited in Taylor & Tedesco, 2012). The cycle identifies the elements that stimulate consumer demand for products and lead to purchase and consumption. Once the store is chosen, illustrated by place, the next drivers to purchase are product, placement, price and promotion. These are the areas of the marketing mix that are the main drivers to buy, and for which retailers are ultimately responsible.

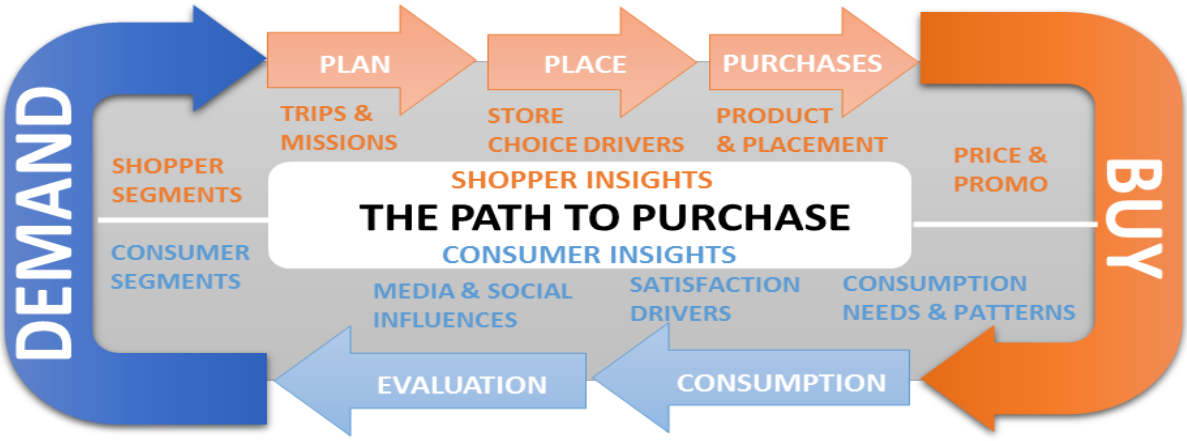

***Figure 1**: The Path to Purchase (Taylor & Tedesco, 2012)*

The four elements of the marketing mix can be interpreted slightly differently for a retailer from their manufacturer counterparts. The adaptation of these elements for a retailer can be explained as follows:

Product: The range stocked by the retailer with reference to variety in terms of both flavour and pack size.

Place: Merchandising of the product in the store.

Price: Pricing discounts on offer in the store. Depth of discount can vary.

Promotions: Promotional mechanics can vary according to store type and retailer. Coupons, competitions and value offerings are examples of this.

1.3. RESEARCH SCOPE

The purpose of this research was to understand how various elements of the retail marketing mix could best be used to stimulate consumer demand for sugar-free foods. There are a large number of categories available from South African grocery retailers that have both added sugar and sugar-free variants, and that fulfil the same consumption need. Examples of such categories are carbonated soft drinks, cereals, cordials, biscuits, iced tea, energy drinks, salad dressings, sauces and condiments. Since the sugar tax will initially target sugar-sweetened beverages and the high sugar content of these products, as well as the size of these categories within South Africa, this study will focus specifically on SSBs.

The image below (Figure 2) illustrates the high sugar content of a variety of SSBs. SSBs are defined by the National Treasury Department of South Africa as "beverages that contain added caloric sweeteners such as sucrose, high-fructose corn syrup (HFCS), or fruit-juice concentrates" (2016, p. 2). Nine out of the top ten SSBs are carbonated soft drinks (CSDs) such as Coke. Due to the specific focus of the South African government on SSBs and the high sugar content of CSDs, this study focused specifically on SSCSDs and their sugar-free alternatives.

Figure2: *SSBs Sugar Content (Carte Blanche, 2016)*

Based on the above, as well as on the elements of the marketing mix, the objectives of this research were as follows:

1. To determine if pricing promotions stimulate a higher or lower demand for SFCSDs relative to those that are sugar-sweetened
2. To determine the impact of various promotional depths on the demand for SFCSDs
3. To determine the impact of merchandising according to sugar content on the demand for SFCSDs.

1.4. SIGNIFICANCE OF THE STUDY

The results of this research will be significant for South African retailers as they come under increasing pressure to drive healthier consumer demand while still meeting their profit goals in challenging economic times. "There is a tremendous opportunity for food manufacturers and retailers to lead a healthy movement by providing the products and services that consumers want and need" (Nielsen, 2015, p. 3). According to the Nielsen

Global Health and Wellness Report (2015), 68% of consumers in the Middle East and Africa have been changing their dietary habits in order to lose weight; however, only 58% have cut down on sugar, one of the leading causes of obesity. It is important, therefore, for retailers to understand trends and to adapt their offerings to meet and support this change in behaviour.

> Changing the types and quantities of foods and drinks consumed is a vital part of solving the problem of obesity. Retailers are an essential part of this change but the difficulty of such changes should not be underestimated, given that both suppliers and retailers have a duty to increase sales and thus maximise profits for their shareholders (Stanton, 2015, p. 57).

With the planned introduction of the sugar tax in South Africa in 2017, it is also important for policy-makers to understand how the impact of retailer activity in-store can affect the desired outcome of fiscal policy implementation. After an analysis of the impact of sugar taxes implemented in other countries, it was found that, in many cases, retailers ended up banking a higher margin on the diet products, so that the effect of the fiscal policies was minimal. This was especially evident in France, where retailers increased prices across all the CSD varients and the demand for drinks as a whole decreased, but “no changes in the indicators for competitiveness were noted” (The National Treasury Department - Republic of South Africa, 2016, p. 27).

There has been a large amount of research conducted on drivers of consumer demand (Sheth, Newman, & Gross; Glanz, Bader & Iyer), on the effects of price or secondary locations on demand (Carter, Phan, & Mills, 2013; Inman, McAlister, & Hoyer, 1990; Inman, McAlister, & Hoyer, 1990; Sigurdsson, Engilbertsson, & Foxall, 2010), as well as on impulse purchases (Muruganantham & Bhakat; Kacen, Hess, & Walker, 2012; Mohan, Sivakumaran, & Sharma, 2013; Bayley & Nancarrow, 1998). There has been no recent research on how these factors can impact healthier consumer choices. Researchers have evaluated how retailers can drive demand for healthier offerings through the placement of fruits and vegetables in the store (Sigurdsson, Larsen, & Gunnarsson, 2011), and there has been research that focused on the perception that healthier products were perceived to be more expensive (Drewnowski & Darmon, 2005). However, to date there have been no articles that focus on how a consumer’s decisions can be influenced in-store away from sugary products to sugar-free items that could, potentially, fulfil the same need.

The research described here looks at the current literature on impulse purchases, as well as the elements that retailers use to drive purchases of functional goods like sugar-free products rather than those that help to propagate the obesity epidemic. Elements of the marketing mix that retailers can control in the in-store environment are pricing promotions and in-store merchandising; the literature on both of these will be reviewed in the following chapter in order to provide a comprehensive survey of their varied impact on sales. The literature on healthy foods and consumption will also be discussed in order to explore what drives consumer's health purchases.

1.5. STRUCTURE OF THIS REPORT

To best understand the role that elements of the retailer marketing mix have in stimulating the demand for sugar-free variants, this report consists of several chapters. The first chapter has introduced the research problem that was addressed, as well as explaining the rationale and significance of the study. Chapter Two provides a detailed review of the academic literature relating to the topic and discusses earlier studies within the area of the retailer marketing mix and its various elements, the different consumer purchase drivers for impulse versus planned purchases, and influences on the consumer demand for healthy food. The research provides a deeper understanding of the key topics that were covered in this study and highlights the contribution of this research to academic theory.

Once a broad understanding of the problem and the need for the research has been enabled, Chapter Three details the specific hypotheses that were analysed and reported on in later chapters. These hypotheses were derived from the literature and provide a deeper insight into retailers' ability to stimulate demand for sugar-free items.

Chapter Four covers the methodology adopted for the research, as well as details of the research approach that was followed. Along with the design of the study and the approach to analysing the data, it also outlines certain limitations of this study. Chapter Five presents the analysis of the data, along with top-line results. This will be developed further in Chapter Six, in a detailed discussion of the results. Chapter Six also highlights how the results link back to prior research and how they can be applied in business today. The concluding chapter, Chapter Seven, highlights the main findings of the research, its limitations, and recommendations for further research.

CHAPTER TWO: LITERATURE REVIEW

2.1. INTRODUCTION

Chapter One provided an overview of the health-related issues associated with sugar consumption, especially of drinks and foods that contain excessive added sugar, such as SSBs. The same chapter also discussed the role that retailers play in enforcing fiscal policy such as the sugar tax, as well as how they utilise their own elements to influence consumers' in-store decisions. The elements of the marketing mix were covered, as well as ways in which these elements can be utilised by retailers to influence in-store decisions. The in-store environment was highlighted as important, as it is the physical site where products and consumers interact and where purchase decisions are ultimately made. An overview was provided of reasons why the problem of excessive sugar consumption is important for businesses and academia, as well as for policy-makers.

Chapter Two presents the findings of the in-depth literature review, gathering information from previous research that offered insights into the main theme of this study. The literature review is divided into three main sections: the first section discusses past studies that have focused on stimulating the demand for healthy versus indulgent items, and explored ways in which the selection of sugar-free products could be encouraged. The elements of the retailer marketing mix are then reviewed, highlighting how changes can affect consumer in-store purchase decisions. The theory identifies four elements of the mix, commonly known as the four Ps. Each of these elements influence demand; however, this study focuses specifically on price, placement and product assortment, specifically pack-size variety.

The third section looks specifically at impulse versus planned purchases and how each element of the retailer's marketing mix influences consumer purchase behaviour, depending on the extent to which the purchase is planned. The section concludes with a framework identifying the path to purchase and the areas that retailers can influence to drive functional or hedonic product choices.

2.2. STIMULATING THE DEMAND FOR HEALTHY FOODS

The evolution of the modern-day supermarket has led to an increase in obesity levels among the surrounding population due to the increased availability of unhealthy products (Stanton, 2015). However, further research has contradicted this; findings show that

proximity to supermarkets has decreased the likelihood of obesity. This was attributed to better access to a greater variety of food, including healthier options (Bodor, Rice, Farley, Swalm, & Rose, 2010). When considering this contradictory evidence, it is important to understand what activities occur within the store environment that drive demand for healthier options and decrease the likelihood of obesity.

There are several in-store approaches that can be adopted to promote healthy choices, such as increases in the availability of healthier goods, affordability, prominent placement and promotional tactics (Glanz, et al., 2012), as well as the location of healthy versus unhealthy food and access to nutritional information (Sigurdsson, Larsen, & Gunnarsson, 2014). This was supported by Glanz and Yarouch, who found that in-store interventions increased access to a wider variety:

> Four key types of grocery-store-based interventions include point-of-purchase (POP) information; reduced prices and coupons; increased availability, variety, and convenience; and promotion and advertising. There is strong support for the feasibility of these approaches and modest evidence of their efficacy in influencing eating behavior (2004, p. 875).

Retailers are in the unique position of acting as the link between consumers and the food and drink they consume, so they are able to utilise their marketing power to influence consumers' decisions in a healthier way (Glanz, et al., 2012). It is therefore important for retailers to understand that, as the health needs of consumers become more important, they must be able to offer product assortment and ultimately drive a demand for healthier alternatives within a category.

Elements of the marketing mix, which are price, placement and assortment, have been shown to drive demand. However, changes in demand are not the same across product groupings, especially those with differing attributes. This was highlighted by Sigurdsson, Larsen and Gunnarsson (2011, p. 2588), who showed that manipulations by retailers in-store were generally more effective for unhealthy products such as potato chips. This was supported by further studies by Paine-Andrews, Francisco, Fawcett, Johnston and Coen (1996), which proved that lower fat products that were on promotion resulted in a lower increase in sales on these items, as opposed to their full-fat alternatives. Similar studies suggested that "…in-store interventions are somewhat more effective in altering the purchase of unhealthy foods than healthy foods" (Sigurdsson, Larsen, & Gunnarsson, 2014, p. 151). It is therefore imperative for retailers to understand these

intricacies, so they can utilise the correct marketing mix strategy to drive demand for healthier products.

Pricing is a key element of the marketing mix that drives demand. “The current structure of food prices is such that sweet and high-fat foods provide dietary energy at the lowest cost” (Drewnowski & Darmon, 2005, p. 900). In this study, it was shown that increasing obesity may be due to the abundant choices consumers now have, including calorie-dense foods that are convenient and low-cost. This conclusion was supported by the findings of a later research study which suggested that supermarkets provided accessibility to high-fat and added-sugar food at cheaper prices (Kearney, 2010). Research has proved that taste and price were the key factors that drove consumer interest, whereas health and nutritional content, specifically of beverages, did not play a significant role in product selection (Block, Gillman, Linakis, & Goldman, 2013). Pricing promotions are often implemented to drive demand, but research has shown that healthy and unhealthy products respond differently to the same changes in the marketing mix:

> Consumers exhibit asymmetric patterns of demand sensitivity to price changes for both healthy and unhealthy food, but they do so in opposite and undesirable directions. Specifically, demand sensitivity for healthy food is greater for a price increase than for a price decrease, whereas the pattern is reversed for unhealthy food (Talukdar & Lindsey, 2013, p. 125).

The other consideration with regard to driving the choice of sugar-free or healthier alternatives is where, as well as how, it is promoted or merchandised in relation to the other more sugary substitutes in the same category. A study by Fishbach and Zhang (2008) showed that individuals showed a greater immediate preference for the unhealthy items and a delayed preference for the healthy items when healthy and unhealthy food items were presented together,. Other research (Wilcox, Vallen, Block, & Fitzsimons, 2009) demonstrated that individuals are more likely to select unhealthy food when a healthy item is available, compared to when it is not available. Further research focused on the significance of the positioning of low-fat variants of junk food. It was found that positioning of these low-fat junk foods altered consumer’s perceptions: they were perceived as less healthy then when they were positioned with their less healthy foods in the same junk food category (Desai & Ratneshwar, 2003).

The literature focuses mainly on the availability and pricing of healthy foods such as fruit and vegetables as opposed to other unhealthy categories in supermarkets. The difference in demand that is driven by in-store implementation of the marketing mix on sugar-free versus added-sugar variants is not covered in the literature and will therefore be the focus of this study.

In a study which aimed to determine the link between retailer marketing strategies and obesity, it was found that along with changing variables such as product, price and placement, there was also an element of de-marketing unhealthy foods, which could drive consumers towards purchasing the healthier options (Glanz, et al., 2012).

2.3. THE RETAILER MARKETING MIX

The marketing mix, originally formulated by McCarthy (1964), is a well-documented conceptual framework relating to how marketers translate their marketing plans into practical ways of influencing demand for products or services. The marketing mix, as described by Sigurdsson, Saevarsson and Foxall (2009), as a set of variables that, when manipulated, stimulate and influence consumer demand for products. Retailers know that the majority of consumer decisions are made in-store (Drèze, Hoch, & Purk, 1994).

The role of the marketer, or in the case of this study, the retailer, is to identify which elements of the mix to manipulate and how best to do so in order to increase the salience of products and ultimately drive purchase. Retailers need to use the appropriate elements of the marketing mix to change consumer's decisions at the point in the buying cycle where purchases actually happen in-store. "The retailer can negate the effect of advertising by changing consumers' minds in store" (Porter, 1974, p. 424); this emphasises how influential the retailer is in altering consumers purchase decisions. It is important for retailers to understand the impact of their various in-store purchase drivers in order to formulate appropriate marketing strategies and allocate budgets resourcefully.

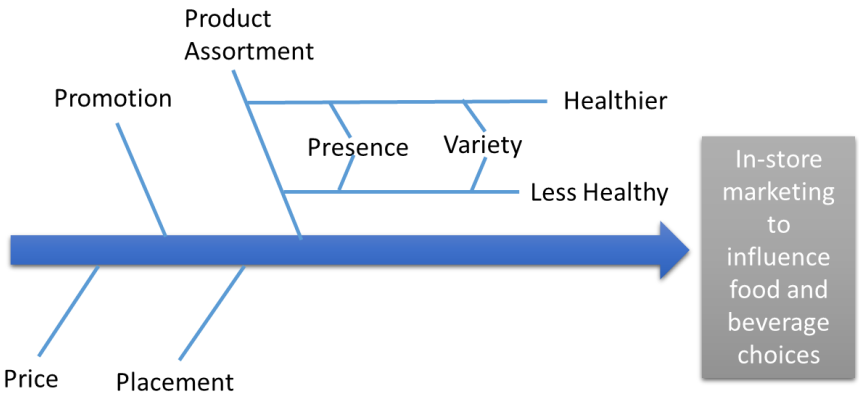

Figure 3: *Conceptual model of in-store marketing strategies. (Sharkey, Dean, & Nalty, 2012)*

Figure 3 identifies the four main in-store variables that can be influenced in order to stimulate a demand for food and beverage products. These are well known among marketers as the marketing mix, or more commonly, the four Ps: price, promotion, placement and product. "Supermarkets themselves have become skilled in manipulating buying behaviour, using their layout and specific product placement as well as advertising to maximise purchases of particular foods" (Stanton, 2015, p. 54). The literature that was reviewed for this study focused specifically on price, product assortment and the impact on placement, as these are under the direct control of the retailer. Promotion was not investigated due to the large variety of promotional activities that are available within the South African retail environment, for example, competitions, coupons and sampling.

2.3.1. Price

It has been shown that in-store cues such as promotional pricing can increase the likelihood that consumers will buy impulsively (Dholakia, 2000). This is especially true of the effect of pricing in times of slow economic growth, such as the one currently being faced in countries like South Africa. Slow economic growth could lead to price having a much larger influence on demand, so a greater understanding of the impact of price changes is needed. Kacen et al. (2012) stated that, as economic times toughen, consumers become more price-sensitive, and increasing promotional activity is therefore an important lever for retailers to consider.

Economic price theory has identified a relationship between price and demand for a product. Based on this principle, a decrease in price is expected to lead to an increase in demand for a product, and therefore to ultimately influence sales volume. This inverse relationship between price and volume is true for products or brands within the same category, given that they are substitutes, due to the downward slope of the demand curve (Sigurdsson, Larsen, & Gunnarsson, 2011). The elasticity of products, which is defined as the unit increase in sales from a change in an influencing factor such as price, can differ among types of products. (Glanz, et al., 2012). Urbany, Dickson and Key (1990) found that retailers also seem to overestimate the degree of price sensitivity of products and therefore place a lot of emphasis on pricing activity, which could be detrimental to a retailer's profit margins. This is supported by findings which demonstrate that only 60% of purchases are affected by price; the remaining 40% occur without any consideration of price or promotion (Murthi & Rao, 2012). It is therefore important for retailers to understand price elasticity across products, so they can make sure that only those promotions that are effective and lead to a significant volume uplift are implemented, so as to avoid unnecessary margin losses.

Studies have shown that pricing discounts accelerate purchases (Dawes, 2012). While price is a key influencer of in-store decisions, research on the impact that price has within categories differs. Cobb and Hoyer (1986) found that price was important in driving demand and had a strong influence on customers who planned their shopping trips to some degree; for example, if they planned the category of purchase they wished to make, but not the brand or specific product. This was supported by a later study which suggested that promotions could help in defining the brand or product that a shopper decided upon in-store, but if a product was not on promotion, it might be excluded from consideration (Fader & McAlister, 1990). This is important for sugar-free versus sugar-sweetened or regular product decisions within a category, because if one variant is not on promotion, it could be excluded from the decision at shelf. However, this view was contradicted in a later study that found that shoppers were more aware of price differences across different categories (for example, squash versus CSDs). Once a customer had decided on a category, there was little consideration of price within that category and therefore intrinsic product qualities might have been of more importance (Binkley & Bejnarowicz, 2003).

A study conducted in Brazil on the consumption of SSBs found that there was no clear link between price and SSB consumption (Duran, De Almeida, Latorre, & Jaime, 2015). It is important for retailers is to understand, first, whether CSDs need to be on promotion

to drive demand for the category, and secondly, whether the promotion of sugar-free variants does, in fact, increase demand. If promotions do not have an effect on the purchase decision of products within a category, then retailers could refrain from promoting sugar-free variants and still maintain profitable margins while using other, more effective elements to drive demand.

The depth of discount is a further element influencing a retailer's pricing decision, which, in turn, affects consumer demand. Depth of promotional discount undoubtedly influences store-switching, brand-switching and, more importantly for this study, category consumption (Ailawadi, Harlam, César, & Trounce, 2006). This is supported by studies that show that deep discounts have a more pronounced effect on choice and quantity purchased than the frequency of promotions (Jedidi, Mela, & Gupta, 1999). While it is accepted that different promotional discount depths influence demand, the effect is not the same for each category, or product within a category, as each has a varying degree of price elasticity. Retailers have to make difficult decisions regarding the depth of the discounts they select, the volume that it generates and the impact on their margin (Ailawadi et al., 2006). It is therefore essential to understand whether deeper promotions will indeed have a greater influence on consumer demand for CSDs and, specifically, for their sugar-free variants.

Along with depth of discount, retailers also have many different pack-sizes of variants within a category to promote, all with potentially different degrees of price elasticity. Promoting across pack-sizes assists in providing savings for the consumer across multiple consumption occasions. Retailers are, ultimately, providing value for consumers for a particular pack-size (Dawes, 2012). By understanding the different price elasticity or sensitivity across pack sizes, retailers are better equipped to decide where to invest. This concept was promoted by Hoch, Kim, Montgomery and Rossi (1995), who referred to the importance of understanding price sensitivity for different stores and allowing for a higher investment in promotions for stores that were more sensitive to price changes.

2.3.2. Product assortment

While product assortment often refers to product-line variety, it also encompasses the pack-size variety that retailers stock. Product-line variety refers to differences in product characteristics such as flavour, whereas pack-size variants offer the same product in

many different pack formats to meet differing consumer demands. Retailers need to stock a variety of pack-sizes in one brand in order to meet differing consumer preferences (Sloot, Fok, & Verhoef, 2006). Offering an assortment of products, in this case across pack-sizes, allows retailers to meet the varying consumer needs more accurately, and therefore to increase demand. Singh, Hansen and Gupta (2005) conceptualised product alternatives within a product category as attributes. Within CSDs, an example of a product attribute could be pack-size. A consumer's product preference is a function of the preference for the attribute levels of the product, as well as the consumer's sensitivity to changes in elements of the marketing mix (Singh, Hansen, & Gupta, 2005). It is therefore important to understand consumers' preferences for different pack-sizes as well as for sugar content attributes, and to be aware that sensitivity to price changes depends on attribute selection.

A study by Dube (2005) of the carbonated soft-drink industry found that there was a different need for beverages between the time of purchase and the time they were consumed. "Consumers are assumed to make multiple decisions in anticipation of a stream of future consumption occasions. At the time of a shopping trip, the consumer makes several discrete choices - one for each anticipated consumption occasion" (Dube, 2005). This study showed that, during one shopping trip, consumers purchased more than one pack-size of the same brand of CSDs, thus highlighting the differing consumption occasions for different pack-sizes. This was confirmed by later research, which found that home consumption is fulfilled by larger or multipacks, whereas an out-of-home or impulse consumption need is met by smaller pack-sizes (Dubois, Griffith, & O'Connell, 2013) .

Differing consumption occasions have an impact on the purchase decisions consumers make in-store, while differing pack-sizes allow for non-linear pricing within a category. This was explained clearly in research which highlighted that a particular pack that is exactly twice the size of another does not necessarily have to cost exactly twice as much (Dubois, Griffith, & O'Connell, 2013). This non-linear pack-size pricing leads to differing price elasticity across pack-sizes, as well as differing price perceptions. Consumers generally believe that larger pack-sizes are more economical to buy because they should cost less per unit of volume than their smaller, impulse packs for immediate consumption. This is referred to as 'volume discount heuristics' (Nason & Bitta, 1983). It is therefore important to understand the effect on pricing changes across the different pack-sizes, as each is associated with different price perceptions and elasticity, as well as with differing consumption occasions.

Different pack-sizes have also been shown to lead to different consumption quantities. Hieke, Palascha, Jola, Wills and Raats (2016) found that larger packs led to larger servings, and therefore increased consumption. It was also found that consuming from larger packs could lead to a larger per-use consumption, whereas with smaller packs, consumers may actually consume more packs and therefore increase total consumption through the number of smaller packs consumed over the period (Glanz et al., 2012). Many studies support the fact that consumption is increased through smaller pack-sizes, stating that when consuming smaller pack-sizes, consumers do not evoke self-control and therefore consume more. "When self-regulatory concerns were activated, consumers were almost twice as likely to start consuming tempting products from small packs as compared to large package formats and - if they did - consumed nearly twice as much" (Vale, Pieters, & Zeelenberg, 2008, p. 388). This uncertainty about the impact of pack-size and consumption indicates that retailers need to find ways to drive demand for sugar-free variants across pack-sizes, as self-regulation cannot be relied upon.

2.3.3. Product placement

It is common for a large proportion of category volumes to be sold on price promotion (Dawes, 2012), and as a result, grocery retailing profit is driven by high volumes of products at low margins. It has been shown that consumers are more price-sensitive in a functional/non-social context, such as grocery-shopping, than they are in more social situations (Wakefield & Inman, 2003). The more price promoting a retailer does, the more detrimental it is for their margins, should a sufficient volume not be sold. It is therefore important for retailers to utilise other elements of their marketing mix in order to drive a demand for products without decreasing margins.

Previous research has found that product location and the amount of space allocated to products on a shelf play a key role in influencing consumers' in-store purchase decisions and ultimately driving demand (Drèze et al.,1994). This idea was reinforced by marketing research which highlighted the importance of efficient self-allocation in the grocery retail industry and emphasised that the amount of space given to products would influence consumer purchase decisions (Wansink, 2004). Along with the amount of shelf-space allocated to products, it was also found that self format influenced the effort required from consumers to make final selection decisions, selecting between brands and flavours as well as variants (Johnson & Payne, 1985). Shelf format is the way that products are merchandised on the shelf. This has been confirmed by a study of which "…the results

suggest that, beyond the familiar effects of product shelf height and facings, retailers can influence consumer purchases by changing the product-display format" (Simonson & Winer, 1992). Format thus plays an important role in focusing consumers' attention and is also utilised as a cue to simplify their decisions (Breugelmans, Campo, & Gijsbrechts, 2007). Simplifying consumer decisions becomes increasingly important because consumers tend to stop the search process once a suitable product is selected (Simonson, 1999). The decision on shelf layout therefore becomes one of the most crucial decisions for retailers.

As the retail industry has become more sophisticated, a large amount of information has become available to retailers. This data can be used to understand their customers better and ultimately to make their shelves easier for shopping. Categorisation is one way to lay out a shelf in order to simplify the decision-making process customer's face when in-store. According Derochers and Nelson (2006), categorising products on-shelf helps focus consumers attention on attributes; this, in turn, impacts the importance weighting that consumers assign to each attribute and helps to drive decisions. This conclusion confirmed findings from an earlier study which noted that consumers, or 'homemakers' as they are referred to, switched brands more often when the shelf was laid out by product type and not brand (Neuhaus & Taylor, 1972). Desrochers & Nelson also noted by that:

> When a collection of objects is encountered, a structure or unifying representation is evoked that helps organize the information about these objects, and this structure influences consumer judgments by identifying a list of relevant attributes that provides the maximum amount of information with the least amount of cognitive effort (Desrochers & Nelson, 2006, p. 359).

If classification can drive demand for products based on increased attention to product attributes, it stands to reason that classification by sugar content could help draw consumer's attention towards sugar-free products and ultimately drive healthier in-store purchase decisions.

2.4. IMPULSE VS PLANNED PURCHASES

The marketing mix elements, as indicated above, have a clear impact on consumers and their purchase decisions. However, the motivation behind product selection may vary and these elements may have differing effects, depending on purchase motivation. Impulse buying behaviour is explained as being sudden, compelling and hedonically

complex where the decision precludes alternative information and choices (Bayley & Nancarrow, 1998). “Hedonic behaviour is marked with pleasure; in contrast to the utilitarian behaviour where the shoppers seek for functional benefits and economic value in the shopping process” (Muruganantham & Bhakat, 2013, p. 150). Hedonic factors are one of the key differentiating factors of an impulsive purchase: impulse buying has been linked to psychosocial motivations, with little to no consideration given to the functional benefits of the product (Sharma, Sivakumaran, & Marshall, 2010). It has been determined that a maximum of 70% of purchases are unplanned in the retail environment (Sigurdsson, Engilbertsson, & Foxall, 2010). This allows for the majority of purchases to be influenced by in-store activity. It is therefore key for retailers to understand which of the purchase decision drivers can affect the unplanned, impulsive decisions that relate to products with functional benefits.

The framework presented in Figure 4, below, outlines the influences of consumer choice behaviour and identifies five consumption values. Impulse purchases fall mainly into the emotional value, whereas sugar-free goods have more of a functional value. “Functional value is measured on a profile of choice attributes” (Sheth, Newman, & Gross, 1991, p. 160).

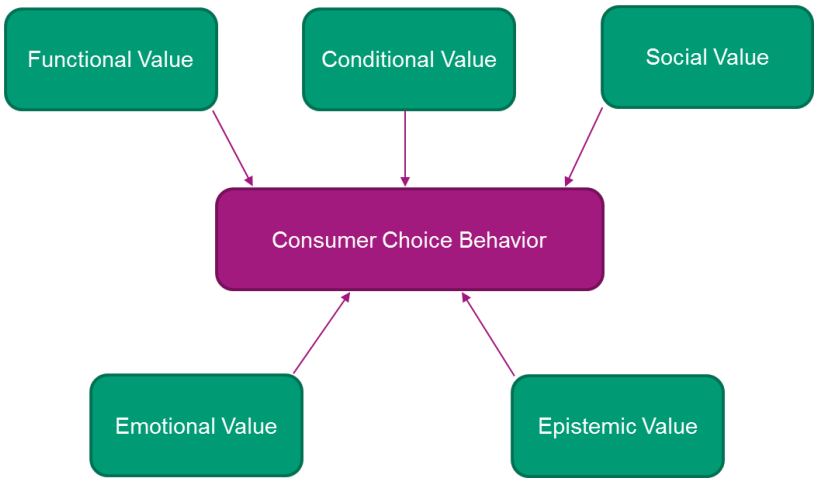

Figure 4: *The five values influencing consumer choice (Sheth, Newman, & Gross, 1991, p. 160)*

This definition of impulse purchases means that decisions are based on the emotional bebfits and functional characteristics of a product, such as it being-sugar free, are not considered. High-sugar products are also more likely to have much higher emotional and hedonic benefits, so any in-store drivers will have a more pronounced effect on consumers' purchase behaviour. It has been proved that, when evaluating utilitarian products, consumers make their decisions with reference to the normative cost-benefit utility maximizing calculus. However, for a hedonic product, this rationality is ignored and the decision is driven by feelings and attitudes (Pham, 1998): "A true impulse purchase reflects an at-the-moment, in-store decision and is therefore subject to greater influence from the store environment, and the consumer's current state at the time of shopping" (Kacen, et al. 2012, p. 580).

The challenge then arises for retailers to determine how best to encourage the movement of these functional products, such as sugar-free goods, into the consumer's basket at the point of purchase. This is more likely to be done for purchases that are semi-planned and will therefore be on a consumer's shopping-list; however, the final decision can still be influenced in-store. "Planned impulse buying is partially planned but specific product or categories are not decided by the shopper. They are further determined on the basis of the different sales promotions inside the shop" (Muruganantham & Bhakat, 2013, p. 150). For products that have a higher functional benefit rather than hedonic benefit, it makes sense for retailers to understand how to use the various in-store stimuli to drive purchases that are more functional for these planned impulse decisions.

2.5. CONCLUSION

The literature reviewed in this chapter has identified the elements of the marketing mix and how they each influence in-store purchase decisions. Reference was made to studies that prove that healthy food decisions are influenced by these elements, with specific focus on the placement of healthy food versus unhealthy alternatives, and on price as well as the assortment on offer. However, these studies were done on products such as fruit and vegetables or high-calorie junk food, and there was limited research on the elements of the marketing mix that could drive the healthier, sugar-free purchase decision, specifically within CSDs.

It seems that an increase in the price of CSDs leads to a decrease in consumption of around 8-10% for every 10% price increase (Andreyeva, Long, & Brownell, 2010; Block, Chandra, McManus, & Willet, 2010). In a study conducted in 2012, it was shown that a price discount led to an increase in sales of zero-calorie beverages and a decrease in SSB sales (Jue, et al., 2012). This study was limited to three shops situated in hospital environments, and did not take into account any other influences of in-store purchase decisions, as highlighted in the literature reviewed earlier. Nor did it look at the depth of discount and its effect across different offerings or pack-sizes in the store.

The '4 P's', are, in fact, not mutually exclusive, but typically occur in combinations, such as "product plus placement, or price plus promotion" (Glanz, et al., 2012, p. 508). Each combination leads to different effects on consumer demand. Based on the literature reviewed, the framework shown below in Figure 5 was devised to identify the path to purchase for a consumer of sugar-sweetened and sugar-free products, and summarises all the elements that influence the final decision, such as purchase motivation and the marketing mix elements, as well as the product attributes and the needs that they fulfil. In order to fully understand how to drive demand for a sugar-free product, the full purchase path and the different effects of each element, depending on motivation, need to be understood.

Figure 5 on the following page shows the path to purchase that a consumer might follow when deciding between SS or SF products. It also highlights the elements of the marketing mix along the path which can be influenced by the in order to drive demand towards SS or SF items.

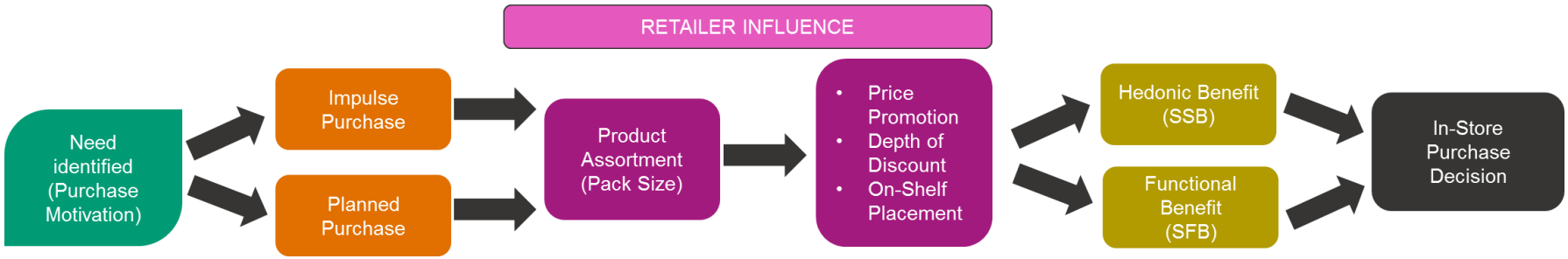

Figure 5: *Sugar/Sugar free path to purchase*

The framework begins with the purchase motivation, because ultimately it is the fulfilment of a certain need that leads to purchase decisions. Differing motivations lead to differing effects of marketing mix elements, and must therefore be understood before any changes in the elements can be implemented. For example, an impulse purchase may require different pack offerings (small, impulse pack-size) and may be more or less reactive to price changes. Once these motivations are understood, retailers can begin to alter the elements of the marketing mix in order to drive demand.

Their first factor is the product assortment that they offer, in terms of both product variations and pack-size offerings. Retailers that aim to drive demand for SFB at this stage must ensure that there is a SF variant across various pack-sizes, so that consumers are able to make a healthy decision that fulfils their original purchase motivation. After that, the product benefits come into consideration for the consumer. However, retailers have a second opportunity to influence consumers' decisions through the remaining marketing mix elements: price, depth of discount and product placement. By changing these elements, retailers can influence consumers to make healthier, more functional choices, such as selecting SFBs.

This study aimed to identify the interaction between each element in the process of determining how best to influence consumer demand so that the healthier, sugar-free offering is selected for each purchase motivation. Consumers are beginning to place more pressure on retail companies to act in a socially responsible way (Mohr, Webb, & Harris, 2001), and it will become increasingly important for retailers to be seen as driving healthier alternatives.

CHAPTER THREE: RESEARCH HYPOTHESES

3.1. INTRODUCTION

Based on the literature review in Chapter Two, this chapter formulates the research hypotheses that will be tested to discover the most effective elements of the retailer marketing mix that drives consumer demand for SFCSDs. In order to explore the various effects of marking mix elements on consumer demand for the sugar-free rather than the regular CSD variants, two studies will be conducted. The first will look at the role of pricing promotions, including depth of promotion, as well as pack-size. The second will evaluate the effect of merchandising based on categorisation according to sugar attribute, and-of pack-size on consumer demand.

3.2. STUDY ONE: THE ROLE OF PRICE AND PACK-SIZE

The first study investigates the role that price and pack-size play in stimulating a demand for sugar-free variants, looking specifically at the CSD category and at Coke in particular. This is because of its size in the market as well as its frequent pricing activity. The aim is to investigate the reaction of each pack-size offering to a change in price, as well as to understand how the effect changes as the depth of price promotion changes. The study focuses specifically on large, two-litre packs, generally a planned purchase, small 330ml cans, which are understood to be an impulse purchase for immediate consumption, as well as the 6x330ml multi-pack offering. The study is also designed to find out how the sales of SFCSDs respond to discounts across the pack-size offerings, what the effect of deeper promotions have on demand and which pack-size provides the greatest uplift in SF sales.

3.2.1. Hypothesis 1 – The Impact of Pricing Promotions on SS and SF CSDs: Large

This hypothesis aims to identify whether pricing promotions have an effect on demand for planned purchases for SFCSDs.

H10: Pricing promotions (PP) achieve an equal percentage sales uplift for planned sugar- free variants (SF2L) versus their regular 2L sugar containing alternatives (SS2L).

H1A: Pricing promotions (PP) drive different percentage sales uplifts for sugar-free variants (SF2L) versus their regular sugar-containing alternatives (SS2L).

Stated alternatively as:

H10: βppsf2L = ppss2l
H1A: βppsf2L ≠ ppr2l

3.2.2. Hypothesis 2 – The Effect of Depth of Discount on SF Sales: Large

This hypothesis aims to identify whether the depth of the pricing promotion has an effect on demand for planned purchases of SFCSDs. Pricing promotions will be analysed at 5% increments.

H20: Deeper pricing promotions (dpp) achieve the same sales uplift as shallow promotions (spp) for SF2l variants.

H2A: Deeper pricing promotions (dpp) do not achieve the same sales uplift as shallow promotions (spp) for SF2l variants.

Stated alternatively as:

H20: βdppsf2l = sppsf2L
H2A: βdppsf2l ≠ sppsf2L

3.2.3. Hypothesis 3 – The Impact of Pricing Promotions on SS and SF CSDs: Impulse

This hypothesis aims to identify whether pricing promotions have an effect on demand for impulse purchases for SFCSDs.

H30: Pricing promotions (PP) achieve an equal percentage sales uplift for sugar-free impulse variants (SFi) versus their regular sugar-containing impulse alternatives (SSi).

H3A: Pricing promotions (PP) achieve different percentage sales uplift for sugar-free impulse variants (SFi) versus their regular sugar-containing impulse alternatives (SSi).

Stated alternatively as:

H30: βppsfi = ppssi
H3A: βppsfi ≠ ppssi

3.2.4. Hypothesis 4 – The Effect of Depth of Discount on SF Sales: Impulse

This hypothesis aims to identify whether the depth of the pricing promotion has an effect on demand for impulse purchases of SFCSDs. Pricing promotions will be analysed at 5% increments.

H40: Deeper pricing promotions (dpp) achieve the same sales uplift as shallow promotions (spp) for sugar free impulse variants.

H4A: Deeper pricing promotions (dpp) do not achieve the same sales uplift as shallow promotions (spp) for sugar-free impulse variants.

Stated alternatively as:

H40: βdppsfi = sppsfi
H4A: βdppsfi ≠ sppsfi

3.2.5. Hypothesis 5 – The Impact of Pricing Promotions on SS and SF CSDs: Multipack

This hypothesis aims to identify whether pricing promotions have an effect on demand for multipack offerings of SFCSDs.

H50: Pricing promotions (PP) achieve an equal percentage sales uplift for sugar-free multi-pack variants (SFMP) versus their regular sugar-containing multi-pack alternatives (SSMP).

H5A: Pricing promotions (PP) achieve different percentage sales uplift for sugar-free multi-pack variants (SFMP) versus their regular sugar-containing multi pack alternatives (SSMP).

Stated alternatively as:

H50: βppsfmp = ppssmp
H5A: βppsfmp ≠ ppssmp

3.2.6. Hypothesis 6 – The Effect of Depth of Discount on SF Sales: Multipack

This hypothesis aims to identify whether the depth of the pricing promotion has an effect on demand for multipack SFCSDs. Pricing promotions will be analysed at 5% increments.

H60: Deeper pricing promotions (dpp) achieve the same sales uplift as shallow promotions (spp) for sugar-free multipacks variants.

H6A: Deeper pricing promotions (dpp) do not achieve the same sales uplift as shallow promotions (spp) for SF multi-pack variants.

Stated alternatively as:

H60: βdppsfmp = sppsfmp
H6A: βdppsfmp ≠ sppsfmp

3.2.7. Hypothesis 7 – The Effect of Pricing Promotions on Impulse vs Two Litre Future Consumption Packs for SF Variants.

This hypothesis aims to identify whether impulse SF variants have the same reaction to price discounts as future consumption of two-litre SF variants.

H70: Pricing promotions (PP) have driven an equal uplift in sales for sugar-free impulse variants and sugar-free two-litre packs.

H7A: Pricing promotions (PP) have different effects on sales for sugar-free impulse variants and sugar-free two-litre packs.

Stated alternatively as:

H70: βppsfi = ppsf2l

H7A: βppsfi ≠ ppsf2l

3.2.8. Hypothesis 8 - The Effect of Pricing Promotions On Impulse vs Multi Pack SF Variants

This hypothesis aims to identify whether impulse SF variants have the same reaction to price discounts as multi-pack SF variants.

H80: Pricing promotions (PP) have driven an equal uplift in sales for sugar-free impulse variants and sugar-free two-litre packs.

H8A: Pricing promotions (PP) have different effects on sales for sugar-free impulse variants and sugar-free multi packs.

Stated alternatively as:

H80: βppsfmp = ppsfi

H8A: βppsfmp ≠ ppsfi

3.3. STUDY TWO: THE ROLE OF ON-SHELF PLACEMENT AND PACK-SIZE

The second study seeks to understand the role that on-shelf placement and pack-size play in stimulating demand for sugar-free variants, looking specifically at the CSD category and at Coke in particular, due to their size in the market and the amount of space they occupy on shelf. The study aims to identify if merchandising SFCSDs next to their SS variants has an equal or lesser impact on demand than merchandising all SFCSDs in a separate sugar-free area in the aisle. The study focuses specifically on packs that are merchandised in the CSD aisle, which are large, two-litre packs, as well as the 6x330ml multi-pack offering.

3.3.1. Hypothesis 9 – The Effect of Sugar Fee Section on Large Pack Demand

This hypothesis aims to identify if creating a sugar-free section on shelf by merchandising all sugar-free variants together will have an effect on the demand for planned purchases of SFCSDs.

H90: Placement of all sugar-free variants (SF) together on shelf, forming a sugar-free section, has no impact on sales for the sugar-free 2L pack sales in test (T) vs control stores (C).

H9A: Placement of all sugar-free variants (SF) together on shelf, forming a sugar-free section, drives increased demand for sugar-free variants in test (T) versus control stores (C).

Stated alternatively as:

H90: βsft2l = sfc2l
H9A: βsft2l ≠ sfc2l

3.3.2. Hypothesis 10 - The Effect of Sugar-Free Section on Multi-Pack Demand

This hypothesis aims to identify whether creating a sugar-free section on shelf by merchandising all sugar-free variants together will have an effect on the demand for multi-pack SFCSDs.

H100: Placement of all sugar-free variants (SF) together on shelf, forming a sugar-free section, has no impact on sales for the sugar-free multi-pack sales in test (T) versus control stores (C).

H10A: Placement of all sugar-free variants (SF) together on shelf, forming a sugar-free section, drives increased demand for sugar-free multi-pack variants in test (T) versus control stores (C).

Stated alternatively as:

H100: βsftmp = sfcmp
H10A: βsftmp ≠ sfcmp

CHAPTER FOUR: RESEARCH METHODOLOGY

This chapter focuses on the methods utilised to conduct the analysis and understand the effect that changes in the marketing mix have on consumer demand for sugar-free

products, according to the various hypotheses presented in Chapter Three. As indicated in the discussion of the literature reviewed in Chapter Two, there is a need to expand on the current knowledge of the marketing mix and the methods retailers can employ to influence product choice in-store, and to understand how retailers can utilise these elements to influence consumer demand towards sugar-free products. This chapter outlines the approach taken to collect and analyse data to ultimately ascertain the effect each marketing mix element has on sugar-free demand.

The research methodology that was employed for both Study One and Two was quantitative in nature. Quantitative research was preferred, not only because it employs the traditional scientific approach to research, but because numerical data could be manipulated to provide more meaningful conclusions (Meyer & Page, 2000).

4.1. RESEARCH DESIGN

In order to test the hypotheses outlined in Chapter Three, a causal research design was used to identify the cause-and-effect relationships between variables (Zikmund W. , 2003). In causal research, the researcher manipulates one or more independent variables to test the effect on the dependant variable (Malhotra, 2007, p. 81). This level of insight, which goes beyond mere descriptive statistics, is required in order to understand the relationship between changes in elements of the marketing mix and the impact that these changes have on consumer demand, as measured by sales units. As described by Zikmund (2003), in this type of research there is usually an expected relationship between the variables being investigated. In this study, the expected relationship was between changes in the marketing mix, i.e. price, placement or pack-size and customer demand represented as sales units.

To test the hypotheses, a quasi-experimental as well as an experimental design was used. “The purpose of an experiment is to study the causal links between variables; to establish whether a change in one independent variable (e.g. the running of a sales promotion) produces a change in another dependent variable (e.g. the level of sales)” (Saunders & Lewis, 2012, p. 114). Experiments allow the researcher to control the situation so that casual relationships can be understood and evaluated (Zikmund W. , 2003).

Both experiments were conducted in the field rather than in a laboratory. The natural setting found in a field study is beneficial because the artificial laboratory environment can lead to findings not reflective of what occurs in a live setting. While a field experiment is conducted in a natural environment, it also allows for less control over extraneous variables (Zikmund W. , 2008). A view of the laboratory versus a field experiment can be found below in Figure 6 (Zikmund W. , 2008).

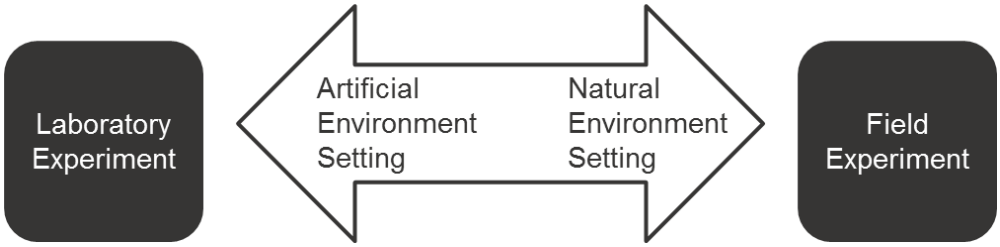

Figure 6: *The artificiality of field vs laboratory experiments*

Study One was conducted using a quasi-experimental event-based time series study. A quasi-experiment is one in which random assignment is not part of the experimental design. A quasi-experimental design "is used when it is not logistically feasible or ethical to conduct a randomized controlled trial" (Harris, McGregor, Perencevich, Furuno, Zhu, Peterson, Finkelstein, 2006). A time series quasi-experiment is used when there are naturally occurring interventions found in data archives (Glass, 1997). In the case of Study One, pricing promotions occurred naturally in-store across all pack-sizes and SF/SS beverages, and could be used to understand the effect on sales units. In Study One the promotions were not conducted for the purpose of this research, but the data collected could be evaluated to understand the interventions.

Study Two was conducted by using a pre-test/ post–test control group experimental design. Two test stores were identified by the retailer, not randomly, but for the purpose of this research, and a sugar-free segment was created in the aisle for all sugar-free CSD variants; this can be seen in Figure 7. Four control stores were identified where sugar-free variants were displayed in the aisle next to their regular counterparts of the same brand; an example of this in-store merchandising can be seen in Figure 8.

Figure 7: *Image of merchandising in test store 1 - Merchandising by sugar content.*

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Figure 8: *Image of merchandising in control store 1 - Merchandising by brand.*

Pre- and post-test analysis could then be conducted to understand the effect of the change in on-shelf merchandising. Test and control stores were based in the same region in South Africa, experiencing the same pricing promotions, secondary locations or any other retailer influence, so all other in store variables that could affect the trail remained constant. It was therefore assumed that only the intervention of the independent variable, the change in an element of the marketing mix, was the cause of the observed change in the dependent variable, sales units (California State University, n.d.).

4.2. POPULATION

Population is defined as an entire group of people, companies or products, all of which have a common set of features (Zikmund W. , 2003). The population for this study consisted of all units purchases of CSDs within supermarkets in South Africa. At the time of this study, CSD sales equated to 26.5 million rand in South Africa for a full year, ending in February 2016 (Nielsen South Africa, 2016).

4.3. SAMPLING

A sample is defined as a subset of the population (Zikmund W. , 2003). The subset selected should allow one to draw conclusions about the entire population.

Of the total population of CSD purchases in South Africa, a sample of stores was selected from the participating retailer. Due to the fact that the participating retailer had multiple regions, all with different promotional calendars, the stores were all selected from one region, the Western Cape, therefore all participating stores would have experienced the same variables throughout the trial. Due to the size of Coke as a brand (78% within the selected retailers Western Cape stores) and the consistency of changes in the marketing mix across their regular sugar-sweetened variant, Coke and the two sugar-free variants, Coke Lite and Coke Zero, the data analysed were limited to this brand.

4.3.1. Sampling: Study One

For Hypotheses One to Eight, 81 weeks of Coke, Coke Lite, and Coke Zero sales units for each pack-size (2 litre, 330ml cans, and 6x330ml multi-packs) were collected, as well as average price per unit for each Western Cape store. There was a total of 35 stores within the Western Cape from which the data were collected.

4.3.2. Sampling: Study Two

Data for Hypotheses Nine and Ten were collected from the selected test and control stores. Two test stores were selected within the Western Cape region by the retailer. Control stores were also selected from the Western Cape region to ensure maximum control over other extraneous variables. To ensure the best fit between test and control stores, the control stores were selected by finding the store or group of stores with the closest Euclidian distance to each test store with regard to total store sales, visits to the store and the price sensitivity profile of the stores. Stores with the smallest Euclidian distance were selected as possible control stores. Selected control stores' Euclidian distances are shown in Table One:

TEST STORES	CONTROL STORES	Euclidian Distance	Adjustment Factor	Correlation
T1	C1a	3.5	1.05	97.25%
	C1b	3.64		
	C1c	4.61		
T2	C2	0.92	1.02	99.73%

Table 1: *Test and Control Stores*

For all possible control stores, thirteen weeks of sales data were pulled at a total store level. For each week of sales data, the adjustment level was calculated by dividing total test store sales by the control store. Weekly adjustment factors were then averaged to get a total adjustment factor for control stores. C1a, b and c had an adjustment factor of 1.05 and C2's adjustment factor was 1.02. The adjustment of pre-test scores was used to make sure that post-test differences were truly from the treatment, as well as to account for the variation around post-test means (Grace-Martin, n.d.). The adjusted weekly store sales for test versus control can be seen in Figures 9 and 10. In order to further confirm the appropriateness of the selected control stores, correlations between sales were calculated. The selected stores saw the highest sales correlations of 97.25% and 99.73% respectively.

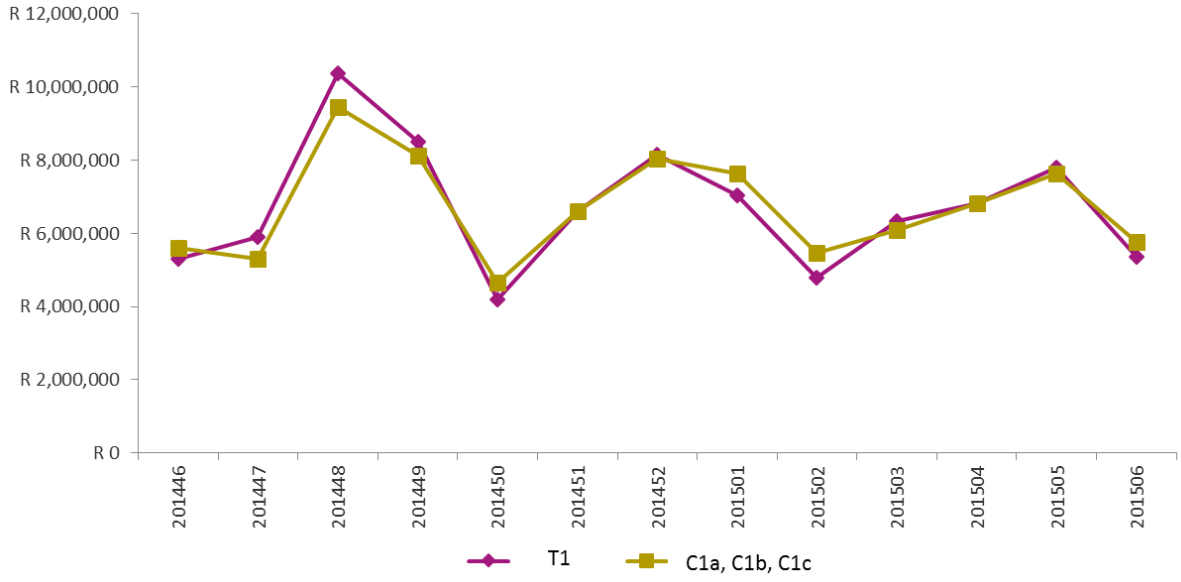

Figure 9: *T1 vs C1a, b and c weekly adjusted sales*

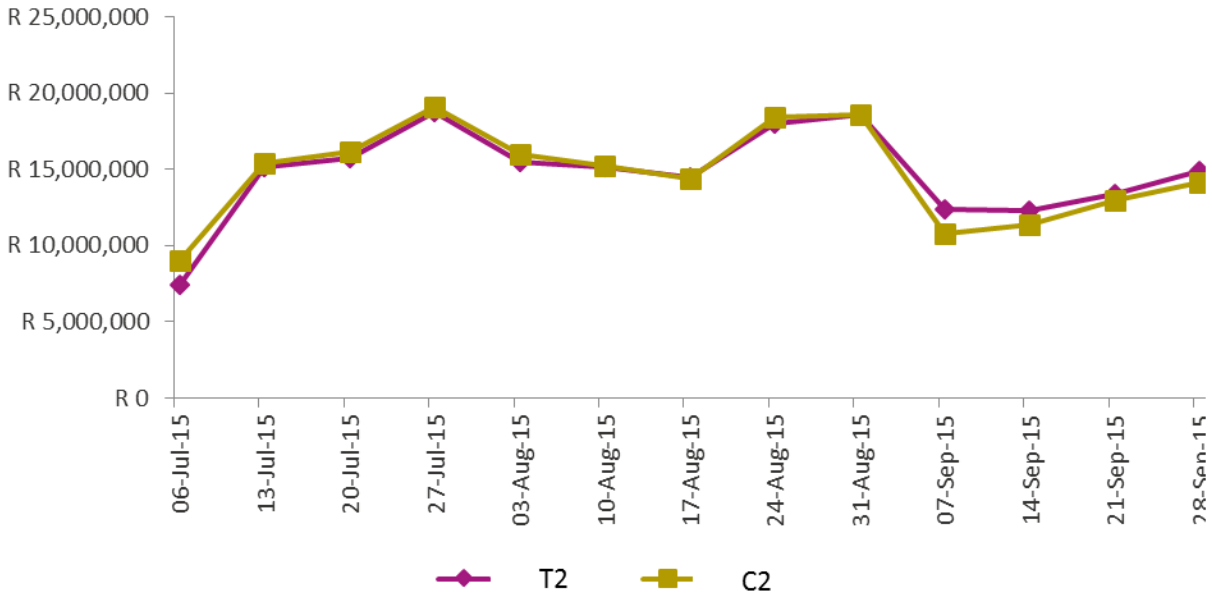

Figure 10: *T2 vs C2 weekly adjusted store sales*

4.4. UNIT OF ANALYSIS

The unit of analysis is described by Zikmund (2003) as the level of investigation focused on the collection of data about the entire group. In order to answer the various hypotheses stated previously, the unit of analysis for both Study One and Study Two is defined as the total number of units of each Coke variant that was sold in the stores within a week.

4.5. DATA COLLECTION AND PREPARATION

4.5.1 Data Collection

Secondary, quantitative data were utilised to complete the study. Secondary data are "data used for a research project that were originally collected for some other purpose" (Saunders & Lewis, 2012, p. 84). The secondary data collected were weekly sales units and average price per unit of all CSD products from a major retail chain within South Africa. Data were gathered from all of their stores within the Western Cape region. "If the results are to be valid, then an experiment that involves a large group of subjects may be necessary" (Saunders & Lewis, 2012, p. 115). Being able to use the data from a large retailer and capturing every CSD products sales for the selected period, improved the

validity of the results that were gathered. Every store that formed part of the sample scanned a product's barcode as it was sold and these data were then compiled in a central database. Compiled data are "data that have been processed, such as through some form of summarising or selection" (Saunders & Lewis, 2012, p. 85).

4.5.2 Data Preparation

Data was received directly off the retailer's internal sales system, Proclarity, and exported into Excel. The Excel data set was formatted and certain characteristics were modified to make sure it was represented in a binary format.

Nine products were under review, created through combinations of three variants (regular, Lite and Zero, denoted by R, L and Z) and three sizes (two-litre, multipack and impulse, denoted by T, M and I). Any week where the price dropped below the normal weekly selling price was considered a promotional week: this was represented by a 1. All non-promotional weeks were represented as 0 in the data. Promotion depth was calculated as the relative difference between current price c and reference price r (c/r-1). When this value was greater than 0.01%, a promotion was seen as taking place. Due to products taking price increases over the period that data were collected, the reference priced changed to ensure that accurate promotional depths were calculated. These constructed variables replaced the corresponding variables in the dataset. This was then represented weekly, with 0% representing no promotional price drop. Data from the test and control stores for Hypotheses 9 and 10 were coded on a separate data sheet. Pre-test weeks were coded as 0 and post-test implementation was coded as 1.

Once all the data was coded and recorded in a usable Excel format, it was visually checked in Excel, as well as in graphs, to make sure there were no obvious errors or anomalies in the dataset. One anomaly of a one-day deep discount promotion towards the end of 2015 was identified; this was excluded from the data as it was outside of any normal promotional activity the retailer conducted. Data were then imported into the R Foundation for Statistical Computing tool for analysis.

4.6. DATA ANALYSIS

In order to understand the various interactions between changes in the retail marketing mix and sales, the following data analysis methods were utilised.

4.6.1. Descriptive Statistics

Descriptive statistics allows for large amounts of data to be organised and summarised, and the essential information that is contained within the dataset is represented in a way that can communicate a message through profiles, patterns, relationships and trends within the data (Wegner & T., 2012). In order to understand the data and trends found within it, sample statistics were calculated and presented in tabular format. These statistics were displayed by pack-size to make it easier to understand the pattern of each pack-size and the variants within them. This method was selected rather than displaying by variant first, because variants in pack-sizes generally experience the same influences and changes in the environment, so two-litre packs are all line-priced and will generally experience price increases or changes simultaneously; they will also be merchandised alongside one another. Due to the fact that datasets for Study One and Study Two are similar in terms of their being time-series data with price and unit information by variant, similar descriptive statistics were used to understand both. Descriptive statistics were used to understand the data further, before the next step, multiple linear regression analysis.

4.6.2. Multiple Linear Regression Analysis

Statistical modelling builds models of relationships between random variables. Modelling is very useful in forecasting because an equation is constructed between variables that are related to each other: “these equations (called models) are then used to estimate or predict values of one of these variables based on values of related variables” (Wegner & T., 2012). Regression analysis is concerned with understanding the response of a dependent variable (y) to a set of independent variables (x_1; x_2…..x_k). “The goal is to build a good model – a prediction equation relating y to the independent variables – that will enable us to predict y for given values of x_1; x_2…..x_k, and to do so with a small error of prediction” (Mendenhall & Sincich, 2014). The independent variables that were taken into consideration were based on researcher knowledge of the category; these were then modelled and the modelling decisions were based on trying various forms of the model on the data for each product and assessing and comparing fits.

These were the independent variables of Study One:

- Time, capturing the general sales (increase or decrease) trend. Sine and cosine functions with periods of one year to allow for the capturing of seasonal patterns.
- Seasonality of October to March versus April to September
- Reference price
- Month-end versus other periods as sales are generally higher over month-end periods
- Promotion - whether there is a promotion and/or the depth of the promotion.

Sine and cosine yearly seasonality, as well as the seasonality of October - March and April - September, are included as main effects and interactions: that is, the relationship between the sin/cos function and sales is different for October - March versus April - September, and there is a general shift in sales over October - March versus April - September, with the intention of allowing for more general seasonal patterns over a year

The terms ‘month end’ as well as ‘promotion’ are also included as main effects and interactions. This was introduced to try to get more accurate estimates of promotions on sales, as they are central to studying the specified hypotheses.

For Study Two, four sets of sales values were used (T1, C1 and after aggregating over the three stores, T2, C2). The relationships described above were modelled as being the same for T1 and C1, but each store (T1 versus C1) was allowed to have its own overall sales level, with similar modelling for T2 and C2. For the test stores, sales depended on the difference in store merchandising, i.e. displaying all sugar-free variants together, creating a sugar-free zone. Two additional variables were modelled:
Store and layout.

In the model, a realised log sales value followed a normal distribution around its mean for that week, with constant standard deviation. This implied that the original sales value followed a lognormal distribution, with standard deviation proportional to the mean.

The following data were excluded to allow for a period of customer adjustment:

The four weeks starting at each change in reference price in both Study One and Study Two, as well as the four weeks following the store layout change for test stores in Study Two.

To investigate the hypotheses defined in Chapter Three, the relevant model parameters were identified and their estimates were reported in summary tables. For each parameter of interest, the estimated parameter was reported together with a 95% confidence interval (CI) and p-value. Inference (CIs and p-values) was based on the asymptotic (large sample) normality of the parameter estimator.

4.6.2.1. General Model Equation: Study One

The general equation for the regression model applied to study one can be found below.

For a given product (e.g. I Z), the linear regression model specified the following relationship between the i^{th} sales value y_i and the predictors for that observation i.

$$y_i = \alpha_0 + \alpha_D \cdot D_i + \alpha_M \cdot M_i + \alpha_{DM} \cdot D_i \cdot M_i + \alpha_T \cdot T_i + \alpha_H \cdot H_i + \alpha_S \cdot \sin\left(\frac{T_i \cdot 2 \cdot \pi}{12}\right) + \alpha_C \cdot \sin\left(\frac{T_i \cdot 2 \cdot \pi}{12}\right) + \alpha_{HS} \cdot H_i \cdot \sin\left(\frac{T_i \cdot 2 \cdot \pi}{12}\right) + \alpha_{HC} \cdot H_i \cdot \sin\left(\frac{T_i \cdot 2 \cdot \pi}{12}\right) + \alpha_{R2} \cdot R2_i + \alpha_{R3} \cdot R3_i + \varepsilon_i$$

Where

- y_i is the log (base 10) sales value

- D_i is the promotion depth (or rather the relative difference between sales price and reference price at that time)
- M_i equals 1 if first or last week of calendar month, 0 otherwise
- T_i is the time, expressed as months from 2016/01/01
- H_i equals 1 if Oct to Mar, 0 otherwise
- $R2_i$ equals 1 if the reference price is the 2nd possible value, 0 otherwise; $R3_i$ equals 1 if the reference price is the 3rd possible value, 0 otherwise
- ε_i is noise, and follows a normal distribution with mean 0 and varianceσ_2, identically and independently distributed for every observation.

In this example, there are three reference prices. There would be $k-1$ reference price terms for k different reference prices. The model parameters are all the α terms and σ_2. The R function 'lm' was used to estimate parameters (by a maximum likelihood method).

4.6.2.2. General Model Equation: Study 2

Model for a specific product and store set:

$$
\begin{aligned}
y_i = \alpha_0 + \\
\alpha_{Test} \cdot Test_i + \alpha_{Diet} \cdot Diet_i + \\
\alpha_D \cdot D_i + \alpha_M \cdot M_i + \alpha_{DM} \cdot D_i \cdot M_i + \\
\alpha_T \cdot T_i + \\
\alpha_H \cdot H_i + \alpha_S \cdot \sin\left(\frac{T_i \cdot 2 \cdot \pi}{12}\right) + \alpha_C \cdot \sin\left(\frac{T_i \cdot 2 \cdot \pi}{12}\right) + \\
\alpha_{HS} \cdot H_i \cdot \sin\left(\frac{T_i \cdot 2 \cdot \pi}{12}\right) + \alpha_{HC} \cdot H_i \cdot \sin\left(\frac{T_i \cdot 2 \cdot \pi}{12}\right) + \\
\alpha_{R2} \cdot R2_i + \alpha_{R3} \cdot R3_i + \\
\varepsilon_i
\end{aligned}
$$

Where the two extra predictors are

- $Test_i$ equals 1 if Test store, 0 otherwise
- $Diet_i$ equals 1 if Test store and separate sugar-free section, 0 otherwise.

Key parameter of interest:

$\exp(\alpha_{Diet})$.

4.6.2.3. Assessing Model Fit and Assumptions

One of the steps of regression is to statistically check the usefulness of the model (Mendenhall & Sincich, 2014). Model fit was assessed visually by comparing the data to the fitted means; following this, diagnostic residual plots were also used. "(A) standard

method for identifying lack of fit in regression analysis is to plot residuals against the predicted values. This plot should form a horizontal band around zero" (Christensen, 1997, p. 129). Two types of plots were reviewed, scatter plots of Pearson residuals (y-axis) against fitted, as well as a histogram of residuals which should be approximately normally distributed with a mean of 0. Goodness of fit tests for all hypotheses can be found in the Appendices.

The R-squared and adjusted R-squared values were also provided as part of the output. These values were typical model fit statistics which indicated how much of the variability in the response was explained by the fitted model (Jank, 2011). R-Squared "measures the proportion of total uncertainty measured by the model" (Jank, 2011, p. 127), whereas adjusted R-squared is "similar to R-squared but penalizes the model for too many useless predictors" (Jank, 2011, p. 127). The closer the R-squared and adjusted R-squared value is to 1, the smaller that deviation between model predictions and observed values.

The Akaike Information Criterion (AIC) measures the relative quality of a model, where a lower value indicates better fit. It "penalizes the model for too many useless predictors" (Jank, 2011, p. 127). For Hypotheses One, Three, Five, Seven, Eight, Nine and Ten, a backward stepwise AIC procedure was used to trim the model and assess how results change. Terms in the model were dropped one at a time to achieve the greatest decrease in the AIC at each step. The process stops when dropping a single term would not result in a lowered AIC. The terms related to the effect sizes of interest were not allowed to be dropped in the procedure. These results are presented as trimmed results and can be found in the Appendices.

4.7. VALIDITY

The validity of the study was important because it ensured that the findings of the study were credible and could be used for the purpose for which the study was intended. Validity examines whether the data collection methods accurately measure what they were intended to, as well as whether the findings are about what they profess to be about (Saunders & Lewis, 2012). Measures were taken to enhance both internal and external validity in this section.

4.7.1. Internal Validity

Internal validity assesses whether or not the cause-and-effect relationship that is identified is, in fact, true. It ensures that the observed results are due to the experimental treatment: it this is true, then the test is found to be internally valid (Zikmund W. , 2008). The following factors were taken into account when controlling for internal validity:

History: This refers to any events within the external environment that could have had an effect on the dependent variable (Zikmund W. , 2008). For Study One, the researcher looked out for any out-of-the-ordinary competitor activity over the period, or any extra marketing activity by the manufacturer or retailer. However, no such events were observed. Study Two was also internally valid, as both groups experienced the same current events.

Maturation: Maturation is defined as any changes experienced by the dependent variable due to normal developmental processes (California State University, n.d.). This was controlled for, because all groups and stores experienced the same developmental process during the time of the study.

Other measures of internal validity, such as selection, statistical regression, mortality, testing, instrumentation and design contamination were considered but were found to have no impact on this study, therefore the study was considered to be internally valid

4.7.2. External Validity

External validity refers to the ability of this research to be used to generalise beyond the experimental data (Zikmund W. , 2008). This is generally a concern in experiments that take place outside of the real world and will not deal with interactions of untested variables (Zikmund W. , 2008). As this study was a field experiment, it may be considered externally valid.

4.8. LIMITATIONS

While every effort has been made to ensure the validity of this research, the study does present the following limitations:

The data used and therefore the results apply only to the carbonated soft drinks category. This may limit the applicability of the results to sugar-free variants in other categories. Also, the CSD category is currently highly promoted within South Africa and as a result, promotions on sugar-free variants in other categories may not yield the same results. Further research across categories would provide a more reliable result.

The data analysed was gathered from one retailer within only one region of South Africa, the Western Cape. This was to ensure consistency amongst stores, however, this could also limit the applicability, as there could be diverse sales responses to the various tests in different regions or countries, and even with regard to different retailers.

A large number of p-values were produced in this study. This is a limitation. Multiple testing increases the chance of making errors in ones conclusions, and this should be noted.

For Hypotheses 1-8, two years of data were available, whereas for Hypotheses 9 and 10 the experiments was only in place for six months. Future studies based on a wider time period might provide a more thorough perspective. The availability of only two test stores for the implementation of a sugar-free segment could limit results of Hypotheses 9 and 10. Further studies could, potentially, test this on a larger scale.

4.9. CONCLUSION

This chapter has detailed how quantitative in-field experimental methodology was utilised to gather data that could be used to understand the effects of changes in the retailer marketing mix on the demand for SFCSDs, as measured in sales units. With an understanding if the methodology, validity and limitations results will be presented in Chapter 5.

CHAPTER FIVE: RESEARCH RESULTS

5.1. INTRODUCTION

Chapter 5 presents the results of the statistical analysis. The information will be given for each study separately, in a logical format that is easy to follow. Each study will begin with

an overview of the main themes under investigation. Descriptive statistics will be utilised to facilitate understanding of the data being analysed and to provide a summary of each variant's performance. Following the descriptive statistics, the results for each hypothesis will be presented. The estimate parameter as well as the 95% confidence interval (CI) and p-value will be shown for each hypothesis.

5.2. RESULTS OF MODEL FIT TEST

R-Squared results indicate how much of the variability in the response is explained by the fitted model (Jank, 2011) . The closer the R-squared and adjusted R-squared value is to 1, the more likely that deviation between model predictions and observed values is small.

Study	Product	Multiple R-squared	Adjusted R-Squared
1	TR	0.869	0.8471
1	TL	0.8348	0.8073
1	TZ	0.845	0.8192
1	MR	0.6883	0.6259
1	ML	0.8449	0.8138
1	MZ	0.8337	0.8004
1	IR	0.9219	0.9057
1	IL	0.9069	0.8876
1	IZ	0.8113	0.7722
2	TL1	0.8655	0.8507
2	TL2	0.6902	0.6558
2	TZ1	0.875	0.8613
2	TZ2	0.7889	0.7655
2	ML1	0.7581	0.7273
2	ML2	0.4807	0.4145
2	MZ1	0.7961	0.7701
2	MZ2	0.4962	0.432

Table 2: *Multiple and Adjusted R-Squared values to assess model fit*

As can be seen in Table 2 above, the chosen model for each study and product is a good fit, represented by high R-Squared values. The model for ML2 and MZ2 sees lower R-squared values but can be attributed to very low sales value in the store set.

5.3. STUDY ONE RESULTS

The first study aimed to understand the impact of pricing promotions on the sales of SS and SF CSD variants across the three main pack-size formats on offer. The main themes of the study were as follows:

1) The impact of promotional depth on sales units
2) The impact of pricing promotions on SS vs SF variants
3) The impact of pricing promotions on SF variants across different pack-sizes.

The format of the results presentation for Study One does not follow the format of the hypotheses laid out in Chapter Three; instead, they are organised according to the themes laid out above. Each study will begin with a review of the descriptive statistics for each product, looking at sales, price and promotions and identifying the promotional intricacies of the category by comparing promotions across the variants.

Both the presence and the depth of the pricing promotion were analysed to get a reliable account of the relative sales performance for each variant. Due to the different purchase motivation, promotional frequency and depth, as well as price points for each pack-size was analysed independently.

The analysis for each variant within each pack-size was also done separately instead of combining Lite and Zero variants. This was because the impact of sales depended on exact promotion depth, and these depths could be different for the different variants. The scatter plots below compare the percentage price discounts of each variant within a specific pack-size. Promotional depth for one variant is found on the X-axis and the comparison variant's promotional depth is on the Y-axis. For example: in the block marked A, the promotional depths for the two-litre regular is found on the X-axis, with two-litre Lite on the Y-axis. If promotional depths of the two variants were exactly the same, a straight line would form; however, as can be identified across all the scatter plots, there were different promotional depths across all variants. The blocks below, marked B, C and D, indicate the variance in price for each Lite variant versus Zero variant; it can therefore be concluded by the lack of a straight line that promotional depths were not the same for each. Because of this difference in promotional depths, it was decided to analyse sugar-free variants separately across pack-sizes.

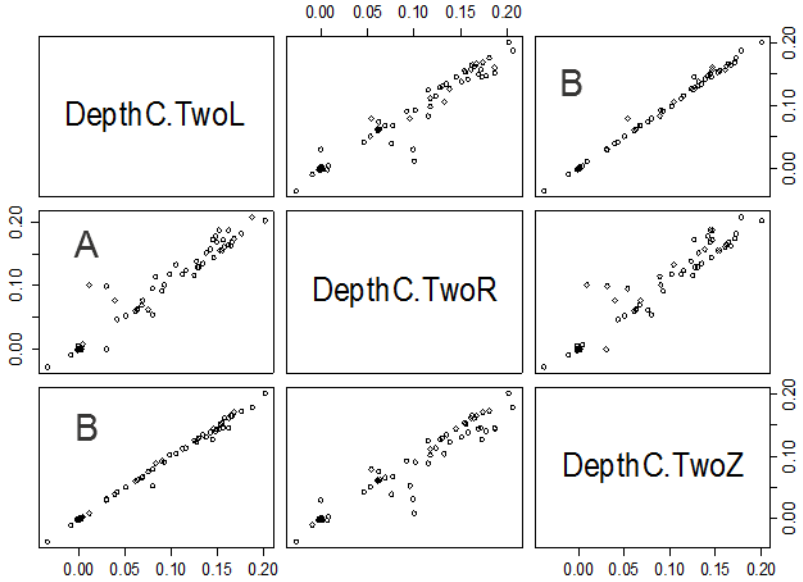

Figure 11: *Scatter Plot of Promotional Depth for Two-litre Variants*

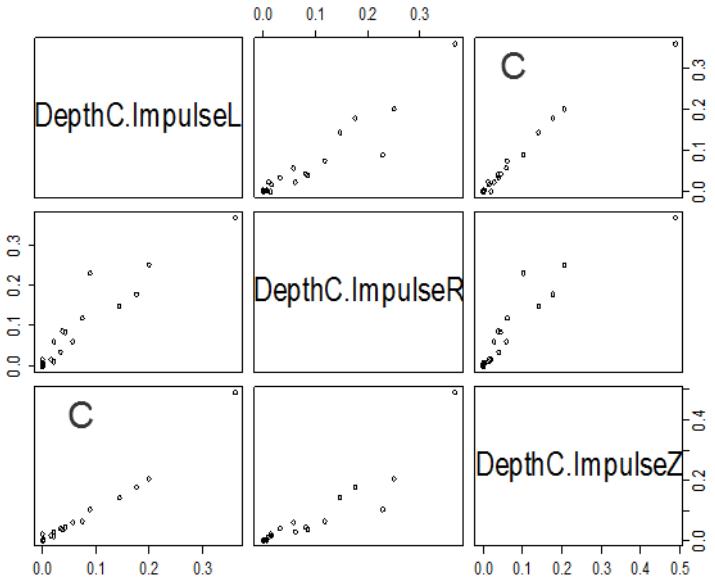

Figure 12: *Scatter Plot of Promotional Depth for Impulse Variants*

Figure 13 (below) shows the weekly sales trend of all two-litre variants within the selected stores. The graph highlights the general upward sales trend over time, as indicated by the trend line, as well as the seasonal periods within the data, with low sales mid-year and higher sales over summer and year-end periods. The graph also shows the spikes seen in the category at month-end.

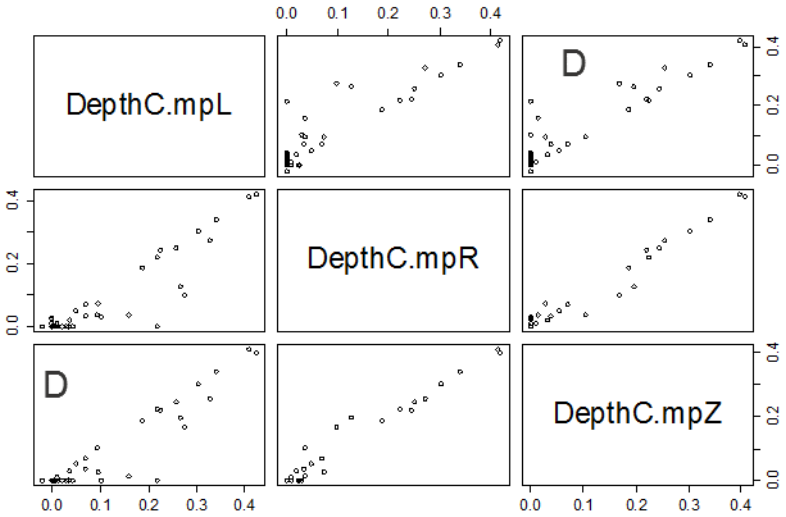

Figure 13: *Scatter Plots of Promotional Depth for Multi-pack Variants*

5.3.1. Descriptive Statistics

5.3.1.1. Two-litre Variants

Images of the variants that are discussed when referring to two-litre variants are shown below (Figure 14):

Figure 14: *Two-litre Variants Image*

Figure 15 shows the weekly sales trend of all multi-pack variants within the selected sample of stores. The graph highlights the general upward sales trend over time, as

indicated by the trend line, as well as the seasonal periods within the data, with low sales mid-year and higher sales over summer and year-end periods. The graph show very high sales spikes during certain weeks.

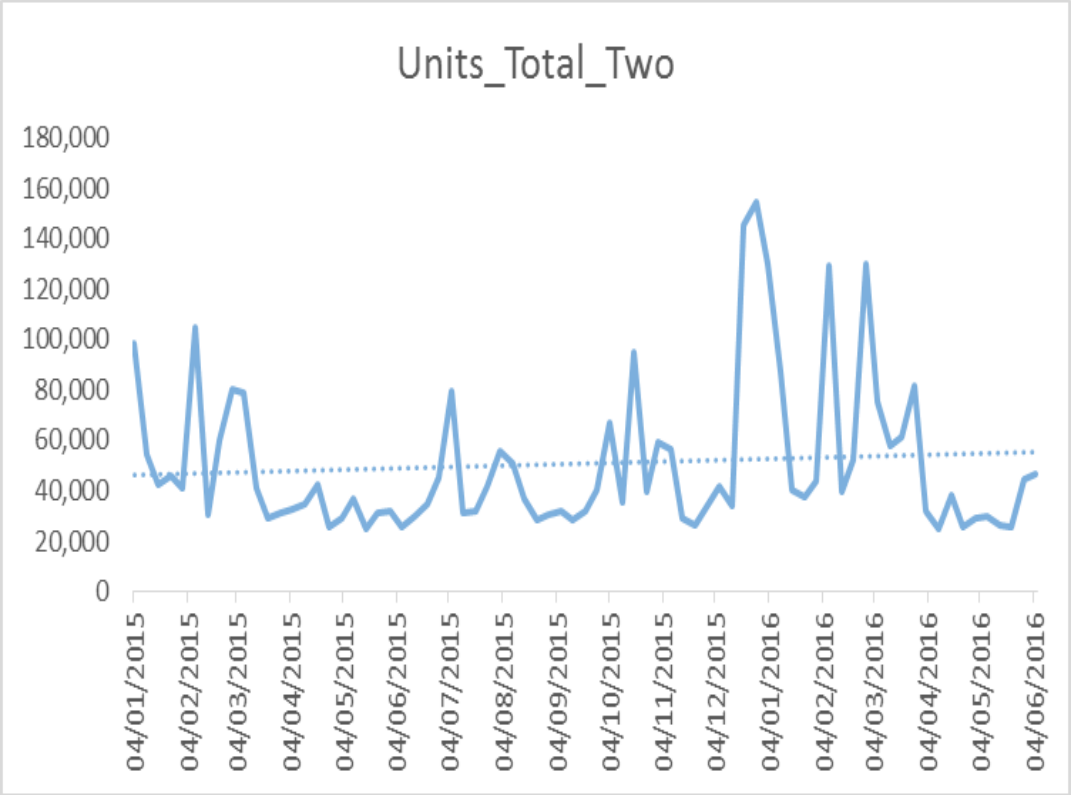

Figure 15: *Total Trended Two-Litre Sales Units with Trend Line*

Table 3 (below) presents key information regarding the two-litre variants in relation to price, weekly sales units and depth of promotion. Variants see a large disparity in weekly sales, with the minimum weekly sales being more that 40% less than the average weekly sales for SF variants and close to 60% less for regular Coke two-litre. The mode for Price_TwoR is less than the mode for both SF variants: this indicates that the regular version has been on promotion, or at a lower price point, for more weeks than its SF counterparts. The minimum, maximum and average depth of TwoR while on promotion is also higher than both TwoL and TwoZ, which seem to be promoted at the same depths consistently.

	Min	Max	Average	Mode
Price_TwoR	R12.66	R16.11	R14.67	R14.95

Price_TwoL	R12.75	R16.11	R14.78	R15.99
Price_TwoZ	R12.75	R16.13	R14.80	R15.95
Units_TwoR	16,070	130,680	39,744	
Units_TwoL	2,408	10,112	4,038	
Units_TwoZ	3,485	13,399	5,939	
Depth_TwoR	5%	21%	12%	13%
Depth_TwoL	3%	20%	11%	13%
Depth_TwoZ	3%	20%	11%	13%

Table 3: *Two-Litre descriptive statistics*

Figure 16 (below) shows that the number of weeks that each two-litre variant was on promotion were equal at 45. This suggests that all variants were promoted together, but at slightly different price points, as indicated by the different average prices and promotional depths in Table 3. The bulk of the promotional activity is driven by the two-litre packs.

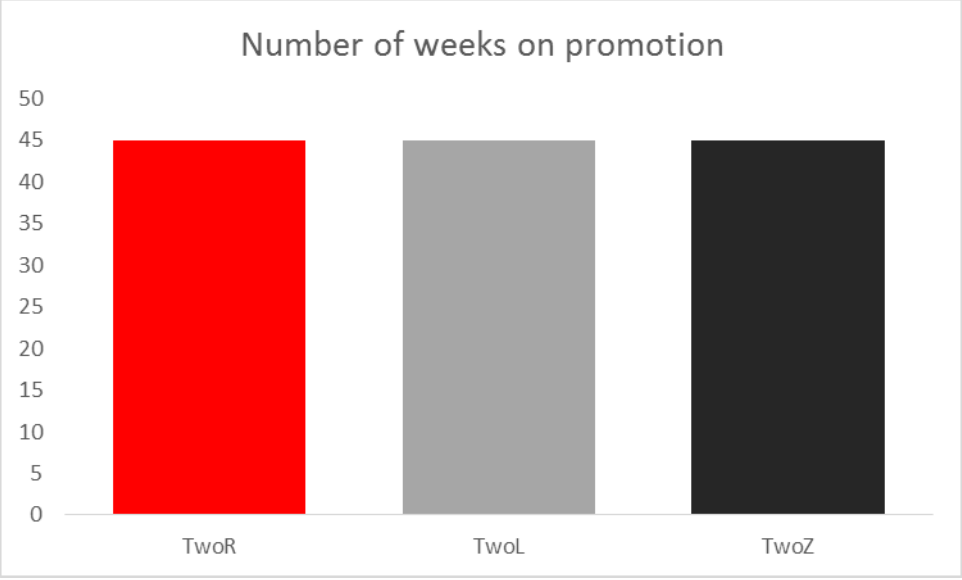

Figure 16: *Number of weeks that two-litre variants were on promotion*

5.3.1.2. Multi-Pack Variants

Below are images of the variants that are discussed when referring to mulit-pack variants:

Figure 17: *Multi-pack Variants Image*

Figure 18 shows the weekly sales trend of all multi pack variants within the selected sample of stores. The graph highlights the general upward sales trend over time as indicated by the trend line as well as the seasonal periods within the data, with low sales mid-year and higher sales over summer and year end periods. The graph show very high sales spikes in certain weeks.

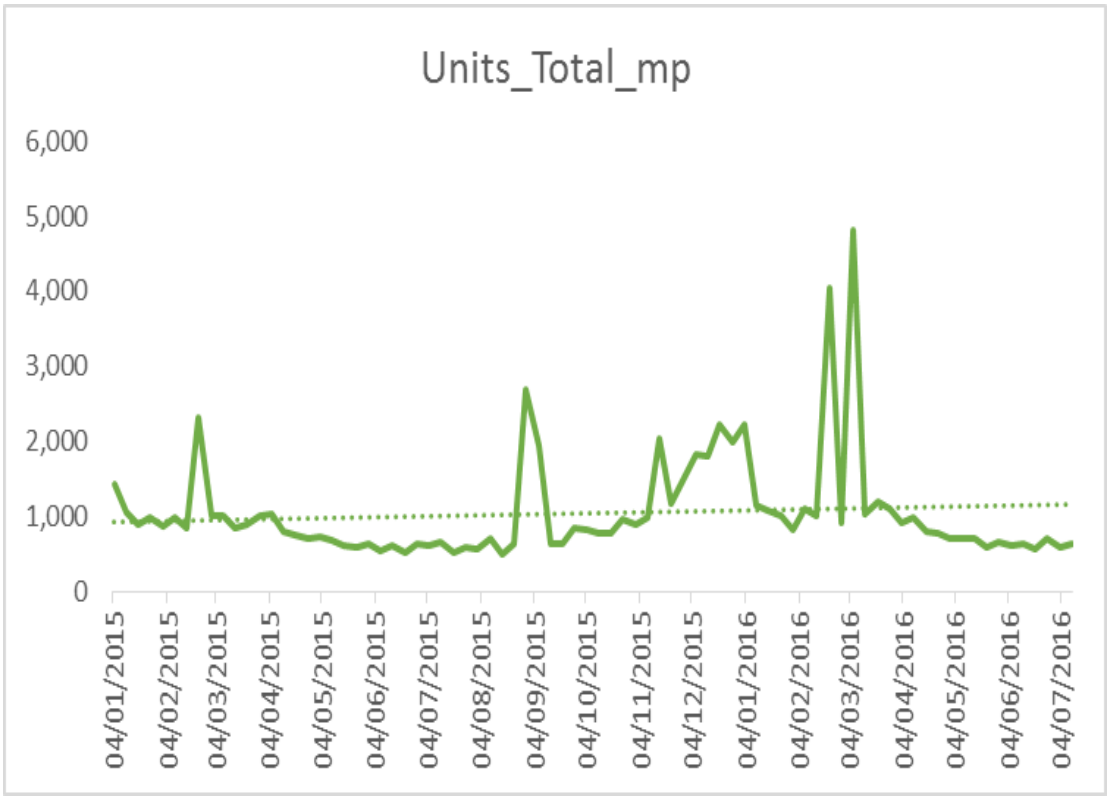

Figure 18: *Total Trended Multi-Pack Sales Units and Trend Line*

Descriptive	Min	Max	Average	Mode
Price_mpR	R 24.99	R 49.99	R 42.40	R 42.99

Price_mpL	R 24.84	R 49.99	R 41.85	R 42.99
Price_mpZ	R 25.44	R 49.99	R 42.42	R 42.99
Units_mpR	301	3,751	678	
Units_mpL	84	513	171	
Units_mpZ	90	571	198	
Depth_mpR	2%	42%	16%	30%
Depth_mpL	3%	42%	17%	30%
Depth_mpZ	3%	41%	22%	19%

Table 4: *Multi-pack descriptive statistics*

Table 4 presents key information regarding the multi-pack variants in relation to price and weekly sales units, as well as depth of promotion. Variants saw a large disparity in weekly sales, with the multi-pack regular seeing significantly higher sales than both SF variants: this was despite similar price points. There was a large fluctuation in depths of discount between 2% to 42%; these large discounts could account for the large spikes within the data. A 30% discount was most frequently applied for both regular and Lite variants, but the Zero pack does not go as low as often. The difference in promotional depth and frequency between Lite and Zero multi-pack variants could indicate that there is a separate brand strategy between sugar-free variants. However, this is beyond the scope of this research. Each variant has been analysed separately and as such the different promotional tactics do not affect the results of this research.

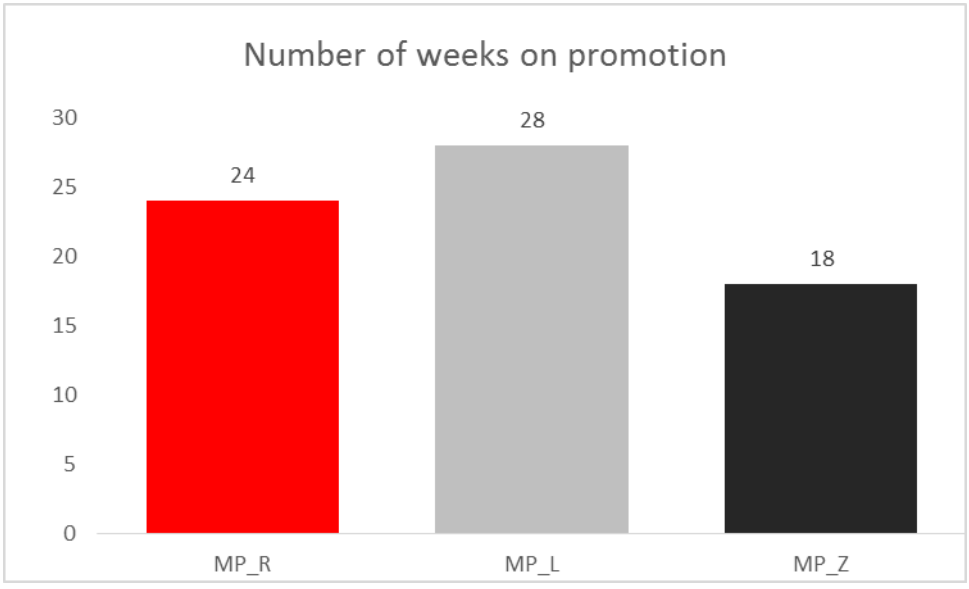

Figure 19: *Number of week's multi-pack variants were on promotion*

Figure 19 highlights the promotional difference between multi-pack variants; however, this does not reflect sugar-content. The Zero variant was promoted for six weeks less

thank the regular variant, whereas the multi-pack Lite was promoted for four weeks longer. There is an indication of a smaller focus on the Zero variant, with fewer promotions at lower promotional depths.

5.3.1.3. Impulse Variants

Below are images of the variants that are discussed when referring to impulse variants:

Figure 20: *Impulse variants image*

Figure 21 shows the weekly sales trend of all impulse variants within the selected sample of stores. The graph highlights the general upward sales trend over time as indicated by the trend line, as well as the seasonal periods within the data, with low sales mid-year and higher sales over summer and year-end periods. The graph show very high sales spikes during certain weeks.

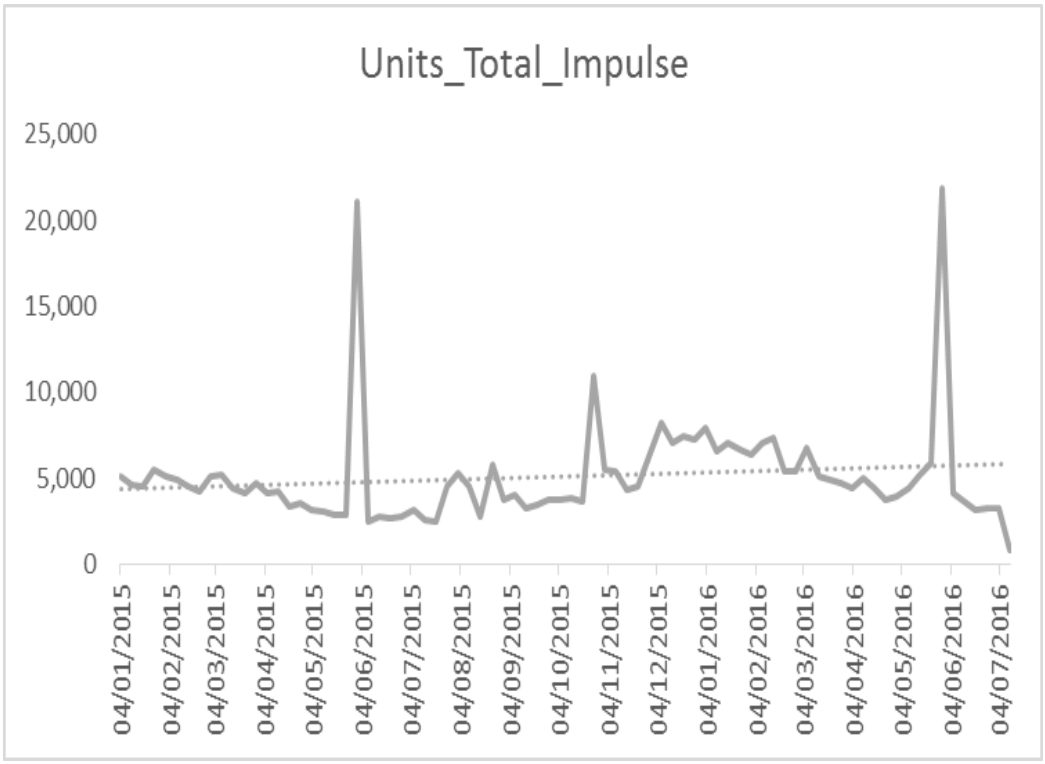

Figure 21: *Total Trended Impulse Sales Units and Trend Line*

	Min	Max	Average	Mode
Price_ImpulseR	R 5.06	R 8.99	R 7.92	R 7.99
Price_ImpulseL	R 5.10	R 8.99	R 7.96	R 7.99
Price_ImpulseZ	R 4.08	R 8.99	R 7.95	R 7.99
Units_ImpulseR	1,792	18,566	3,866	
Units_ImpulseL	304	1,706	595	
Units_ImpulseZ	300	1,848	677	
Depth_ImpulseR	6%	37%	16%	8%
Depth_ImpulseL	2%	36%	12%	4%
Depth_ImpulseZ	3%	49%	14%	4%

Table 5: *Descriptive statistics for impulse variants*

Table 5 provides key information regarding the impulse variants with relation to price, weekly sales units as well as depth of promotion. Variants saw a large disparity in weekly sales, with the regular impulse variant seeing significantly higher sales than both SF variants: this was despite similar price points. There was a large fluctuation in depths of discount between 2% to 49%, and these large discounts could account for the large spikes within the data. The discount most frequently applied was 8% for regular and 4% for both SF variants. This was a significantly lower discount than was applied in other

pack-sizes, but could be attributed to its low selling cost, most commonly priced at R7, 99.

The impulse variants all saw equal promotional weeks, however, far fewer than other pack-sizes and at lower promotional depths.

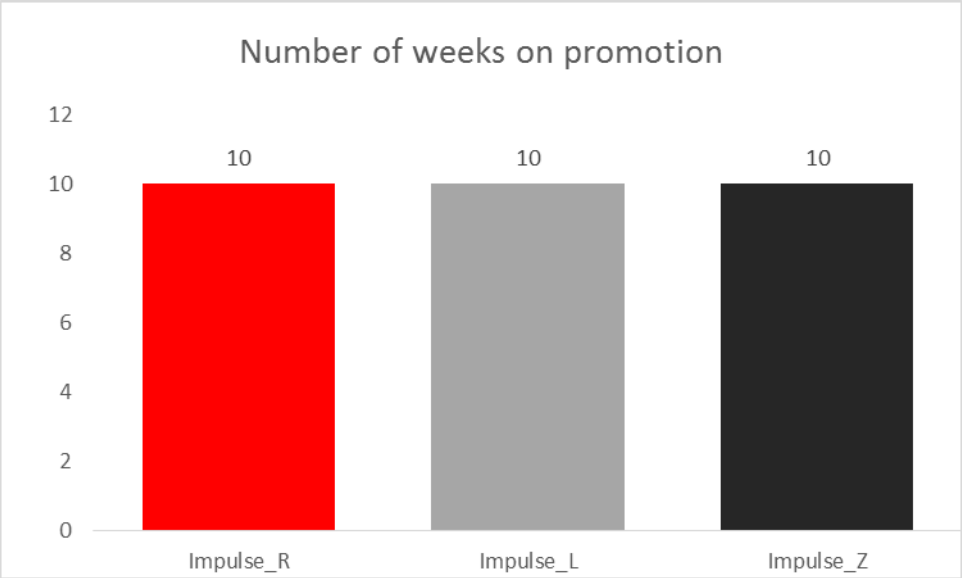

Figure 22: *Number of week's impulse variants were on promotion*

5.3.2. The Impact of Promotional Depth on Sales Units

The findings shown below in Table 6 relate specifically to Hypotheses 2, 4 and 6, which aimed to discover whether the depth of promotions has an impact on the sales of SF variants. The results for the regular products are also included here for comparison. For each of the nine distinct products (three sizes by three variants) sales were allowed to depend both on whether or not there was a pricing promotion, and if yes, on the depth of the pricing promotion.

Table 6 also shows estimates of the multiplicative change (as a ratio) in the mean/average sales value with each 5% increase in depth (in absolute terms):

Size	Variant	Estimate	95% CI Lower	95% CI upper	P-Value
T	R	1.324	1.263	1.389	<0.001
T	L	1.212	1.162	1.265	<0.001
T	Z	1.192	1.145	1.241	<0.001
m	R	1.061	1.006	1.119	0.030
m	L	1.059	1.028	1.091	<0.001
m	Z	1.053	1.016	1.091	0.006
I	R	1.304	1.258	1.35	<0.001
I	L	1.222	1.18	1.265	<0.001
I	Z	1.116	1.078	1.155	<0.001

Table 6: *Estimates of the multiplicative change (as a ratio) in the mean/average sales value with each 5% increase in depth*

Table 6 shows that for product TR, every 5% increase in depth of promotional pricing (in absolute terms), will result in the mean sales being 1.324 times what it was (95% CI: 1.263, 1.389; p-value: <0.001), so that mean sales increase by an estimated 32.4%. For hypotheses 2, 4 and 6, the small P-Value suggests strong evidence against the null hypothesis, showing that depth of discount did have an effect of sales. This can be found to be true for all products, which show an estimated change in sales (within a 95% confidence level) with every 5% increase in promotional depth, supported by very low p-values.

5.3.2.1. Hypothesis 2 Results

H20: Deeper pricing promotions (dpp) achieve the same sales uplift as shallow promotions (spp) for SF2l variants.

Based on the results presented in section 5.2.2, there is significant evidence to reject the null hypothesis. This is valid for all two-litre variants, which shows that deeper price promotions will lead to an increase in sales units.

5.3.2.2. Hypothesis 4 Results

H40: Deeper pricing promotions (dpp) achieve the same sales uplift as shallow promotions (spp) for sugar-free impulse variants.

The findings in section 5.2.2 showed strong evidence to reject the null hypothesis. The results showed that, for each 5% drop in price, there will be an increase in demand for all three impulse variants.

5.3.2.3. Hypothesis 6 Results

H60: Deeper pricing promotions (dpp) achieved the same sales uplift as shallow promotions (spp) for sugar-free multipacks variants.

Section 5.2.2 presents strong evidence to reject the null hypothesis. The very low p-values supported the findings of the model which showed that, for every 5% drop in price sales, there will be an increase in sales units, although this increase will be smaller than that which is expected for the other products.

5.3.3. The Impact of Pricing Promotions on SS vs SF Variants

The findings presented in Tables 8 and 9 related to Hypotheses 1, 3 and 5, which aimed to understand if pricing promotions have the same impact for regular SS products as well as for their SF counterparts. For these hypotheses, the models for all three variants of 2L drinks (regular, Lite and Zero) were combined into one model. For each variant independently, the model allowed for sales to depended on trend, month-end peaks, seasonality and reference price as described above, and each variant had its own overall 'mean' sales value. For each variant, depth also had its own impact on sales. The reference variant is the regular variant. Also, in an attempt to obtain the most accurate impacts of depth, the model allowed for a different impact of depth, depending on whether it was month-end or not. Results are therefore provided separately for month-end periods and other periods.

Two parameters were of interest:

- The difference between Zero and regular products, in terms of the impact of depth on sales
- The difference between Lite and regular products, in terms of the impact of depth on sales.

The trimmed results for these tests can be found in Appendix C.

Table 7 (below) holds the findings for depth of sales of Lite and Zero products versus regular during other periods, i.e.: not at month-end. The estimate of 0.899 for TL vs TR indicated that the Lite variant was not as responsive to a 5% drop in price as the regular. This is supported by the low p-value. For the two-litre variants the small p-values provided evidence against the null hypothesis of there being no difference between regular and SF variants; however, for the other pack-sizes the high p-values suggested strong evidence that the null hypothesis was true and there was little difference in impact between regular and SF variants when on promotion.

Size	Estimate (L vs R)	95% CI Lower (L vs R)	95% CI upper (L vs R)	P-Value (L vs R)	Estimate (Z vs R)	95% CI Lower (Z vs R)	95% CI upper (Z vs R)	P-Value (Z vs R)
T	0.899	0.847	0.954	0.001	0.894	0.842	0.949	<0.001
m	0.947	0.886	1.013	0.111	0.947	0.884	1.015	0.124
l	0.932	0.854	1.017	0.112	0.932	0.853	1.018	0.116

Table 7: *OTHER PERIODS - The difference between Lite, Zero and regular products, in terms of the impact of depth on sales.*

Table 8 (below) presents the same results as those given above, but for month-end periods. The results at month-end differed slightly from other periods in that the small p-values for both two litre and impulse (Lite and Zero) variants suggested that there was a difference in promotional price impact on sales, with the SF variants not having the same uplift as their regular counterparts for 5% change in price. There was weak evidence to support the claim that sales of multi-pack SF variants responded differently to promotions from regular SS multi-packs.

Size	Estimate (L vs R)	95% CI Lower (L vs R)	95% CI upper (L vs R)	P-Value (L vs R)	Estimate (Z vs R)	95% CI Lower (Z vs R)	95% CI upper (Z vs R)	P-Value (Z vs R)
T	0.93	0.872	0.993	0.029	0.91	0.852	0.972	0.005
m	0.995	0.943	1.049	0.847	0.974	0.922	1.029	0.342
l	0.928	0.885	0.973	0.002	0.844	0.809	0.88	<0.001

Table 8: *MONTH END PERIOD - The difference between Lite, Zero and regular products, in terms of the impact of depth on sales.*

5.3.3.1. Hypothesis 1 Results

H10: Pricing promotions (PP) achieve an equal percentage sales uplift for planned sugar-free variants (SF2L) versus their regular 2L sugar-containing alternatives (SS2L).

The evidence from the regression model presented in Tables 7 and 8 is strongly in favour of rejecting the null hypothesis for both month-end promotions and those that occur in other periods. The evidence suggests that two-litre SF variants see a lower uplift in sales when on promotion in comparison with the regular SS variants.

5.3.3.2. Hypothesis 3 Results

H30: Pricing promotions (PP) achieve an equal percentage sales uplift for sugar-free impulse variants (SFi) versus their regular sugar containing impulse alternatives (SSi).

Results presented in section 5.2.3 showed strong evidence for rejecting the null hypothesis during month-end promotions, when SF impulse variants did not see as large an uplift in sales as the regular SS variant. During other periods, there was little evidence to support rejecting the null hypothesis, which was found to be true for promotions occurring during other periods.

5.3.3.3. Hypothesis 5 results

H50: Pricing promotions (PP) achieve an equal percentage sales uplift for sugar-free multi-pack variants (SFMP) versus their regular sugar containing multi-pack alternatives (SSMP).

The results for multi-pack promotional sales presented in Tables 7 and 8 show weak evidence to support pricing promotions having different effects on multi-pack variants depending on sugar content, so the null hypothesis was found to be true.

5.3.4. The Impact of Pricing Promotions on SF Variants Across Different Pack Sizes

The findings in this section relate to Hypotheses 7 and 8, which aimed to understand if pricing promotions have the same impact on future consumption (i.e. planned purchases), as they do on impulse packs looking specifically at the SF variants. Table 9 shows the results during other periods, i.e. not month-end. The high p-values suggested that there was a lack of evidence to support the claim that in future consumption, planned purchase packs react differently to pricing promotions to impulse variants.

Variant	Estimate (m vs l)	95% CI Lower (m vs l)	95% CI upper (m vs l)	P-Value (m vs l)	Estimate (T vs l)	95% CI Lower (T vs l)	95% CI upper (T vs l)	P-Value (T vs l)
Z	0.976	0.9	1.058	0.555	1.041	0.957	1.133	0.342
L	0.977	0.904	1.055	0.543	1.047	0.966	1.136	0.262

Table 9: *OTHER PERIODS – The difference between 2L, multi-pack and impulse products, in terms of the impact of depth on sales*

The results for promotions at month-end, as represented in Table 10 below, are slightly different for the multi-pack versus impulse variants. From this we can see that there is strong evidence to support the hypothesis that there is a difference between impulse and future consumption packs on promotion at month-end, but only for multi-packs versus impulse products. Here we can see that multi-packs are less responsive to every 5% drop in price.

Variant	Estimate (m vs l)	95% CI Lower (m vs l)	95% CI upper (m vs l)	P-Value (m vs l)	Estimate (T vs l)	95% CI Lower (T vs l)	95% CI upper	P-Value (T vs l)

							(T vs I)	
Z	0.906	0.869	0.944	<0.001	1.036	0.98	1.095	0.212
L	0.841	0.803	0.882	<0.001	0.963	0.908	1.022	0.208

Table 10: *MONTH END PERIODS - The difference between 2l, Multi pack and impulse products, in terms of the impact of depth on sales*

5.3.4.1 Hypothesis 7 Results

H70: Pricing promotions (PP) have driven an equal uplift in sales for sugar-free impulse variants and sugar free two litre packs.

Based on the results presented in section 5.2.4, the null hypothesis for hypothesis 7 was found to be true. There was no significant evidence to show that pricing promotions drove an increase in consumer demand for impulse versus two-litre SF packs at both month-end and other periods.

5.3.4.2. Hypothesis 8 Results

H80: Pricing promotions (PP) have driven an equal uplift in sales for sugar-free impulse variants and sugar free two litre packs.

The results presented in section 5.2.4 provided evidence to both reject and accept the null hypothesis, depending on time of the month. During month-end periods, the null hypothesis was rejected as multi-pack sales were less responsive to pricing promotions than impulse SF variants. During other, the null hypothesis was rejected.

5.4. STUDY TWO RESULTS

The first study aimed to understand the impact of merchandising on the sales of SS and SF CSD variants across two pack-size formats (two-litre and multi-packs). Impulse variants were not part of this study because they are not merchandised in the aisle. One parameter was of interest: the change in overall sales after the layout was adjusted, compared to before the adjustment occurred as well as to the control stores that had no change in layout.

Based on plots of the data which can be found in Appendix B, T1 and C1 behave quite differently to T2 and C2. They are, in fact, different types of stores, and therefore in the analysis that follows the two sets of stores are analysed separately (labelled StoreSets 1 and 2).

The analysis will deal first with descriptive statistics in order to understand the overall changes in sales over the period. This will be followed by the results from the regression model, which will estimate the overall change in level of sales with the implementation of the sugar-free section. For the test store, there is a four-week adjustment period following the change in layout, and the observations from these weeks are excluded from the analysis.

5.4.1 Descriptive Statistics

Table 11 (below) presents the descriptive statistics of T1 and C1, comparing unit sales for the period before and after the change but excluding the four weeks directly after the sugar-free zone was implemented. Average sales for both two-litre variants increased in both stores in the post-period. The growth in average sales was higher in C2 (37% & 36.7%) than in T2 (23% and 36%) for both two-litre variants. For multi-pack variants there was little change in average weekly sales in both stores. The two-litre variants did see a higher uplift in maximum sales units pre- versus post-period than the control stores. However, for multi-packs, both test and control stores saw a drop in maximum weekly sales units. Minimum values of 0 represented no sales during a week and could indicate out of socks at store level.

Store	Measure	Units_TwoL	Units_TwoZ	Units_mpL	Units_mpZ
T1	Average Weekly sales (Pre)	218	290	12	11
T1	Min weekly sales (Pre)	112	132	0	1
T1	Max weekly sales (Pre)	412	696	115	117
T1	Average Weekly sales (post)	268	394	11	12
T1	Min weekly sales (Post)	121	185	0	0
T1	Max weekly sales (Post)	602	880	44	41
C1	Average Weekly sales (Pre)	149	227	11	13
C1	Min weekly sales (Pre)	101	96	3	4
C1	Max weekly sales (Pre)	298	486	105	105
C1	Average Weekly sales (post)	204	311	11	12
C1	Min weekly sales (Post)	93	166	3	4
C1	Max weekly sales (Post)	430	621	29	31

Table 11: *Descriptive statistics for T1 and C1*

Table 12 (below) presents the same descriptive statistics for T2 and C2. The control store saw larger growths in average weekly sales units pre- versus post-period than the test store for all variants. This indicated that the change in merchandising had a negative effect on the sales of SFCSDs. For multi-packs, there was a higher increase in average sales in the control store.

Store	Measure	Units_TwoL	Units_TwoZ	Units_mpL	Units_mpZ
T2	Average weekly sales (Pre)	261	395	4	4
T2	Min weekly sales (Pre)	178	270	0	0
T2	Max weekly sales (Pre)	459	646	9	11
T2	Average weekly sales (post)	292	467	4	5
T2	Min weekly sales (Post)	0	7	0	0
T2	Max weekly sales (Post)	452	780	13	14
C2	Average weekly sales (Pre)	187	235	5	6
C2	Min weekly sales (Pre)	135	162	0	1
C2	Max weekly sales (Pre)	387	484	14	12
C2	Average weekly sales (post)	212	309	11	14
C2	Min weekly sales (Post)	133	200	3	5
C2	Max weekly sales (Post)	376	479	45	41

Table 12: *Descriptive statistics for T2 and C2*

5.4.2. Estimate Sales Changes as Derived From Regression Model

Table 13 (below) shows the estimated overall change in sales level for stores that had a sugar-free section implemented (test) versus those that did not (the control group). The table compares the effect of the sugar-free section in both test stores, as well as for each variant (two-litre & multi-pack). This is presented with a 95% confidence interval. As before, trimmed models were produced by way of a sensitivity analysis: these results can be found in Appendix E.

Size	Variant	StoreSet	Estimate (SF section vs not)	95% CI Lower	95% CI upper	P-Value
T	**L**	**1**	0.995	0.987	1.002	0.172
T	**L**	**2**	1.001	0.995	1.008	0.736
T	**Z**	**1**	1.000	0.992	1.008	0.987
T	**Z**	**2**	0.997	0.991	1.003	0.354
m	**L**	**1**	0.994	0.973	1.015	0.562
m	**L**	**2**	0.972	0.951	0.994	0.012
m	**Z**	**1**	0.994	0.973	1.015	0.572
m	**Z**	**2**	0.964	0.942	0.987	0.002

Table 13: *Estimate changes in sales values with sugar-free section vs without*

The results indicate that there would be a very slight reduction in sales for SF variants, if any change at all, with the implementation of a sugar-free section in-store. However the p-values are very high, and the evidence supporting any sales change with the implementation of the sugar-free section is very weak. Multi-pack Lite and Zero variants in-store in Set Two did have a very low p-value, which supports the finding that the implementation of the sugar-free section reduced the sales levels of SF multi-pack variants. However, it must be noted that as this was at an individual store level, it could indicate some other changes within the total store environment that could have affected this outcome. The model for mpL & mpZ in T2 also saw the lowest R-squared and adjusted R-squared figures, therefore it may not be indicative of true results due to a poorly fit model.

5.4.3. Hypothesis 9 Results

H90: Placement of all sugar-free variants (SF) together on a shelf, forming a sugar-free section, has no impact on sales of the sugar-free 2L pack sales in test (T) versus control stores (C).

Based on the results presented in section 5.3, the above null hypothesis was found to be true. The creating of a sugar-free section in-store was found to have no impact on the sales of 2L SFCSDs and did not drive consumer demand.

5.4.4. Hypothesis 10 Results

H100: Placement of all sugar-free variants (SF) together on shelf, forming a sugar-free section, had no impact on sales of the sugar-free multi-pack sales in test (T) versus control stores (C).

Based on the results presented in Section 5.3, the null hypothesis for Hypothesis 10 was found to be true. The creating of a sugar-free section in-store was found to have no impact on the sales of multi-pack SFCSDs. While the second test store did have a small p-value that would lead to the rejection of this hypothesis, the poorly fit model was taken into account.

5.5. CONCLUSION

The analysis presented in this chapter has provided valuable insight into the impact that changes in pricing and in store placement have on sales for various CSD products. These will be elaborated on further in the discussion in Chapter Six.

CHAPTER SIX: DISCUSSION OF RESEARCH RESULTS

6.1. INTRODUCTION

Chapter Five presented the detailed results of the field research conducted in the Western Cape stores of a prominent South African retailer with regard to the sales of SF and SSCSDs. The aim was to understand how the implementation of the elements of the marketing mix influenced the sales of SFCSDs. In both Chapters One and Two it was demonstrated that, while a large amount of research has been undertaken on the marketing mix and its various elements, there has been limited research on the effect these elements have on the demand for sugar-free products, an important attribute in today's society.

This chapter delves more deeply into the findings reported in the previous chapters, breaking down the findings of each statistical test, relating these to past studies and presenting conclusions from the study to aid retailers in applying their marketing mix to sugar-free products in the most effective and efficient way. The outcomes of the study will be discussed in detail in Chapter Six. A suggestion for research that would add more information on the topic of this study is presented in Chapter Seven.

Product assortment, both variety and presence, have been identified by Sharkey et al. (2012) as important concepts for in-store marketing strategies that drive the choice between healthier and less healthy alternatives. Within the CSD category, it was also noted that there was a variety of pack-sizes to cater for varying consumer needs (Singh et al., 2005). There were also SF variants across all pack-sizes. Because this variety was available, the results could determine how best to drive SFCSD consumption for each pack-size, individually and amongst SF variants of each pack.

6.2. RESULTS OF STUDY ONE: PROMOTIONAL ACTIVITY

The first results relate to Study One and the investigation into the effect of promotional activity on SF versus SS variants, as well as the influence that depth of promotional discount had on demand.

6.2.1. Study One Hypotheses Results

The results for Hypotheses ! to 8 can be found in Table 14 below:

Hypotheses	Statement	Period	Result	Conclusion
1	**H10:** βppsf2L = ppss2l	Month End	Reject null hypothesis	SF promotions did not have an equal sales uplift to SS products. SF variants see a lower uplift in sales when on promotion in comparison with the regular SS variants.
	H1A: βppsf2L ≠ ppr2l		Accept alternate	
1	**H10:** βppsf2L = ppss2l	Other	Reject null hypothesis	SF promotions did not have an equal sales uplift to SS products. SF variants see a lower uplift in sales when on promotion in comparison with the regular SS variants.
	H1A: βppsf2L ≠ ppr2l		Accept alternate	
2	**H20:** βdppsf2l = sppsf2L	ALL	Reject null hypothesis	Deeper price promotions will lead to an increase in sales units for SF 2 litre packs.
	H2A: βdppsf2l ≠ sppsf2L		Accept alternate	
3	**H30:** βppsfi = ppssi	Month End	Reject null hypothesis	SF impulse variants did not see as large an uplift in sales as the regular SS variant.
	H3A: βppsfi ≠ ppssi		Accept alternate	
3	**H30:** βppsfi = ppssi	Other	Accept null hypothesis	There is equal uplift for SF & SS impulse variants during other periods.
	H3A: βppsfi ≠ ppssi		Reject	
4	**H40:** βdppsfi = sppsfi	ALL	Reject null hypothesis	Deeper price promotions will lead to an increase in sales units for SF impulse packs.
	H4A: βdppsfi ≠ sppsfi		Accept alternate	
5	**H50:** βppsfmp = ppssmp	Month End	Accept null hypothesis	There is an equal uplift for SF & SS multi-pack variants during month end periods.
	H5A: βppsfmp ≠ ppssmp		Reject	
5	**H50:** βppsfmp = ppssmp	Other	Accept null hypothesis	There is an equal uplift for SF & SS multi-pack variants during other periods.
	H5A: βppsfmp ≠ ppssmp		Reject	
6	**H60:** βdppsfmp = sppsfmp	ALL	Reject null hypothesis	Deeper price promotions will lead to an increase in sales units for SF multi-packs.
	H6A: βdppsfmp ≠ sppsfmp		Accept alternate	
7	**H70:** βppsfi = ppsf2l	Month End	Accept null hypothesis	

	H7A: βppsfi ≠ ppsf2l		Reject	Impulse and 2L packs see equal uplifts on promotion during month end periods.
7	**H70:** βppsfi = ppsf2l	Other	Accept null hypothesis	Impulse and 2L packs see equal uplifts on promotion during other periods.
	H7A: βppsfi ≠ ppsf2l		Reject	
8	**H80:** βppsfmp = ppsfi	Month End	Reject null hypothesis	Multi-pack variants are less responsive to price discounts then impulse packs during month end
	H8A: βppsfmp ≠ ppsfi		Accept alternate	
8	**H80:** βppsfmp = ppsfi	Other	Reject null hypothesis	During other periods SF multi-pack variants saw an equal uplift to price discounts as SF impulse products.
	H8A: βppsfmp ≠ ppsfi		Accept alternate	

Table 14: *Results for Study 1 Hypotheses*

6.2.2. Hypotheses 1, 3 and 5 – Effect of Promotional Activity on Each Pack-Size

It was has been shown in previous studies that promotional activity was an important marketing mix element to use to drive demand for products (Dawes, 2012). Hypotheses 1, 3 and 5 aimed to discover if pricing promotions had an equal effect on demand for SF versus SSCSDs across large, impulse and multi-packs. Figures 12, 16 and 19 show the sales trend for each of these pack-sizes: it can be identified through a visual analysis that there are peaks at month-end, and the results presented in Chapter Five relate to the impact of pricing promotion during month-end, as well as other periods throughout the month, to get an in depth understanding of promotional impact.

There is evidence to support the view that price influences the healthy or unhealthy dietary choices that individuals make (Claro, Levy, Popkin, & Monteiro, 2012). In the same study, which showed the impact of taxes on SSB in Brazil, it was shown that an increase in the price of SSB led to a decrease in the calories consumed as a result of SSB intake (Claro et al., 2012). However it did not investigate the reaction of SFB to the same change in price. The aim of this study was to understand, firstly, if promotional activity was effective across all variants, and if so, which variant showed the greatest impact as a result of promotions.

It has been shown, both within the aforementioned study in Brazil and the research reported here that CSDs do react to pricing promotions and that they need to built into

the category plans devised by the retailer. The literature presented by Glanz et al. (2012) support the findings that price does impact consumer demand. However, products have different elasticities and the impact of price will differ across them. The data analysed showed that SF products performed equally, or not as well as the SS offering. For two-litre packs, the regular variant was more reactive to promotions, both at month-end and during other periods throughout the month. This is the most promoted pack, with 45 weeks on promotion in this selected study. SS impulse variants were also shown to be more reactive to pricing promotions than SF variants at month-end periods only, whereas for multi-pack the variants see an equal reaction to pricing promotions. Our findings build on the literature around the purchase decisions of unhealthy versus healthy options. As shown in out results, across some pack-sizes and time periods, unhealthy or SS variants are in increasing demand when on promotion, as supported by Sigurdsson et al. (2014), who showed that unhealthy products are more reactive to in-store interventions.

Fader and McAlister (1990) used the EBA model (Figure 23) to show the decision strategy based on promotional activity in a category. The model shows that if consumers are attuned (or responsive) to promotions, as has been proved with the results for Hypotheses 1, 3 and 5, they will select between brands or variants that are on promotion and whose benefits are marginally acceptable to the consumer. As a result, if a consumer does not feel strongly about selecting products with functional benefits such as SF, then if this item is not on promotion it will be easily substituted with other products such as the SS variant. “Typical low involvement, repetitive choices in supermarket settings are powerfully influenced by promotional offers. Our EBA model posits a phased decision strategy in which consumers occasionally screen out unpromoted brands” (Fader & McAlister, 1990, p. 331). As such, even though promotions are not as effective on SF variants as on the SS, it is still important to have promotional activity on the variants because the aim is to keep SF within the consumers’ choice set. The data gathered therefore does not support the findings of Binkley and Bejnarowicz (2003) who suggested that once a category is decided upon, there is little consideration of price and a product’s intrinsic qualities become more important. The results show that promotional activity is important for all variants in the category, and drive an uplift across variants and pack-sizes.

Figure 23: *Flow chart representation of the (elimination by aspects) EBA model incorporating stratified preferences (Fader & McAlister, 1990, p. 329)*

6.2.3. Hypotheses 2, 4 and 6 – Effect of Promotional Depth Across Pack-Sizes

Hypotheses 2, 4, and 6 aimed to identify whether deeper pricing promotions drove an increased demand for SF variants. The results of Hypotheses 1, 3 and 5 showed that promotional pricing is important for CSDs across all variants, and while it may have been more effective for some regular variants at certain times of the month than at others, promotions still drove the demand for products. The element of depth of promotion across the variants still needs to be discussed and understood. According to the literature, different products react differently to the same price discounts, i.e. they have different price elasticities (Glanz et al., 2012).

The next step in understanding the effect of the pricing element of the marketing mix would then be to understand the depth of promotion required to drive demand. The importance of understanding a product's elasticity (i.e. its change in sales units or demand for every percentage change in price) allows retailers to understand if it is the mere fact that the product is on promotion that will drive demand or if deeper promotions

would increase demand for a product. This analysis will help retailers effectively manage their margins.

Once again, Fader and McAlister emphasised the importance of depth of promotion as they state that “substantial price cuts, enable shoppers to make quick, fairly good decisions without processing all available information” (1990, p. 322). This was supported by Ailadwadi et al. (2006), who maintain that deep promotions can lead to switching and drive consumption within a category. In investigating the impact that price has on consumption across a variety of categories, a study by Andreyeva et al. (2010) analysed similar data to this one, in that it used retailer scanner data, but supplemented them with household surveys. The results showed that a 10% increase in price would lead to an 8% to 10% reduction in consumption; the reverse of this can be assumed true, in that a reduction of price would lead to further increases (Andreyeva et al., 2010). This study indicates that soft drinks are elastic; however, there is no discussion on the elasticity on SF variants, which is the main focus of this paper.

The results presented in Chapter Five supported the findings in other research as they showed that across all variants, each 5% increase in depth of promotion led to an increase in units sold. For both SF and SS variants, depth of promotion was an important driver of demand. Therefore, if a retailer wants to drive SF consumption, deeper promotions on these variants would be key. This is true for both impulse and the future consumption of two-litre packs, as has been indicated in Table 6. Both of these pack-sizes saw double-digit changes changed in units sold for every 5% drop in price and could therefore be classified as highly elastic. However, within the results presented for the impact of promotional depth across variants, it was noticed that the impact on sales for multipacks was much lower than for the two-litre and impulse packs across both SF and SS, with each 5% change in price. The multi-pack variants only saw a 5-6% increase in units sold and therefore were not as elastic as the other packs. The multi-packs were, however, the pack-size that was promoted at the deepest percentage discount most often, as can be seen by the mode promotional depth of 30%. Based on these results, and the understanding that different price sensitivities across products allow retailers to understand where best to invest (Hoch et al.,1995). If retailers have limited funds to invest into price to drive SF products, it would be best to drive deeper promotions on two-litre and impulse variants.

6.2.4. Hypotheses 7 and 8 - The Impact of Pricing Promotions on SF Variants Across Different Pack Sizes

Hypotheses 7 and 8 aimed to understand if pricing promotions have the same impact for future consumption (i.e. planned purchases) as they do for impulse packs, looking specifically at the SF variants. This is important to establish as the different purchase missions (impulse or planned) are linked to consumers searching for different benefits. Muruganantham and Bhakat (2013) found that impulse decisions are focused on hedonic benefits, and promotional activity for SF variants can be assumed to be less responsive on impulse variants than for those that are planned. However, the results presented in section 5.2.4. disprove the above theory.

The results presented in Chapter Five showed that SF variants displayed a similar estimated uplift in sales across impulse and planned consumption packs. This was true for both mid-month and month-end sales. The only difference that was identified in the model was at month-end periods, when multi packs are less responsive to price drops than impulse SF variants. The response of multi-packs on promotion versus impulse products, as well as the smaller price elasticity, further support the conclusion that should retailers decide to drive SF products, investment in impulse as well as two-litre packs would have a greater impact on demand than similar promotional activity on multi-packs.

6.3. RESULTS OF STUDY TWO: MERCHANDISING BY SUGAR CONTENT

6.3.1. Study Two Hypotheses Results

Hypotheses	Statement	Result	Conclusion
9	**H90:** βsft2l = sfc2l	Accept null hypothesis	Sugar-free section in-store was found to have no impact on the sales of 2L SFCSDs.
	H9A: βsft2l ≠ sfc2l	Reject	
10	**H100:** βsftmp = sfcmp	Accept null hypothesis	Sugar-free section in-store was found to have no impact on the sales of multi-pack SFCSDs.
	H10A: βsftmp ≠ sfcmp	Reject	

Table 15: *Results for Study Two Hypotheses*

6.3.2. Study Two Results Discussion

Hypotheses 9 and 10 aimed to understand the impact of merchandising according to sugar content rather than by brand on units sold. Shelf space is one of the fundamental elements of the marketing mix that retailers can control, and it does not require incremental investment that could be detrimental to their margin and profits. Both shelf space as well as the layout of the shelf, shelf format, is essential in guiding consumers and influencing purchase decisions in. The literature supports the fact that a shelf that eases decisions drives incremental purchases. The shelf should be laid out to focus the attention of consumers and to help simplify decisions (Breugelmans, Campo, & Gijsbrechts, 2007). In previous research, we saw evidence that changing the format of a shelf changed the consumers purchase decisions and, ultimately, their demand for products. In a laboratory experiment conducted on the sales of yoghurts, it was established that a variation of shelf format, merchandising by brand or by flavour, had an influence on the effort required to make a selection and impacted the selection made (Simonson & Winer, 1992). However, as discussed, laboratory experiments are not necessarily conducive to drawing real-life conclusions.

The experiment in Study Two was conducted in a natural environment in which a sugar-free section was implemented in stores and tracked pre- and post-implementation. One way of easing decision-making is to categorise products on-shelf. The theory suggests that categorising products, i.e. grouping SF variants all together in a sugar-free section, will draw attention to its attributes and guide consumers purchase decisions (Desrochers & Nelson, 2006). However, the results presented in Chapter Five showed that the implementation of the sugar-free section had a negative impact, if any, on the sales of SF beverages. As a result, it was clear that classification by sugar content did not help in drawing consumers' attention towards the sugar attribute of a product, as there was no significant change in sales of SFCSDs.

As with the yoghurts study conducted by Simonson & Winer (1992), simplifying the shelf format to drive flavours would involve merchandising the shelf by brand, focusing consumers' attention on their desired brand and then substituting variants within the brand selected. This is supported by the findings of Neuhaus and Taylor (1972) who suggested that when products are laid out by variant, this leads to brand switching. However, in order to decrease consumption of high-calorie SS products, retailers want to drive a switching between variants, and not between brands. As the research did not support a sugar-free zone where products are laid out by variant, the simplest shelf

format to drive substituting a SS variant with a SF one may be to lay out the shelf by brand.

6.4. LIMITATIONS

The two studies conducted helped in providing answers to the hypotheses laid out in Chapter Three, but there are concerns around the study that should be highlighted. The first is with regard to the calculation of promotional discount using a reference base price. The reference price was selected by the researcher, based on knowledge of the category. In the light of this, the data might show a drop in price and record a promotional price point, but this might not have been communicated in-store as a saving to consumers. As well as this promotional communication, the use of media and in-store displays could vary by promotion and this could influence demand to a greater degree. Data to help understand the activity supporting each pricing promotion were not available for this study.

The second concern centres around the number of test and control stores used in Study Two. The work was done to assess the model fit and it was identified that the model was a good fit for the majority of the products. However, for mpL and mpZ in test store two, the accuracy of the model fit is questionable due to the low R-squared result. The results reported in Chapter 5 were reliable, based on the model and stores selected, but a more robust sample of test and control stores could provide more robust findings across all pack-sizes and avoid any in-store nuances, such as out of stocks, which could effect results.

CHAPTER SEVEN: CONCLUSION

7.1. INTRODUCTION

The studies conducted in this research aimed to provide a deeper understanding of how elements of the marketing mix could be used by retailers to influence consumers to purchase SF products. As obesity becomes an increasing concern for populations, economies and societies, it is becoming more important, not only to offer consumers choices, but to find ways of guiding them towards healthier alternatives. With the rise of sugar-sweetened and refined products which not only taste good but are also affordable and of good quality, it becomes a challenge to help consumers identify the need for and importance of the functional benefits of products.

It is widely understood that retailers are the critical link between consumers and products and play an important role in influencing consumers at the point of purchase. The outcome of this study found that retailers can help to drive the demand for SF products by utilising marketing levers at their disposal. As consumers become increasingly aware of the dangers of excess sugar consumption, they will begin to look to retailers to help them with their selection. This research is useful in terms of helping retailers in selecting the correct approach for driving SF offerings and, ultimately, in growing consumer demand within a socially responsible context.

7.2. MAIN OBJECTIVES OF THE STUDY

The objectives of these studies as outlined in Chapter One were as follows:

1. To determine if pricing promotions stimulate a higher or lower demand for SFCSDs versus those that are sugar-sweetened
2. To determine the impact of various promotional depths on the demand for SFCSDs.
3. To determine the impact of merchandising according to sugar content on the demand for SFCSDs.

7.3. FINDINGS

7.3.1. The impact of pricing promotions on SF vs SS demand

The EBA model (Figure 23), highlights the importance of promotions in the selection of brands or products within a category. Literature has already established that promotional pricing plays a significant role in consumers' choices between healthy and unhealthy products (Carter, Phan, & Mills, 2013). The results from Study One have shown that pricing promotion is an important element of the marketing mix for the CSD category as all pack-sizes experience an increase in sales when on promotion. However, pricing activity on SSCSDs leads to a higher uplift in sales, and is therefore more effective at driving consumer demand than pricing activity on SFCSDs. Multi-packs experience an equal uplift across variants, whereas for 2L and impulse packs, SS variants see a greater consumer demand.

The findings of this study supported the literature in terms of the importance of pricing to drive demand, but in order to drive SF products it might be necessary for retailers to promote them more frequently than the SS variants so that they ensure a prolonged increase in demand from consumers.

7.3.2. The impact of promotional depth on SF demand

The finding from the first objective highlighted the importance of pricing as a one of the marketing mix levers for driving demand for SF products. Once this importance is recognised, the impact of depth of promotion is the next portion of this marketing mix element to understand. Research indicates that deeper pricing promotions drive increased consumer demand (Ailadwadi et al., 2006), however it is also known that different products have differing pricing elasticities (Glanz et al., 2012). This study closes the current gap in the literature by identifying the elasticities and importance of depth of SF versus SS variants.

The results have shown that all CSD variants are highly elastic, meaning that the deeper the promotion, the larger the increase in sales, and therefore in consumer demand. Following on to this result is the impact in depth across pack-sizes in order to determine if deeper promotions are essential across all SF variants. The results show that both SF two-litre and SF impulse packs see similar increases in demand as promotional depth increases. Therefore, the deeper promotions are critical for both of these pack-sizes

during all periods of the month. SF multi-packs are not as responsive to deep promotions during month-end periods as impulse products. This understanding helps retailers to prioritise promotional activity towards two-litre and impulse packs at month-end and essentially to protect profit margins on multi-packs with shallower pricing promotions.

7.3.3. The impact of merchandising by sugar content on SF demand

The placement of on-shelf merchandising of products is an important element of the marketing mix as it influences customers' decisions and ultimately drives demand (Drèze, Hoch, & Purk, 1994). The results from the above sections highlight the importance of deep pricing promotions in driving demand for SF products, so the shelf becomes an even more crucial element of the marking mix for retailers to utilise, as it requires little or no investment. However, the amount of space given to products is only one element of merchandising; the literature also highlights the importance of utilising shelf format to simplfy consumers in-store decisions and ultimately to drive demand (Breugelmans, Campo, & Gijsbrechts, 2007). For this study, the analysis focued on creating a shelf-format based on categorisation of sugar content. The results showed that creating a sugar-free section in-store by grouping all the sugar-free packs together did not have any impact on the sales of SF products, so this merchandising format cannot be regarded as a priority element of the marketing mix.

7.4. PRACTITIONER RECOMMENDATIONS

Research was conducted to inform both retail management and policy-makers in terms of understanding the requirements of both in order to drive consumer demand for sugar-free products.

7.4.1. Management recommendations

This research has significant implications for managers within the retail industry as it identifies the elements of the marketing mix that can best be used to drive demand for SF products. The benefit of understanding the implications of elements of the marketing mix is that it allows retailers to decide where to prioritise their resources, either by investing in margin or by ensuring the best utilisation of in-store space. Understanding the impact that each element has on demand can also aid them in negotiating with suppliers to support SF initiatives, for example through deeper discounts.

Based on the results presented in Chapter Five and the literature reviewed in Chapters Two and Six, the path-to-purchase framework presented in Chapter Two has been adapted to a framework reflecting the findings. The framework presented in Chapter Two took specific insights from the literature and created a theoretical path-to-purchase which could be applied to SF and SS beverages. The framework described below aims to build on that, utilising a deeper understanding of the results to enable retailers to understand how to prioritise marketing mix interventions, with the aim of increasing demand for SF products.

Figure 24 (below) is the conceptual framework that indicates the path to purchase for consumers for SF & SS products. It indicates the sequence of marketing mix elements required to assist retailers in prioritising investment to drive purchase behaviour.

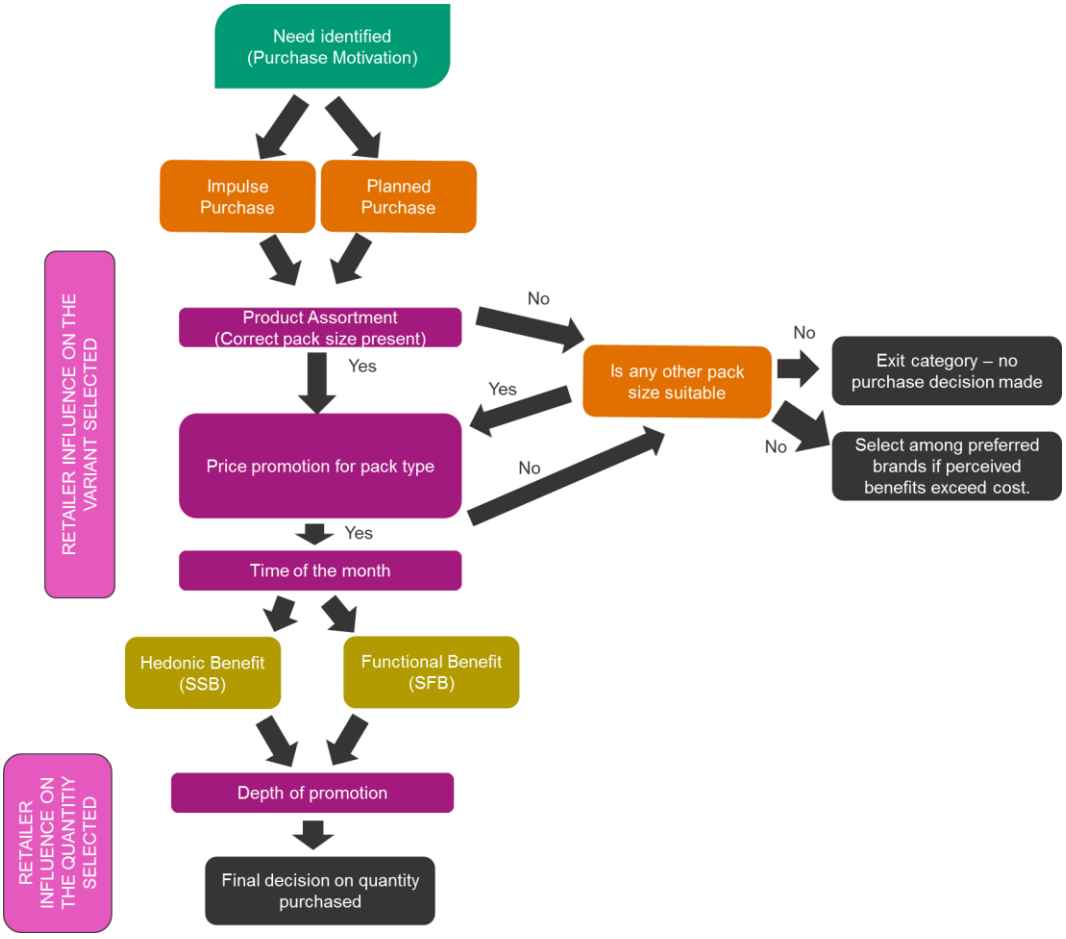

Figure 24: *Conceptual framework indicating the prioritisation of marketing mix elements to drive demand of SF products.*

The framework begins with consumers identifying a need or a motivation for purchase, as discussed in section 2.4. This motivation is linked to the element of planning behind a product. Impulse purchases account for a maximum of 70% of purchase decisions in-store (Sigurdsson et al, 2010) and are therefore more likely to be influenced by in-store activity. The purchase motivation links to all elements of selection, such as the benefits consumers are looking for as well as the pack-size they select. Purchase decisions include pack-size selection, as immediate consumption packs are strongly linked to impulse purchase, whereas packs for future consumption are generally part of a partially planned or planned trip. The motivation is the first step in the framework, as it is the driver to store and post that mix, and elements need to be utilised to drive demand towards products.

Shelf format has been excluded from this model because the results showed in section 5.3 and discussed further in section 6.3 revealed that categorising the products on-shelf by brand or by sugar-content did not have any significant impact on the sales of SF variants.

The first step in which retailers can influence demand relates to product assortment. At this stage, retailers need to ensure that they carry pack-sizes that meet demand across consumption occasions and therefore fulfil the initial purchase motivation. If a suitable pack is not available, consumers may switch to an alternative size if it is suitable, or if not, they may exit the category. Assortment is a critical element of demand as it links directly to consumers purchase motivation.

Section 5.2.3 results showed that consumers are attuned to promotions and that promotions are therefore important across pack-sizes and variants. Once a pack format that suits the purchase need has been identified by the consumer, the next priority for retailers is to make sure that promotional activity is present in each decision along the path to purchase. The results indicated that pricing promotions are a critical element to be utilised by retailers to drive demand. Pricing promotions drive up lift in demand across pack-sizes and variants: this is shown in section 5.2.3 and discussed in depth in section 6.2. If there are no promotions across the selected pack type, consumers may look for promotions in other pack types, exit the category or select their preferred brand at full cost if the perceived benefits exceed the cost. Elements of the model in Figure 21 were utilised and adapted, based on results. The results also indicated that there are different uplifts for products at month-end, in contrast to other periods in the month. Once promotion has been identified, the time of month would play a role in the selection of variant.

Assessment of assortment, promotion and time of month leads consumers towards the selection of the product they wish to purchase. At this stage, the final decision between SF and SS variants is made. It is important to emphasise that assortment, which is within the control of the retailer, is important, as it is necessary to stock a variety in order to present a choice to consumers. Also, we know that regular products perform better or equally with SF products on promotion, as was proved with the answers to Hypotheses 1, 3 and 5 (section 5.2.3). Therefore the retailer could also decide whether or not they want to advertise SS beverages on promotion if there is a strategic direction towards aiding socially responsible consumption.

Once the product that is on promotion is selected, the depth of promotion is the final influencer which will determine the quantity that consumers purchase. Quantity purchased is another driver of consumption. The results in section 5.2.2 have shown that deeper promotional discounts drive an increase in demand, as identified by increased spend in the category.

The importance of this model indicates that, within the CSD category, it is assortment and price that drives demand for products, followed by depth of promotional price. As the results in Chapter 5 showed, both SS and SFCSDs are reactive to price and both show an increase in demand for products, depending on the depth of the promotional price. Therefore, should reatailers take the decision to drive SF products over SS ones, not only do they need to stock a variety of SF variants, but pricing and depth of discount for SF should take precedence over SS variants. This suggests that retailers need to invest more into SF products in order to influence consumer demant.

7.4.2. Public policy-maker recommendations

The findings of this research are also important for policy-makers, as they make decisions to impose a tax on sugar products, specifically on SSCSDs within South Africa. The results have identified that CSDs are sensitive to changes in price and the implementation of the tax could lead to a decrease in demand for SS products.

However, it is also clear that the pricing needs to be implemented effectively in the retail channels. If retailers absorb the price increases imposed by the sugar tax and do not pass it on to consumers, the tax could have no impact. The other option for government to consider is how retailers promote SF versus SS products. As has been noted, all the variants across all pack-sizes on offer are sensitive to pricing promotions, and the deeper

the promotion, the greater the increase in demand. Government could therefore legislate that SS beverages may not be promoted on their own, but must be on offer with all SF alternatives, or that SF beverages should have a deeper pricing discount to encourage purchase

7.5. LIMITATIONS

As discussed in Chapter Four, this research has various limitations. These are:

- The results are limited to the carbonated soft drinks category. This may limit the applicability of the results to sugar-free variants in other categories
- The data analysed was gathered from one retailer within only one region of South Africa: the Western Cape
- A large number of p-values were produced in this study. Multiple testing increases the chance of making errors in ones conclusions
- The availability of only two test stores for the implementation of a sugar-free segment could limit results of Hypotheses 9 and 10.

7.6. FUTURE RESEARCH

This study has endeavoured to make a contribution towards the body of knowledge relating to consumer demand, specifically for SF products, as well as the steps that can be taken to drive this utilising the marketing mix. It has identified clear actions for both retailers and public policy-makers in order to drive consumers in making healthier purchase decisions. Opportunities remain for further investigation. The following recommendations for future studies could build extensively on this research and develop the literature around retailers and their roles, as well as the mechanisms that could be utilised to drive SF demand.

The current studies were conducted solely on CSDs as they are widely consumed, available in all retailers and have clear SF and SS variants. In order to develop the understanding of consumer demand for SF products, there is scope to conduct a similar study across a variety of categories that offer SF and SS variants, for example cereals, squashes and cordials, sweet snacks, salad dressings and sauces, to name a few. It would be interesting to investigate whether the levers that work for CSDs have a similar effect across categories.

In the light of the above, it is also important to understand how the use of marketing mix elements in-store can lead to consumers switching between high-sugar and SF categories. For example, fruit juice is thought to be healthy and yet is very high in sugar; it would be of use to retailers who aim to drive healthy choices to find out what levers could be used to move consumers out of the fruit-juice category to a SF alternative such as water.

Future studies could usefully build on the current knowledge of pricing to explore the use of the fourth lever, promotions. How do in-store display, broadsheets or different pricing promotion mechanics (i.e. buy two for a price, or straight price cuts) influence demand? Another area that is covered in the literature but not in this study is the impact of calorie-messaging at-shelf.

The need for future research relates to the impact measured in Study Two. This study focused solely on the impact that an implemented sugar-free zone has on demand for SF products; however, it did not take into account the impact on the demand for regular products. If the goal is an overall reduction of calorie consumption through reduced sugar intake, it will be important to understand the effect of this merchandising layout on the sales for SS beverages. If SS beverage demand decreased with no effect on SF variants, this could be a positive layout to drive healthier purchase decisions.

Lastly, a key element that should be researched is the effect that driving SF options has on retailer perception as well as on profitability. In many categories and retailers, SS variant sales far exceed the SF options, and thus a decision to invest in and drive demand for SF could have a negative effect on profitability. On the other hand, consumer perception is also a key measure for retailers. It would be important for any retailer to understand, not only the profit implications, but also the change in consumers' perceptions of the store if they are found to drive socially responsible consumption in the form of SF products.

7.7. CONCLUDING REMARKS

With the increased prevalence of obesity and its related illnesses, governments, society and businesses will be subjected to increased pressure to drive healthier choices. Sugar-sweetened products will be the first to come under review, as indicated by the sugar tax that will be implemented in South Africa in 2017. The literature shows that retailers are a core element in the value chain and are thus instrumental in influencing the final purchase decision in-store through well-researched elements of the marketing mix.

Despite this, there is very little research that links the demand for sugar-free and sugar-sweetened beverages to in-store activities. This research set out to close this gap in the existing literature. The findings that emerged have resulted in the development of a conceptual framework of retailer influence on in-store purchase decisions, with a specific focus on sugar versus sugar-free products. This framework assists retailers in understanding how to prioritise investment amoungst the marketing mix elements in order to influence consumer demand. The results of this study indicate that assortment of SF products is the first requirement, as well as a variety of packs that meet different purchase motivations.

Following this, price and depth of discount are the crucial investments required by retailers. Should they wish to drive SF products, investment into pricing will need to exceed that invested into SS variants. The study also found that categorising products by sugar-content and reflecting this in shelf format had no impact on consumer demand for SF products.

It is hoped that this research contributes to the decisions retailers take when implementing both the sugar tax and strategies to drive the consumption of socially responsible products. It also aids policy-makers in determining how to structure and enforce policies such as the sugar-tax to ensure the maximum public benefit.

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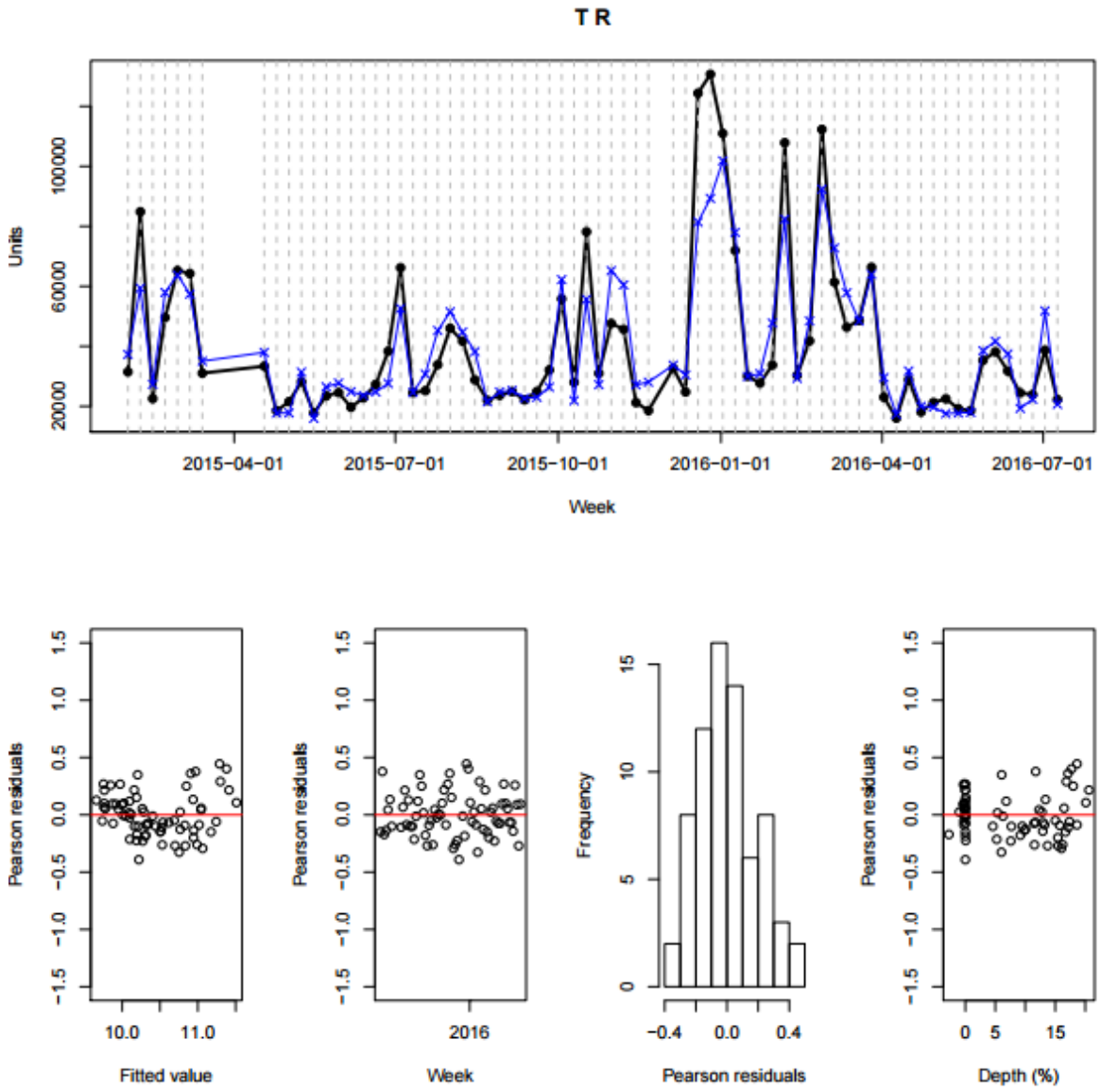
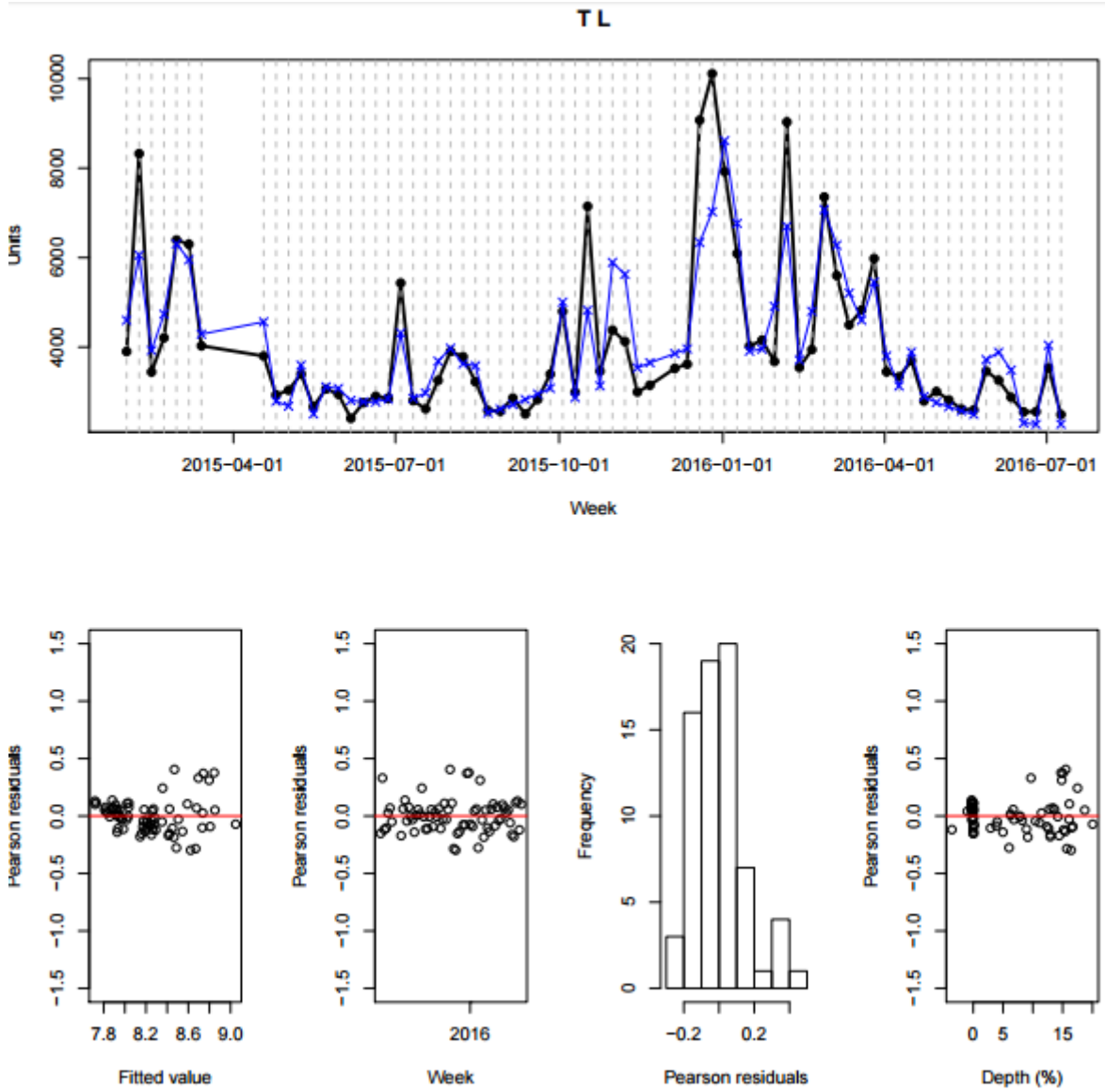
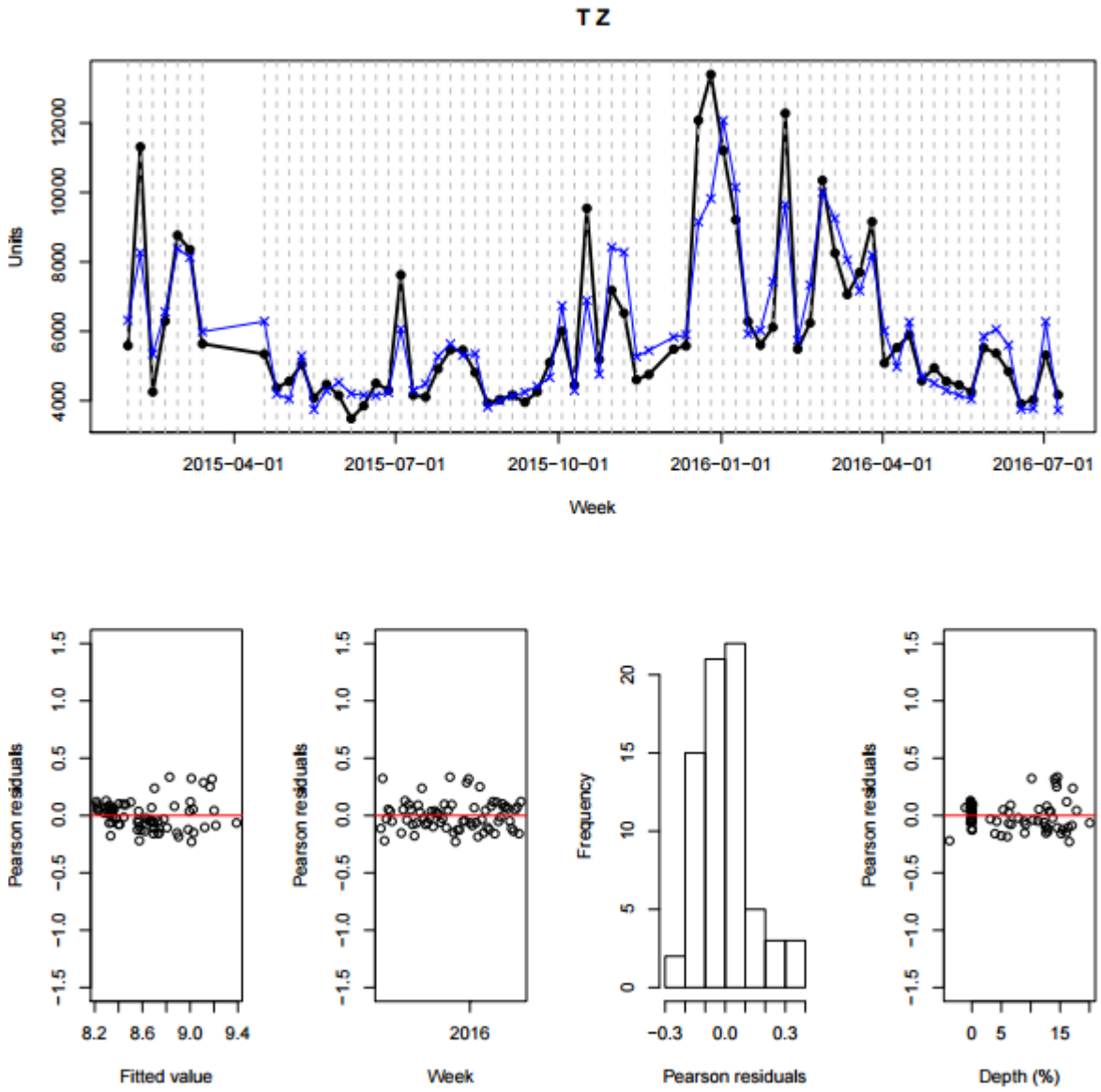
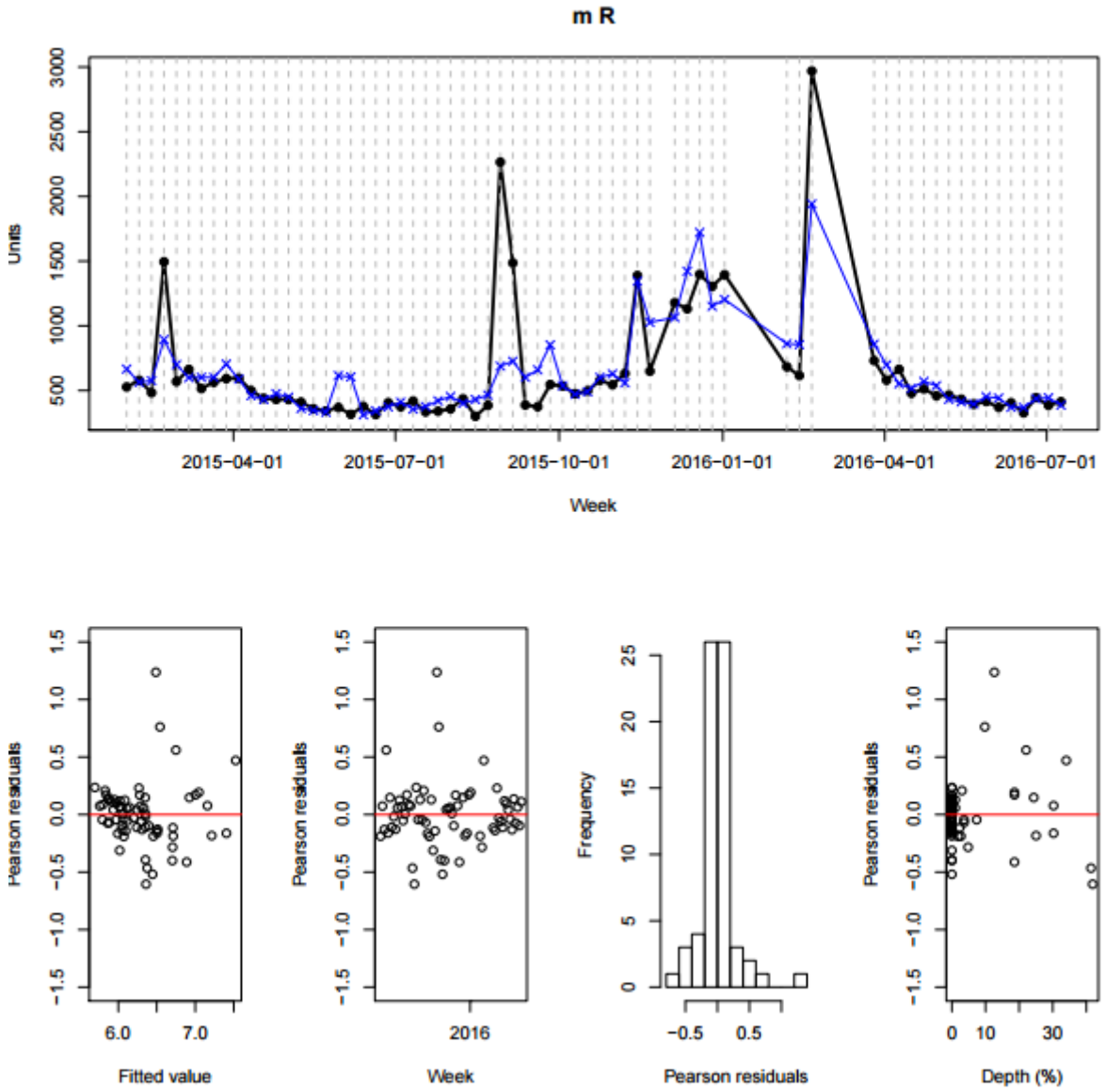
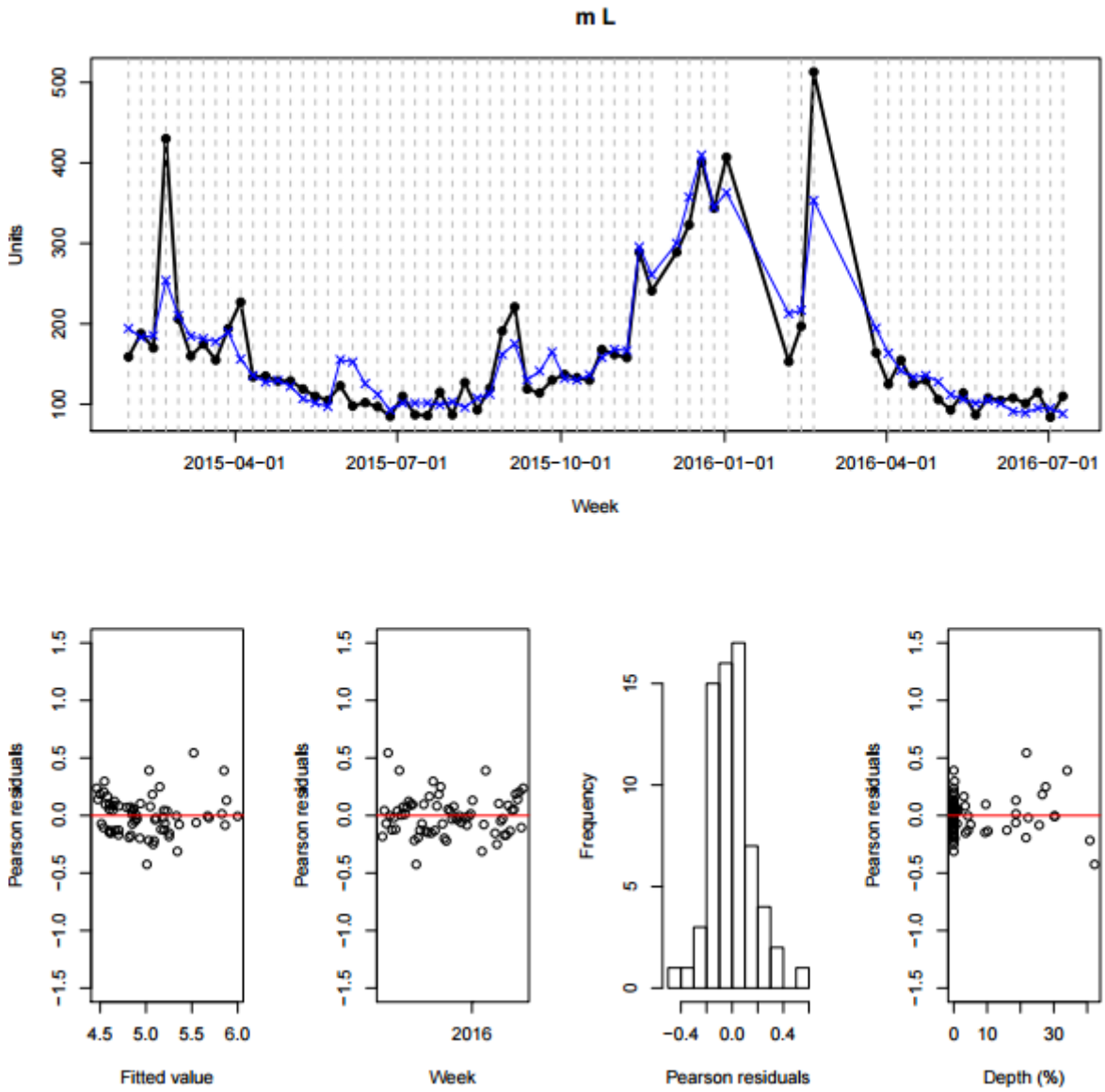
APPENDIX 1: Model fit for Study One

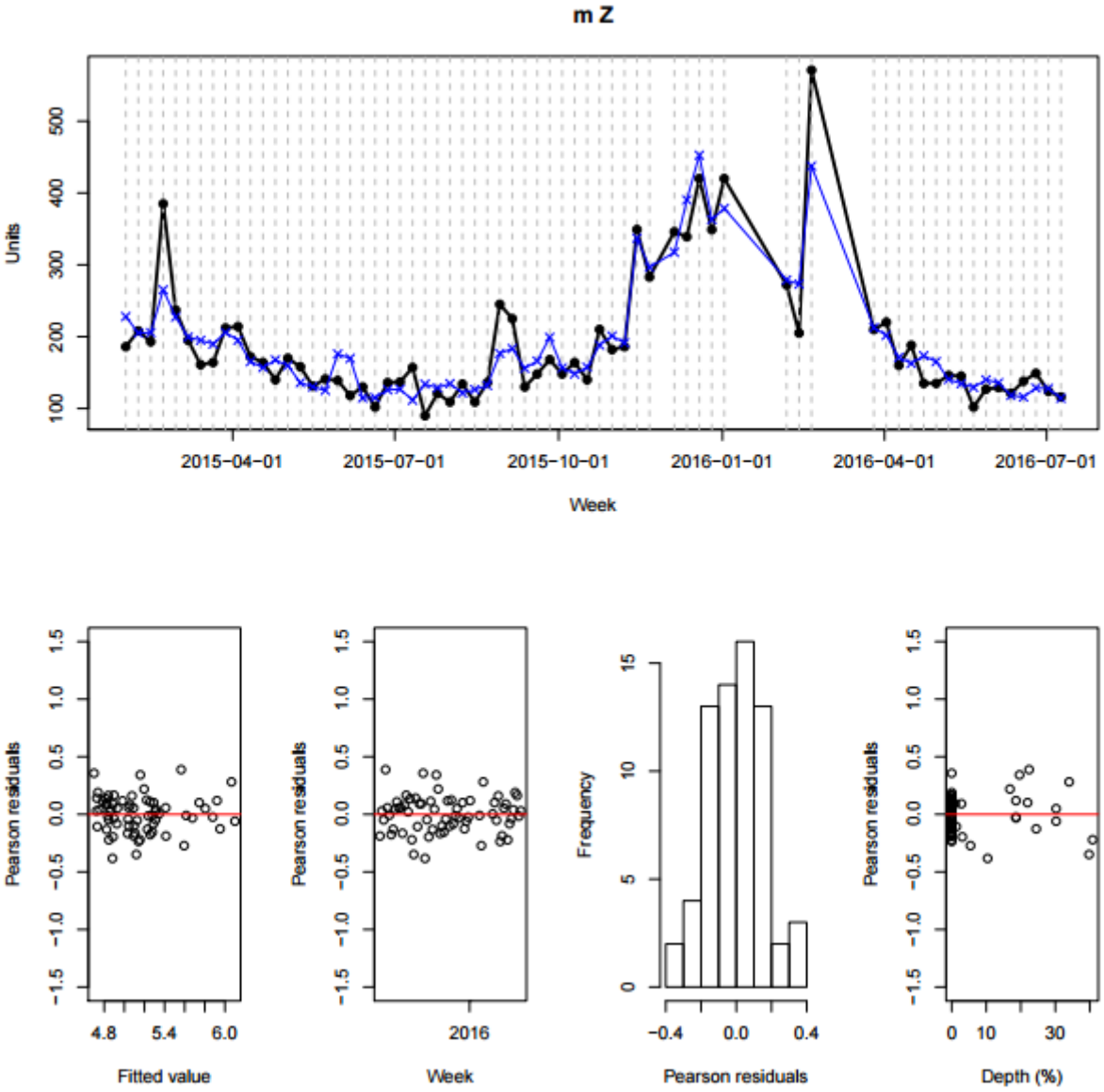


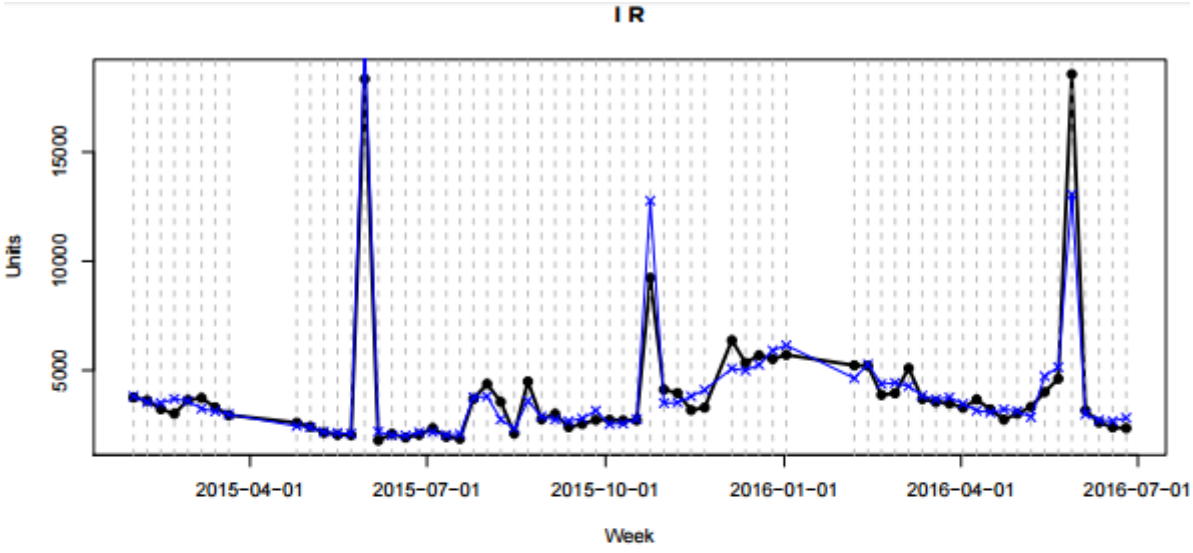


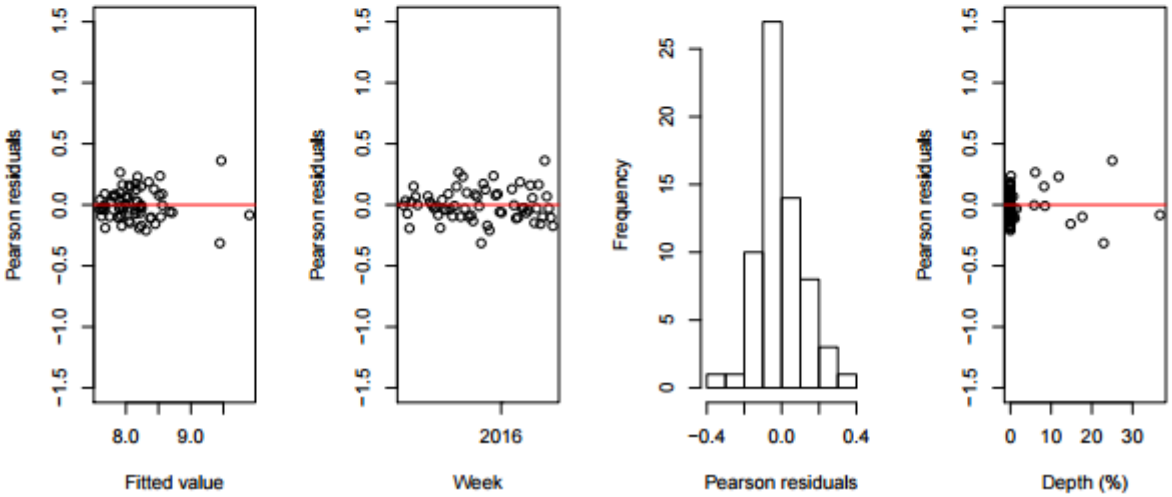


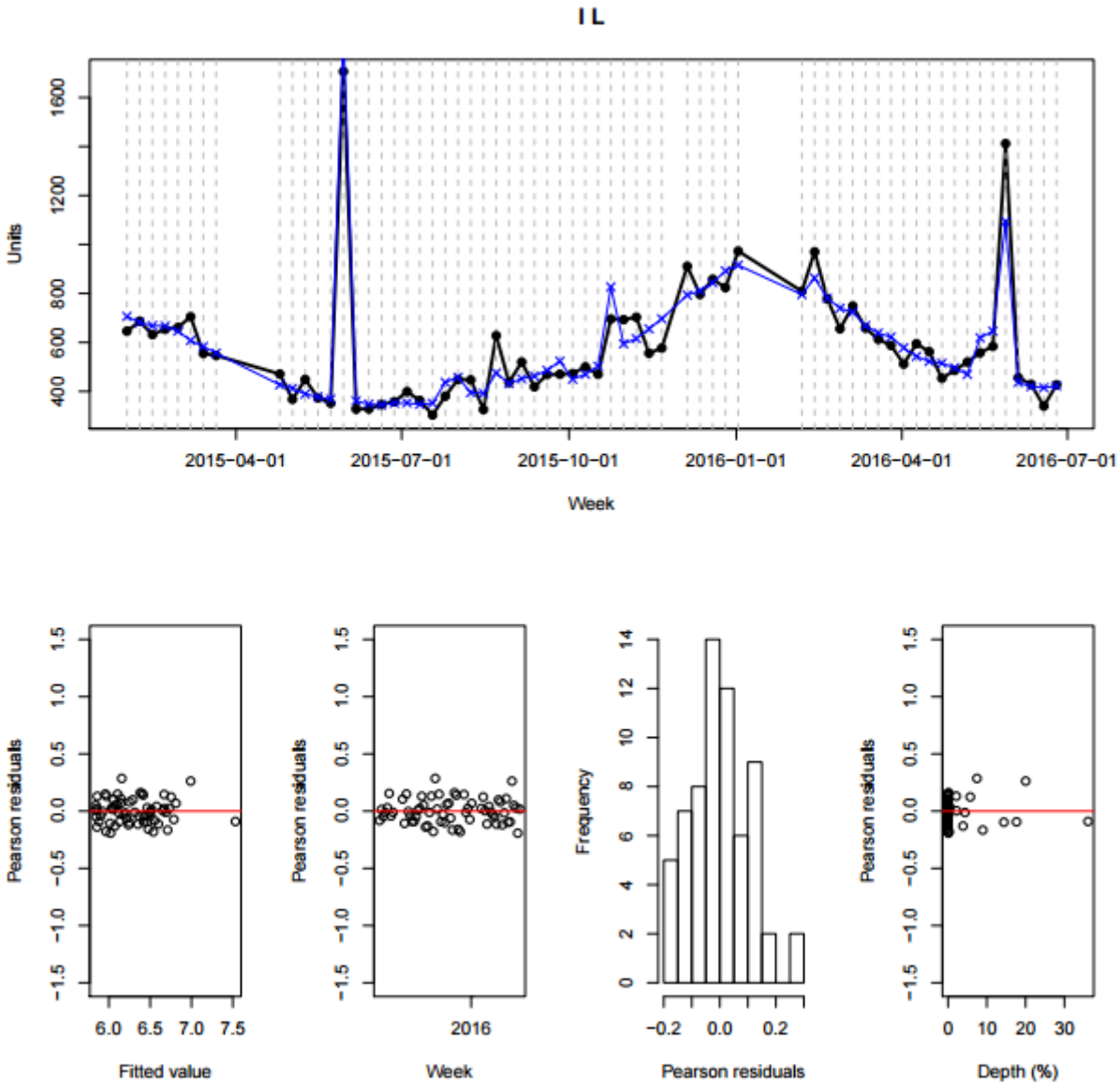


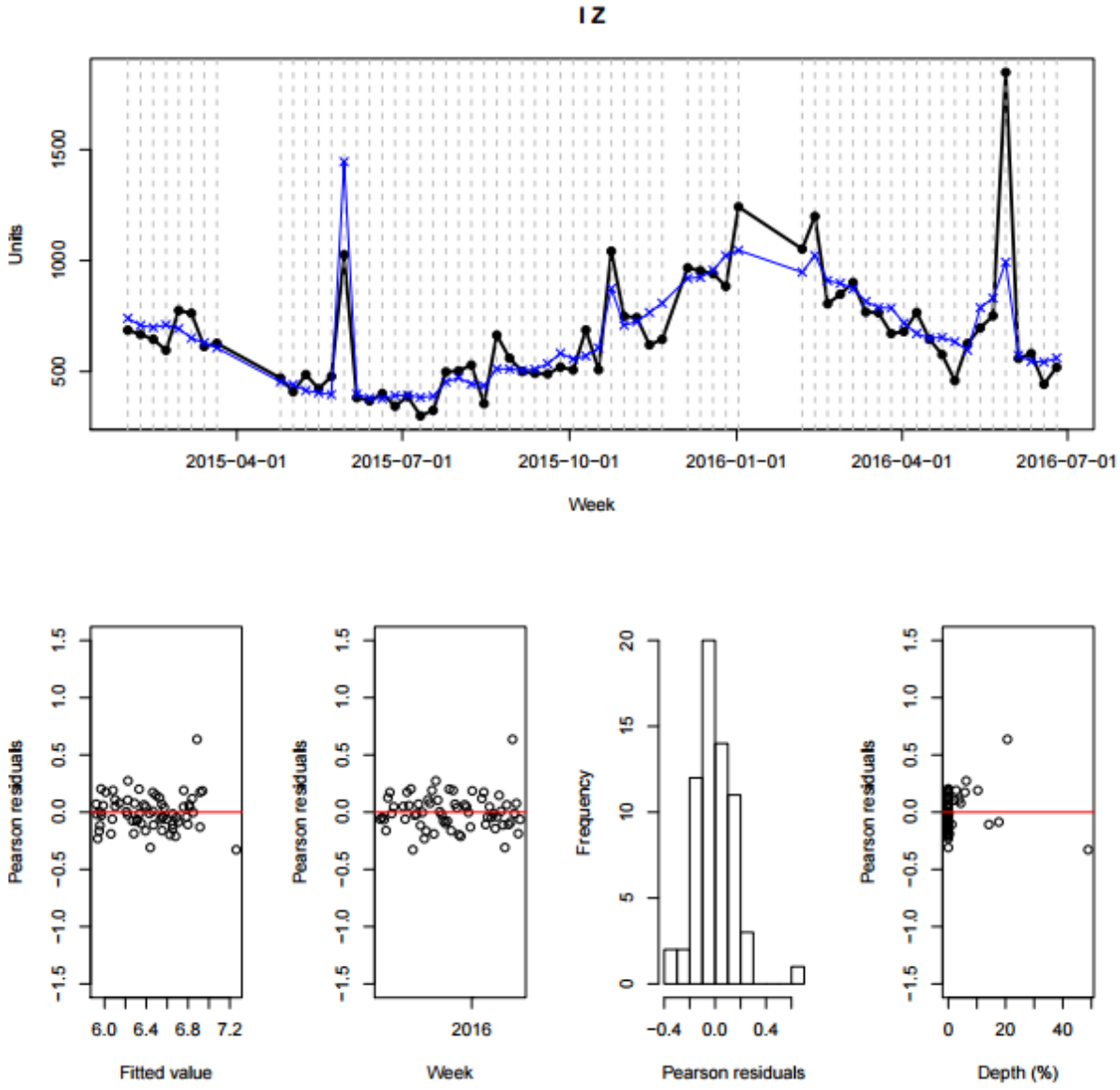




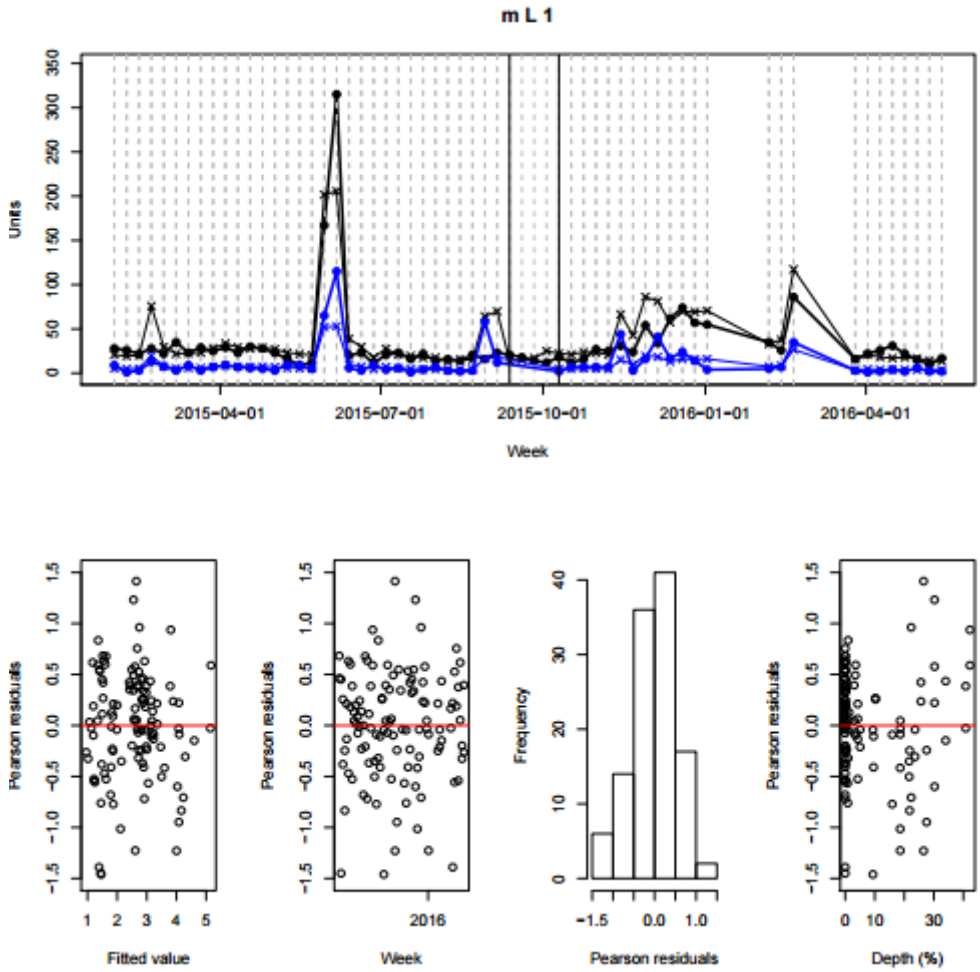


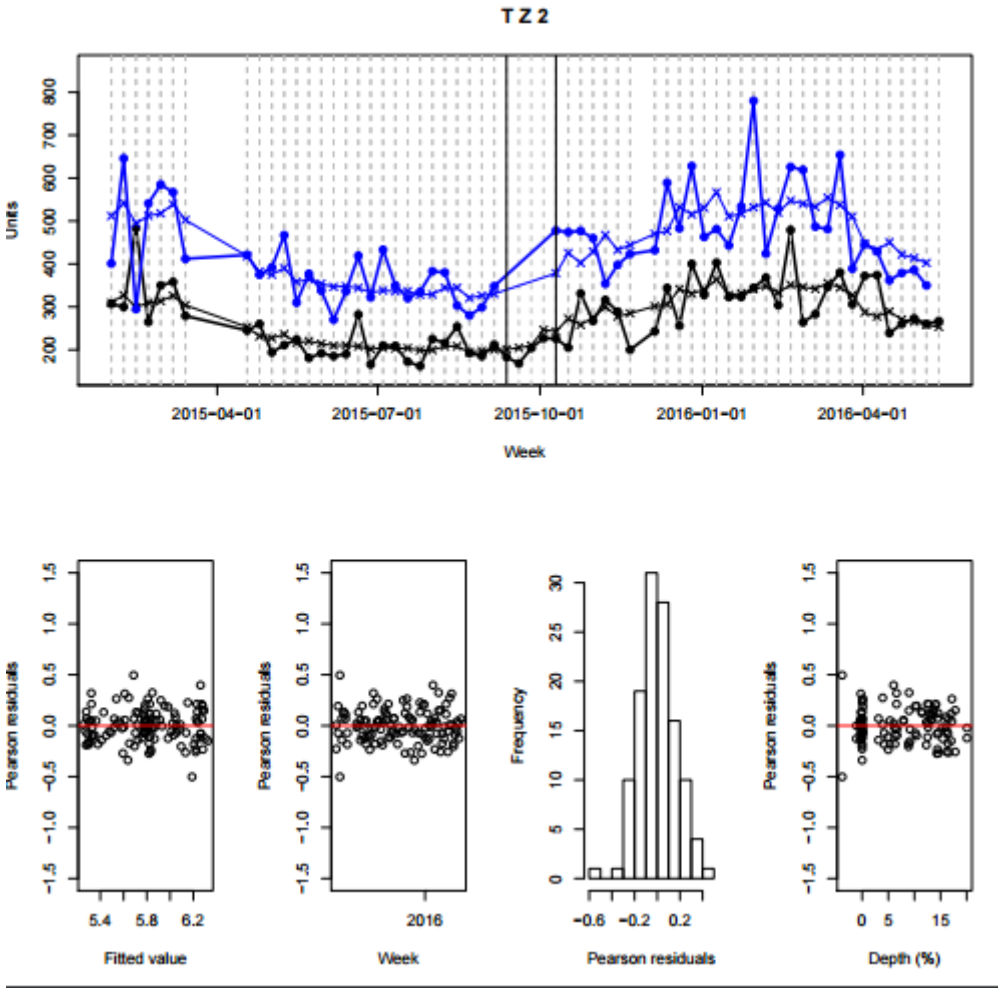


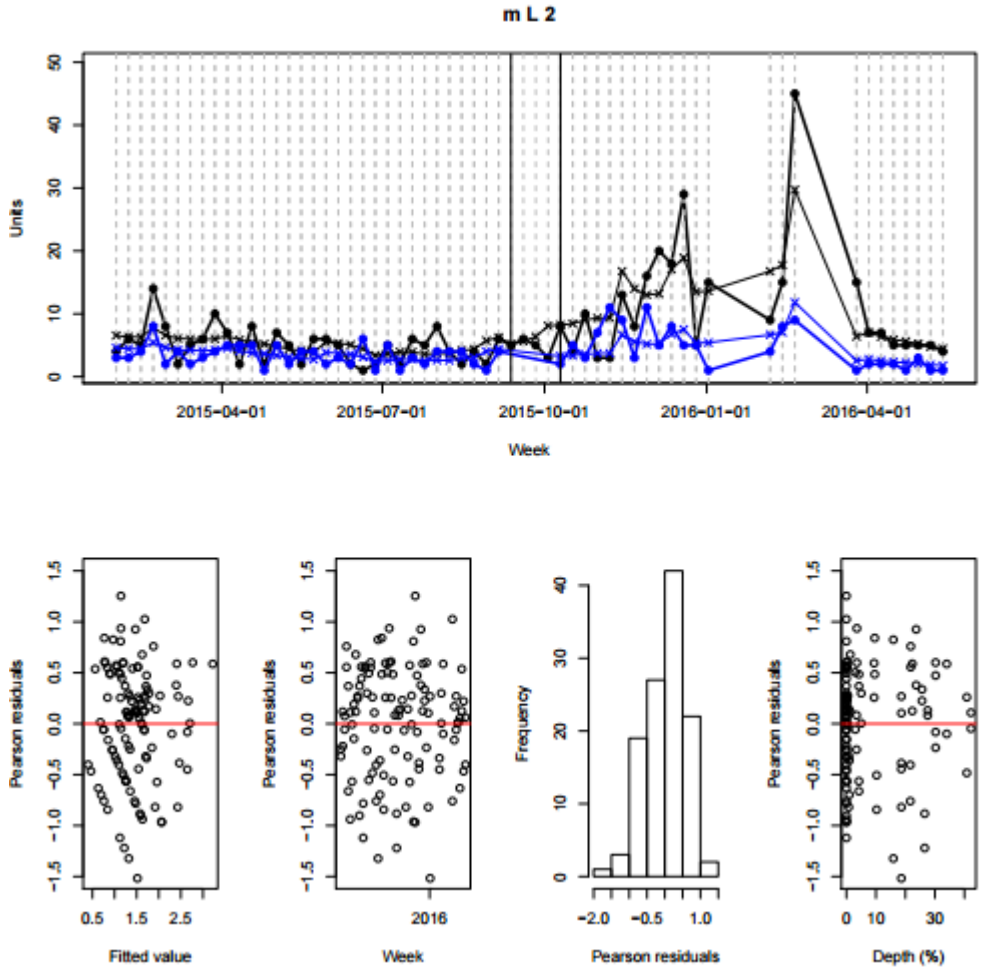


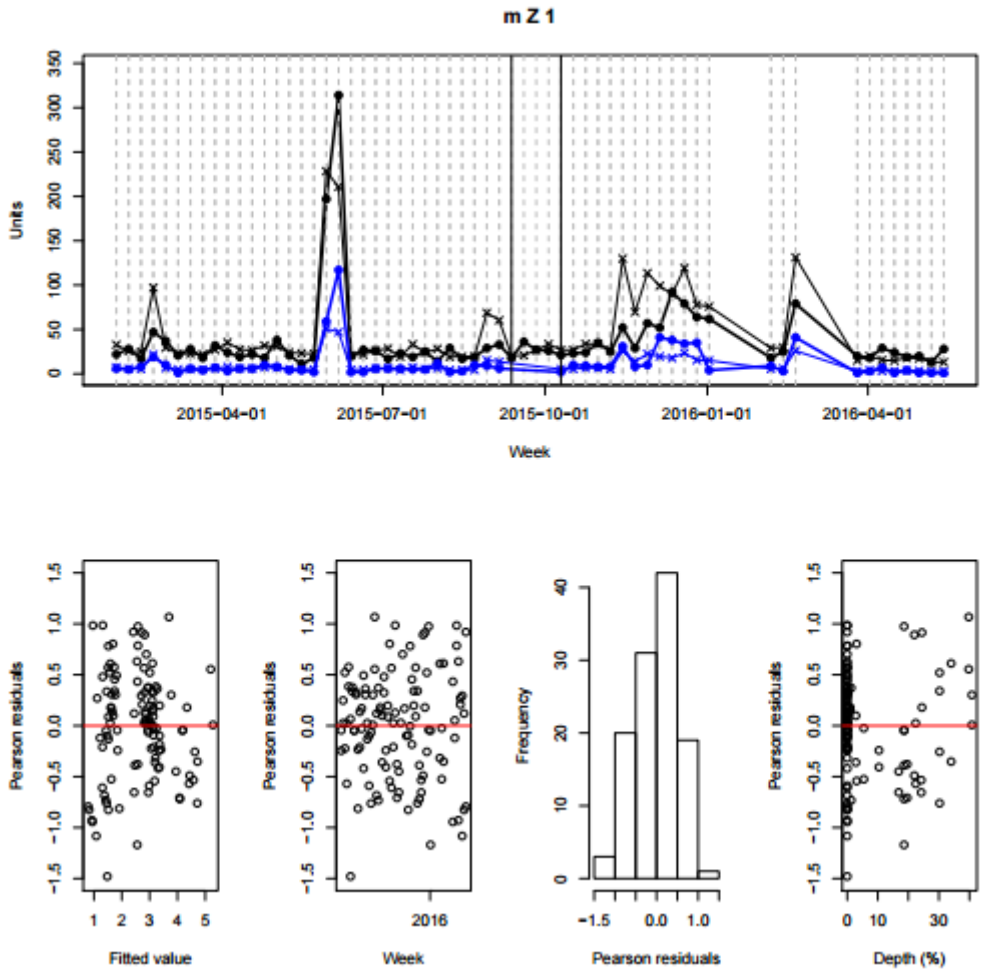


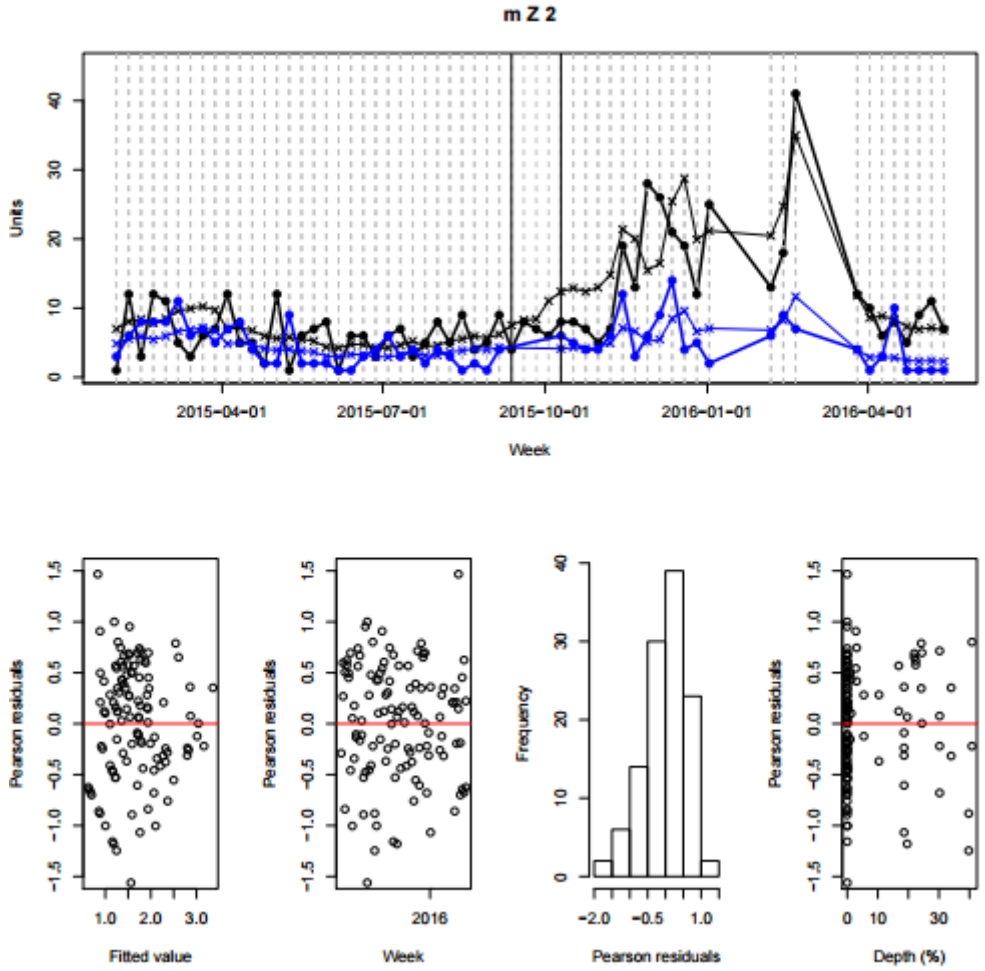
APPENDIX 2: Model fit For Study Two











APPENDIX 3: The impact of pricing promotions on SS vs SF variants – trimmed results

Other Periods

Size	Estimate (L vs R)	95% CI Lower (L vs R)	95% CI upper (L vs R)	P-Value (L vs R)	Estimate (Z vs R)	95% CI Lower (Z vs R)	95% CI upper (Z vs R)	P-Value (Z vs R)
T	0.9	0.85	0.953	<0.001	0.894	0.844	0.947	<0.001
m	0.965	0.915	1.017	0.183	0.959	0.909	1.012	0.127
l	0.927	0.854	1.007	0.073	0.929	0.854	1.009	0.081

Month End,
Trimmed

Size	Estimate (L vs R)	95% CI Lower (L vs R)	95% CI upper (L vs R)	P-Value (L vs R)	Estimate (Z vs R)	95% CI Lower (Z vs R)	95% CI upper (Z vs R)	P-Value (Z vs R)
T	0.904	0.852	0.959	0.001	0.895	0.843	0.95	<0.001
m	1.009	0.963	1.058	0.693	0.99	0.943	1.039	0.687
l	0.925	0.885	0.967	0.001	0.843	0.81	0.876	<0.001

APPENDIX 4: The Impact of pricing promotions on SF variants across different pack-sizes – trimmed results

Other Periods,
Trimmed

Variant	Estimate (m vs l)	95% CI Lower (m vs l)	95% CI upper (m vs l)	P-Value (m vs l)	Estimate (T vs l)	95% CI Lower (T vs l)	95% CI upper (T vs l)	P-Value (T vs l)
Z	0.987	0.913	1.066	0.734	1.035	0.954	1.124	0.403
L	0.966	0.896	1.043	0.378	1.047	0.966	1.135	0.258

Month End,
Trimmed

Variant	Estimate (m vs l)	95% CI Lower (m vs l)	95% CI upper (m vs l)	P-Value (m vs l)	Estimate (T vs l)	95% CI Lower (T vs l)	95% CI upper (T vs l)	P-Value (T vs l)
Z	0.913	0.878	0.95	<0.001	1.035	0.983	1.091	0.187
L	0.836	0.798	0.875	<0.001	0.969	0.915	1.026	0.275

APPENDIX 5: Hypothesis 8 and 9 - trimmed results

Size	Variant	StoreSet	Estimate (Diet section vs not)	95% CI Lower	95% CI upper	P-Value
T	**L**	**1**	0.995	0.989	1.001	0.098
T	**L**	**2**	0.998	0.993	1.004	0.533
T	**Z**	**1**	1.001	0.995	1.007	0.832
T	**Z**	**2**	0.997	0.991	1.003	0.371
m	**L**	**1**	0.996	0.975	1.017	0.691
m	**L**	**2**	0.974	0.954	0.995	0.017
m	**Z**	**1**	0.995	0.975	1.016	0.629
m	**Z**	**2**	0.966	0.944	0.988	0.003

APPENDIX 6: Ethical clearance

Dear Jo-Anne Clemitson

Protocol Number: **Temp2016-00832**

Title: **J Clemitson, Application for Guide**

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

Adele Bekker

APPENDIX 7: Permission letter

SHOPRITE Checkers

REG. NO. 1929/001817/07 (PTY) LTD

5/16/2015

PO Box 215
Brackenfell 7561
Western Cape
South Africa

Approval For Use Of Shoprite Group Sales Data

The use of Shoprite Group LTD sales data by researcher Jo-Anne Clemitson, for inclusion in the required integrative business research report is approved. The retail chain name and company specific details should however remain confidential and anonymity for Shoprite Holdings LDT

Any information derived from the provided data, subject to anonymity being maintained, may be used e.g. for publication, by the researchers.

Andre Van Aswegen
Projects Department

REGISTERED OFFICE: CNR WILLIAM DABS & OLD PAARL ROADS, PO BOX 215, BRACKENFELL, 7561, SOUTH AFRICA
TEL: +27 (0) 21 980-4000 FAX: +27 (0) 21 980-4050 www.shopriteholdings.co.za