The effectiveness of store-wide theme weeks by Dutch retailers

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Management Summary

A new phenomenon is emerging in the Dutch retailer market, called store-wide theme weeks which differ from seasonal and regular price promotions. A store-wide theme week consists of real price promotions, promotes a portfolio of products across various categories, is supported by external media, built around a central store-wide theme and lasts for several consecutive weeks. But to what extend are store-wide theme weeks by Dutch retailers effective to increase brand and category sales?

This problem statement is roughly divided in two separate research questions: are store-wide theme weeks effective for increasing brand and category sales and how effective are price promotions during store-wide theme weeks. In order to answer these questions, the SCAN*PRO model is adjusted and implemented for brand and category sales. The dataset consists of panel scanner data collected by GFK in the Netherlands. It contains information about the weekly volume and revenues of brands and categories of retail chain Albert Heijn. The well-known Dutch store-wide theme week called 'Hamsteren', will be used to determine whether store-wide theme weeks are effective for increasing brand and category sales. The SCAN*PRO model will be used to analyze different national and private label brands (with a market share larger than 3%) and four different categories. The key independent variables in this study are the price index (β1), the dummy for store-wide theme weeks (β2) and the interaction effect (β3) and these key variables, together with some control variables, are analyzed separately for each brand and category.

The results of the analysis indicate that, for brand sales, store-wide theme weeks increases the sales of beer, soft drink and chips brands. However, price promotions during store-wide theme weeks are only effective for shampoo brands. For the category, the results indicate that the chips category is the only category which expands its volume during store-wide theme weeks. Again, a price promotion during a store-wide theme week is only effective for the shampoo category.

For the manufacturer this implies that beer, soft drink and chips brands already increase their volume during store-wide theme weeks without any form of price promotions. Moreover, manufacturers should only use price promotions for their shampoo brands since price promotions during store-wide theme weeks are only effective for increasing shampoo brand sales. For the retailer, it implies that only the chips category expands its volume from store-wide theme weeks. Moreover, a retailer can emphasize that during store-wide theme weeks price promotions are efficient for increasing sales of shampoo brands.

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Chapter 1. Introduction

Chapter 1 starts with the introduction of store-wide theme weeks and is followed by the problem indication. Afterwards the problem statement and research method will be discussed. In 1.5 the academic and managerial relevance are presented and the chapter ends with the structure of this study.

1.1 Introduction

Most of the people know regular price promotions in which one or a few brands of the same category are promoted. However, a few years ago a new phenomenon has been rapidly emerging in the Dutch retail environment; store-wide theme weeks. In contrast to regular price promotions, retailers of various retail chains use their resources and scale to implement these widely advertised store-wide theme weeks where retailers heavily promote many brands across a broad set of categories across multiple weeks. Moreover, store-wide theme weeks are continuing throughout the year and the themes are diverse. For instance, in the summer the central theme can be barbeque in which barbeque equipment (non-food) and meat platters/sauces (food) are on sale. There are also Spanish weeks in which products related to Spain (olives, orange juice, chorizo and wine) can be bought at a discount. There is also a typical Dutch theme called 'Hamsterweken' which is named after the typical Dutch phenomena of buying products in bulk in order to stock ('Hamsteren'). During these Hamster weeks the emphasis is on steep price discounts of multiple products across various categories.

These characteristics are all in contrast to regular price promotions which mostly contain one or a few brand in the same category (Raju, 1992; Mulhern and Padgett, 1995). Moreover, store-wide theme weeks also differ from seasonal price promotions since they are (most of the time) not limited to a special season. Sometimes, store-wide theme weeks, such as barbeque weeks, are limited to a season. However, these store-wide theme weeks still differ from seasonal price promotions by offering a larger range of barbeque related brands/product across various categories (sauces, meat) both food and non-food (barbeque equipment). Store-wide theme weeks communicate their separate price promotions as one large store-wide promotion but is there a reason for this new emerging type of store-wide theme weeks in the Dutch market?

Researchers noted a change by consumers which demand a more (pleasant) shopping experiences (Pine and Gilmore, 1999; Kim, 2001; Bäckström and Johansson, 2006; Wolf,

2010) and store-wide theme weeks seems to communicate such a message. However, since these store-wide theme weeks are not like regular price promotions and seasonal promotions, this study will specify the different aspects and effects of store-wide theme weeks.

1.2 Problem indication

The objective of store-wide theme weeks is the same as all other promotions, which is to increase sales of the brand (manufacturer) and increase sales of the category/store (retailer) (Mulhern and Padgett, 1995). These regularly store-wide theme weeks break with regular price deals. Instead of regular price deals for individual brands, these store-initiated promotions are heavily advertised nationally, typically lasting for several weeks, and the price promotion involves a broad set of different brands across many categories of groceries. The effects that these kinds of price promotions during store-wide theme weeks have on products, categories, stores and consumers might differ from regular price promotions due to their divergent nature. Existing research does not yet address these kinds of store-wide theme weeks with all their accompanying characteristics.

1.3 Problem statement

Figure 1 represents the conceptual model of the thesis. The independent variable store-wide theme weeks influence the dependent variables of brand and category sales. Moreover, price and non-price promotions influences consumers and are expected to moderate the impact of theme promotions on brand and category sales.

The need for improved information and better insight are essential in order to determine if store-wide theme weeks are effective for brand and category sales. The following problem statement will be the central question on which this study is based:

To what extend are store-wide theme weeks by Dutch retailers effective to increase brand and category sales?

In order to be able to answer the problem statement, the problem will be subdivided into multiple research questions:

How do retailers schedule store-wide theme weeks with regard to duration, frequency and time of the year?
How effective are price promotions during store-wide theme weeks and does the promotion effectiveness differs from regular price promotion weeks?
Are store-wide theme weeks able to increase total category sales at the retailer?

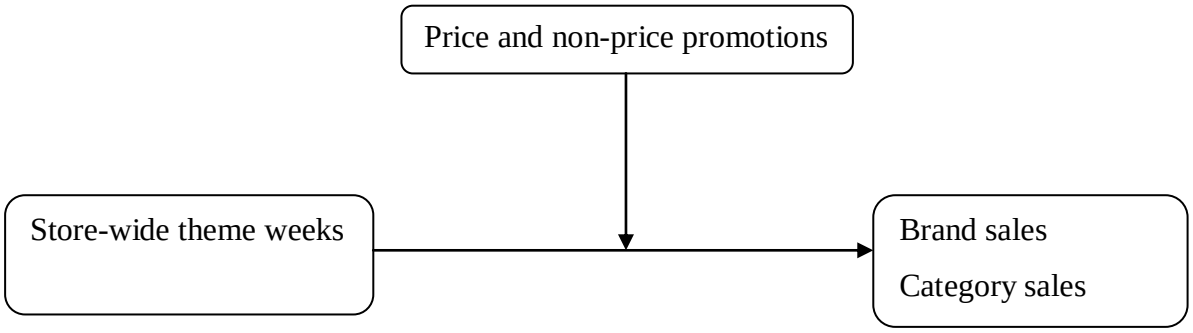

Figure 1: Conceptual model

1.4 Research method

The data used in this study is based on panel scanner data of Albert Heijn, the largest retail chain in the Netherlands. It consists of scanner panel data in the period from January 2007 until December 2009. The data is obtained from GFK, a well-known multinational market research company in the Netherlands. The data is used to give an answer to the three research questions. The first research question is answered by means of summary statistics. The second and third research question will be answered using the SCAN*PRO model (adjusted) on brand and category level. The SCAN*PRO model is used worldwide by various academic applications and has already 3000 reported commercial applications (Andrews, Currim, Leeflang and Lim 2008; Heerde, Leeflang and Wittink, 2002). In chapter 4 a more extensive explanation will be presented regarding the SCAN*PRO model.

1.5.1 Academic relevance

There is an abundance of literature on price promotion effects for both the manufacturer and the retailer. The manufacturer wants to increase sales of the brand while the retailer wants to increase the category/store sales (Mulhern and Padgett, 1995; Volle, 2001). These regular price promotions have various effects which has both positive and negative effects on the sales of the product and the sales of other categories/the store (Mulhren and

Leone, 1991; Walters, 1991; Gedenk, Neslin and Ailawadi, 2006). Research has also been conducted on the effects of a price promotion combined with large events (Grohs, Wagner and Vsetecka, 2004; Banaher, Bonfrer and Dhar, 2008; Keller, Deleersnyder and Gedenk, 2014). The literature also focusses on research conducted on price promotions at different holidays and seasons (Warner and Barsky, 1995; Chevalier, Kashyap and Rossi, 2003). Moreover, some literature is available on clothes shops and restaurants with the usage of a central theme (Foster and McLelland, 2015). They, Foster and McLelland (2015), call for an increase in different type of retailers which is why this study responds to this call, by expanding the usage of a central theme to a different type of retailer (supermarket chain), by means of store-wide theme weeks.

1.5.2 Managerial relevance

Since there is no academic literature supporting store-wide theme weeks, it is difficult for managers and retailers to make fully use of store-wide theme weeks. Managers of manufacturers have to decide whether price promotions during store-wide theme weeks are the right choice for their brands to increase brand sales. Without any insights, manager can only guess if the effects of store-wide theme weeks for their brand are positive of negative. Moreover, only a few managers might be hesitant to invest money or make trade promotion agreements if the effects of store-wide theme weeks are unknown.

However, retailers need these price promotions for their store-wide theme weeks and the creating of insights might result in a better negotiation position. Moreover, different price and non-price promotions can positively but also negatively influence sales of brands and categories in the store. Additionally, a store-wide theme week might be costly to implement throughout a retail chain which underline the importance of a solid academic background. By creating a better insight in the effects and effectiveness of store-wide theme weeks, managers and retailers are able to overcome these difficulties.

1.6 Structure of the thesis

In the next chapter the relevant theory regarding store-wide theme weeks and its effect on brand and category sales will be examined. The main aim of this chapter is to explain the various constructs in the conceptual model and determine what has already been examined in the literature which is relevant to this topic. In chapter three, the moderators influence on the

main relationship will be explained. In chapter four the empirical part of this study is described. In this chapter the data and the (adjusted) SCAN*PRO model will be explained. In chapter five, the results of the (adjusted) SCAN*PRO model will be presented for brands and categories, and chapter six contains the conclusions, implications and limitations of this study.

Chapter 2. Main effect

To examine store-wide theme weeks, chapter 2 will first give a literature review of the effects of regular price promotions on brand and category sales. Afterwards, a description of store-wide theme weeks will be given and insights in the experiences of a store-wide theme weeks will be examined.

2.1 Literature review on the effects of regular promotions on brands and category sales

Figure 2 provides an overview of possible effects that promotions can have for manufacturers (sales of brand) and retailers (sales of category/store). Price promotions are used to increase sales which can be achieved in various ways (Gedenk, Neslin and Ailawadi,

Figure 2: Effects of promotions

2006). As figure 2 shows, a distinction is made between the pre-promotion dip, sales of the promoted product, store effects, and post-promotion dip.

The pre-promotion dip consists of deceleration which occurs before the promotion. Deceleration is the willingness of consumers to decrease their inventories below a normal level (Mela, Jedidi and Bowman, 1998). The reason for doing so is that consumers anticipate promotions. Consumers wait until there is a promotion in order to restock their inventory with their preferred brand for a lower price (Mela, Jedidi and Bowman, 1998; Neslin and Mace, 2004). Interesting to note is that consumers actually plan for these kind of decelerations and promotions (Blattberg, Eppen and Lieverman, 1981; Gonul and Srinivasan, 1996). An important factor that influences deceleration is promotion predictability, which is the process of anticipating and planning for promotions. It can even contribute to an increase in deceleration since higher predictability creates better insights in the availability of the next

promotion (Krishna, 1992). Deceleration leads to a decrease in sales for brands (manufacturer) and categories (retailer) since consumers wait for a promotion of their preferred brand and thereby neglect promotions of other brands Krishna (1994). Moreover, the decrease in sales also decreases the gain of the total promotion period since the manufacturer has to compensate the loss in sales/gains in the period before the promotion (Mace and Neslin, 2004). In sum, deceleration leads to decrease in inventory of consumers which anticipate a promotion. Therefore, there is a decrease in sales and margin prior to the promotion period for the manufacturers while the retailer experiences a loss in sales prior to the promotion period.

The sales of the promoted product consist of short-term and long-term effects for the manufacturer and the retailer. Short-term effects are the effects which occur during the promotion period while long-term effects are the effects that influence sales after the promotion stops. In the short-term, sales increase for the promoted brand (and thus the manufacturer) due to attracting consumers from other stores, brand and category switching, acquiring new users, and purchase acceleration (Gedenk, Neslin and Ailawadi, 2006). Furthermore, purchase acceleration influence the amount of products that a consumer buys in the short-term. Instead of buying the quantity the consumers initially wanted, the consumer buys and consumes more of the promoted brand which increases the sales of the brand (Gedenk, Neslin and Ailawadi, 2006). Stockpiling results in a similar pattern, except that consumers do not consume the extra products but save them for later. This long term approach leads to a decrease in sales for the brand after the promotion is ended. Another long-term effect is the effect of a promotion on loyalty. Manufacturers try to increase brand loyalty by promotions, while retailers aim for store loyalty. When a product is promoted it may lead to a decrease in loyalty since a promotion can decreases the reference price which makes the product and/or the store more expensive during the next visit which is negative for both the manufacturer (decrease sales) and the retailer (decrease margin) (Gedenk, Neslin and Ailawadi, 2006). All these various short- and long-term effects of promotions influence sales for the brand and/or the store in a positive or negative way.

Other effects which occur during promotions are store effects. Mulhern (1989) and Walters (1991) specify that retail promoting is an activity which influences more than the sales of the product itself. It expands to the original promoted category of the product and the non-promoted categories and products (cross-category effects). In the promoted category, the sales of the promoted brand increases which is positive for the manufacturer but the sales of other brands in the same category decreases which can be negative for the retailer in terms of

margins (Mulhren and Leone, 1991). In the non-promoted category, the effects are divided into two different terms; substitutes and complements. In the case of substitutes, which are products that are interchangeable, the promotion of a product reduces sales of a substitute product. This effect can be positive or negative since a manufacturer gains sales if his brand is on sale but loses sales if a competitor promotes. For the retailer substitutes can either increase or decrease its profits based upon the differences between the margin of the promoted product and the substitute (Mehta and Ma, 2012). The main reason for interest in cross-category effects is the relationship between the promoted product and its complement products. For example, a promotion of a hot dog bun increases the sales of hot dog meat, this can favourably influences complement brand sales for the manufacturer as well as increase sales of a complement category for the retailer (Mehta and Ma, 2012; Gedenk, Neslin and Ailawadi, 2006). Moreover, non-promoted categories and products are influenced in another way. In addition to category effects, store switching could occur which increases store traffic and results in an increase in brand sales as well as overall sales for the retailer (Hruschka, Lukanowicz and Buchta, 1999). Harlam, César and Trounce (2007) argue that store switching is a significant phenomenon which can be responsible for an increase of 45% which is due to the store switching behaviour of consumers. However, it is argued by Fox and Hoch (2005) that a fair percentage of consumers are cherry-pickers. This indicates that these cherry-pickers search for the best promotions in order to decrease the costs of their shopping basket. The strategy of the cherry-pickers is to visit multiple stores and only buy the promoted products in each store. On the one hand, promotions lead to cherry-pickers who only buy the promoted product, but on the other hand, there are also store switching consumers who buy all their groceries at the promoted stores. The sales of a brand are positively influenced by store switching and complements while substitutes can decrease sales. The sales of the retailer are positively influenced by a complement category, store switching effects and can be positively influenced by substitutes in terms of margins.

Finally the post-promotion dip occurs after a promotion is ended and consists of stockpiling. It was already briefly mentioned that stockpiling is the process of buying extra products in order to save them for later and stock these products at home. In the end, this behavior of consumers' leads to a decrease in sales of the brand after the promotion period which results in lower brand sales for the manufacturer and lower sales for the retailer since consumers first deplete their inventory before buying new products again (Krishna, 1994). Assunçao and Meyer (1993) suggest that stockpiling is a trade-off between inventory costs and savings on a preferred brand. Krishna (1994) also shows that consumers are more likely

to stockpile a preferred brand since consumers like to avoid stock-outs and consume more of their preferred brand. Moreover, consumers may even neglect a promotion of another brand and wait for their preferred brand to be promoted. In sum, consumers have three main reasons for stockpiling: saving money on a preferred brand, consuming more of a preferred brand and avoiding stock-outs at home, which leads to a decrease in sales for the manufacturer and the retailer after the promotion period has ended.

2.2 Description store-wide theme weeks

In order to advance even further into the topic of store-wide theme weeks, there is a need for a clear description. Volle (2001) provides a basis, which are three conditions that have to be simultaneously met in order to call a promotion a store-level promotion. First, the deals need to be real price promotions and not normal priced products. Second, a portfolio of products needs to be promoted not one product or category. Third, at least one source of external media has to be used. This study elaborates on these conditions by adding two extra conditions, that need to be simultaneously met, in order to call a store-level promotion a store-wide theme week. These two extra conditions are based upon Dutch retailers such as Plus with 'Hollandse Prijs weeks', Albert Heijn with 'Hamsteren' and C1000 with 'Euroweken'. But there are also retailers like Carrefour in the Belgium and French market which has 'De straffe maand' and 'le mois extra ordinaire', Kroger in the United States has a store-wide theme week called 'Cart Buster Savings Event' and Alcampo in Spain promotes with 'Ofertas todo a 1€'. They all satisfy the three conditions of Volle (2001) and share certain characteristics like a store-wide central theme and promotion duration of several consecutive weeks. Therefore, the fourth condition is that the promotion has to be built around a central store-wide theme, not a small theme for an isolated product or category. Condition five is that the promotion period has to last for several consecutive weeks, not a separate one week theme promotion. In sum, a promotion is called a store-wide theme week if it consists of real price promotions, promotes a portfolio of products across categories, is supported by external media, built around a central store-wide theme and lasts for several consecutive weeks.

2.3 Store-wide theme week experiences

On the one hand, store-wide theme weeks of Dutch retailers communicate a price promotion, but on the other hand the Dutch retailers also emphasis that the saving process

(doing groceries) can be "fun". This notion of fun in the retailing environment is not new. According to the literature, consumers are divided in two groups based upon utilitarian or hedonic needs. Consumers motivated by utilitarian needs have the desire to shop efficiently, rationally, and are task-oriented to the purchasing of products (Babin, Darden and Griffin, 1994), while consumers motivated by hedonic needs have the desire to enjoy the experience which can be caused by entertainment (Babin et al., 1994; and Childers et al., 2001).

The previous part specified the two different types of consumers and over the past years, consumers have been demanding more enjoyable (hedonic) experiences in their consumption activities (Pine and Gilmore, 1999; Kim, 2001; Kozinets et al., 2002; and Bäckström and Johansson, 2006). Research by Wolf (2010) takes it even one step further by arguing that shopping and entertainment have emerged into "shoppertainment". Pine and Gilmore (1999) argue that consumers are increasingly looking for more enjoyment during shopping. They state that due to this development, retailers are attempting to facilitate the "buying of experiences". Retailers use interactive displays and other engaging promotional materials to evoke emotions and sensations which make the (shopping) experience unique and individual. Therefore, there seems to be an upcoming trend that consumers demand a greater degree of entertainment during their shopping activities. In the research of Bäckström and Johansson (2006) both retailers and consumers agree that there is an increase in demand for positive experiences. Diep and Sweeney (2008) elaborated on this notion and concluded that that the shopping experience of a consumer can be influenced by the fun provided in the store. The increases of experiences centered on groceries are also observable in Dutch cities. In Amsterdam and Breda, retail chain Jumbo opened a food plaza and in Rotterdam the Markthal was recently build. Both shopping formats offer consumers what they aspire, namely a more (pleasant) experiences by giving consumers the opportunity to experience a vast variety of new, special, nostalgic and exclusive foods and also try/buy new/distinct combinations and tastes. All the food is prepared in front of the consumer which contributes to the experience. The construction of these formats indicates that consumers indeed demand an increase in enjoyable experiences that can be fulfilled by providing a pleasant environment.

The underlying motive for store-wide theme weeks is, just like for other regular promotions, to positively influence brand sales (for manufacturers) and category/store sales (for retailers). When compared to regular promotions, store-wide theme weeks use multiple aspects to achieve its goal. Getz (1993) argues that retailers appeal to the senses of sight (lighting), sound (music), smell (fresh baked bread), touch (interaction), and food (tasting of products) to increase the duration of a shopping trip, and therefore, the average amount spend.

Store-wide theme weeks are also used to increase positive word-of-mouth (Pine and Gilmore, 1999). Moreover, Ginsberg and Morris (1999) argue that due to the increase in online competition, contemporary stores should offer a more than average experience in order to survive in this new environment. That is why a unique in-store environment can also help to compete against online brands and is able to stand out from its (online) competitors (Foster and McLleland, 2015). The theme promotion is identified more easily with the corresponding stores since there is a greater degree of differentiation compared to the competitors. This indicates that a theme promotion is likely to be better recalled and recognized than a regular promotion (Foster and McLelland, 2015). Furthermore, store appearance can positively influence store choice (Gilmore et al, 2001; Koelemeijer and Oppewal, 1999). This might indicate that a store-wide theme week can work if it is supported by promotion material, which is corresponding with the national advertised promotion. Moreover, creating more memorable and attractive experiences for consumers is also a way to attract new consumers to the store (Gottdiener, 1997; Pine and Gilmore, 1999; Wolf, 2010). Consumers who enjoy their shopping experience, engage in more purchases (Kim and Kim, 2008), linger longer in the store (Bäckström and Johansson, 2006), and the entertainment context has a stronger impact on consumer satisfaction (Soderlund and Julander, 2009). It can even add value to the goods and services provided in the store (Newsom, Collier and Olsen, 2009) and create consumer enjoyment, positive brand attitude and brand loyalty (Foster and McLleland, 2015). All these effects mentioned above can be caused by a store-wide theme weeks and positively influence brand and category sales.

Apart from all the positive effects Sands, Oppewal and Beverland (2009) argue that themed events are mostly effective for specialty stores. This is due to the nature of grocery shopping which is still more focused on utilitarian values than hedonic values. Moreover, a specialty store is literally built around a theme from the start, whereas a grocery store has a fixed store layout. Despite all the positive effects, it is important to be critical about the effects of store-wide theme weeks which are not yet thoroughly studied.

To conclude, a store-wide theme week positively affects (non-promoted) brand and category sales in multiple ways. Brand sales profit from pleasant experiences created by store-wide theme weeks because it results in consumer enjoyment which positively influences brand attitude and brand loyalty. Store-wide theme weeks can even add value to services and goods while it is also a way to compete against online brands due to the unique experience of the shopping process. Category sales profit from store-wide theme weeks when the consumer enjoys the experience which increases its duration of the shopping trip and results in an

increase of the average amount spend. Moreover, a pleasant experience increases positive word of mouth and helps to stand out, differentiate and compete against (online) competitors. A unique store appearance can also positively influence store choice and attract new consumers while it has a stronger link with consumer satisfaction. Both brand and category sales are positively influenced, in general, by store-wide theme weeks and therefore the following two hypotheses are developed:

Hypothesis 1: Store-wide theme weeks positively affect brand sales

Hypothesis 2: Store-wide theme weeks positively affect category sales

2.4 Conclusion

Price promotions have various positive and negative effects on brand and category sales. However, a store-wide theme week communicates more than only a price promotion since it also communicates fun. Moreover, it creates a pleasant experience for the consumer which results in multiple positive effects that influences (non-promoted) brands and categories and ultimately increases brands and category sales.

Chapter 3. Moderators

In chapter 3 an overview will be provided of different promotions types. Price promotions and non-price promotions are examined in more detail since both types of promotions are used during store-wide theme weeks.

3.1 Promotion types for brands

Store-wide theme weeks makes use of both price and non-price promotions which are also the main groups of promotions in retailing (Barat and Paswan, 2005). During store-wide theme weeks many brands are on sale (price promotions) while sings, displays, point of purchase material and national advertising (non-price promotions) make the consumer aware of these price promotions. As the names describe, the main difference between these two types of promotions is the involvement of price. As long as a promotion does not involve a price element, the promotion is called a non-price promotion (Pauler and Dick, 2006). Price promotions focus on discounts for the consumer while non-price promotions attract the attention of consumers.

As shown in figure 3, price promotions consist of temporarily price reduction (TPR), promotion packages, coupons, and rebates. Non-price promotions are divided into two separate groups. One group is the supportive non-price promotions whereas the other group is

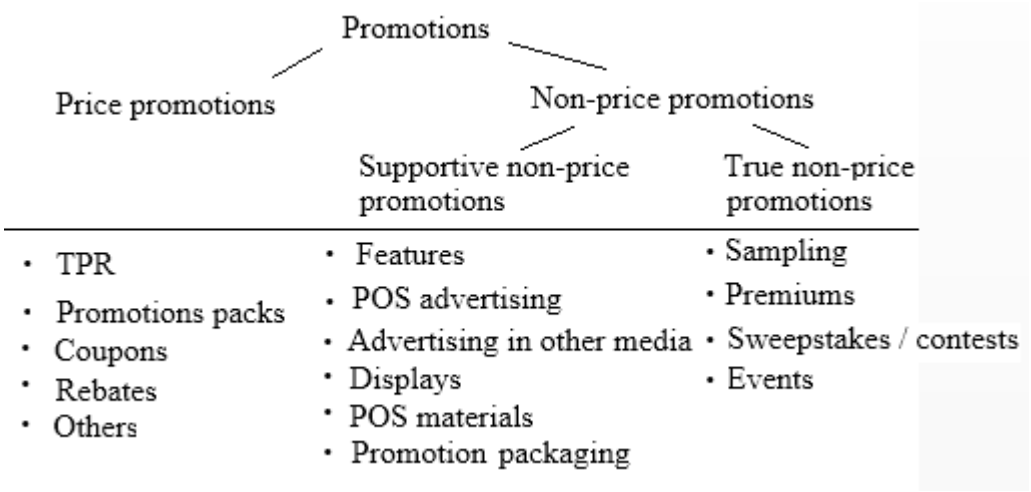

Figure 3: Price- and non-price promotions

called true non-price promotions. The difference is that the first is used to draw attention (support) to the price promotions and the latter focuses on the brand, category or store itself (Gedenk, Neslin and Ailawadi, 2006). Supportive non-price promotions consists of features, point of sales advertising, advertising in other media, displays, point of sales materials, and promotion packaging. True non-price promotions consist of sampling, premiums, contest, and events.

During store-wide theme weeks, retailers use every week different brands/products for price promotions while using sings, display, magazine and national advertising (supportive non-price promotions) to further support the store-wide theme week.

3.1.1 Price promotions

Retail chains use real price promotions in their store-wide theme weeks. Although these price promotions offer the same discounts, they can influence consumers differently because these promotions are framed in other ways. This is due to the prospect theory which argues that people evaluate in a relative way in which the objective value can be the same but the 'emolumentum' (subjective value) is different (Kahneman and Tversky, 1979). Therefore, differences in price promotions can have different effects which is why the research of Sinha and Smith (2000) examined the differences in framing between 50% discount, 2 for the price of 1, and buy 2 get 50% off. For the transaction value, which is the satisfaction of taking advantage of a discount, the 50% discount was perceived best, since it allows the consumer to buy the same product much cheaper. However, volume/extra product promotions are seen more as a gain by consumers which feel like they freely gain extra products/volume (2 for 1). These two types of framing, 50% discount and 2 for 1 promotions, are evaluated by the consumers as the best ways to frame a promotion (Sinha and Smith, 2000).

Krishna, Briesch, Lehmann and Yuan (2002) contributed to these finding by arguing that percentages are better suited for low prices, since a discount of 25% on a four dollar product is better evaluated than a one dollar discount for a four dollar product since 25% discount feels like a large discount. The opposite is true for more expensive products that are advised to state their monetary discount instead of a percentage which favors a discount of 300 dollar on a 3000 product instead of a 10% discount.

3.1.2 Non-price promotions

All supportive non-price promotions have the same purpose; they are utilized to draw consumer attention to a specific brand. Supportive non-price promotions can be used to drastically increase the effectiveness of a brand its price promotions by drawing extra attention to them. This shown in the study of Narasimhan, Neslin, and Sen (1996) which raises the sales of the promoted brand from 34% (without supportive non-price promotion) to a 161% increase in sales of the brand if supported by a non-price promotion. Supportive non-price promotions also contribute to framing the deal (Krishna et al., 2002). As discussed in 3.1.1 framing promotions has different effects (costs reduction versus gaining volume). A supportive non-price promotion can also be used without price reductions. Consumers interpret the use of a sign as an indication for promotions, so by placing a sign consumers purchase products at full margin which can be favorable for both the manufacturer and the retailer (Wansink, Kent and Hoch, 1998).

During store-wide theme weeks, there are steep price promotions which are also heavily supported by non-price promotions and thereby draw attention to the promoted brands and categories. However, non-price promotions can also appeal to the hedonic needs of a consumer that are attracted by the store-wide theme weeks (Chandon, Wansink and Laurent, 2000). As explained in 2.3.1 consumers demand more enjoyable experiences which make supportive non-price promotions increasingly important. If price promotions and non-price promotions are compared, non-price promotions establish a more favorable attitude towards brands than price promotions (Yi and Yoo, 2011). In this research the effect is most efficient when the consumers are low-deal prone consumers which seems more like hedonic than utilitarian values. Furthermore, non-price promotions can be used to differentiate from competitors based upon their shopping experience (Carpenter and Moore, 2009). Based upon the appeal of hedonic needs the following hypotheses are developed:

Hypothesis 3: A price promotion will be more effective during a store-wide theme week for increasing brand sales than a regular price promotion week.

Hypothesis 4: A price promotion will be more effective during a store-wide theme week for increasing category sales than a regular price promotion week.

Hypothesis 5: Price promotions during store-wide theme weeks that are supported by non-price promotions are more effective in increasing brand sales than pure, non-supported price promotions.

Hypothesis 6: Price promotions during store-wide theme weeks that are supported by non-price promotions are more effective in increasing category sales than pure, non-supported price promotions.

3.2 Conclusion

Store-wide theme weeks are a combination between price and non-price promotions. The promotion combine various price promotions of brand with non-price promotions such as sings, displays, point of purchase material and national advertising. Since store-wide theme weeks combine both elements it is predicted that a price promotion during a store-wide theme week is more effective in increasing brand and category sales than a regular price promotion week.

Chapter 4. Empirical Analyses

Chapter 4 will begin with discussing the research setting. The research setting is followed by data and sources of the analysis in 4.2. In 4.3 the SCAN*PRO model and the estimated model will be first given for brands and then categories. At the end of the chapter a short conclusion will be drawn in 4.4.

4.1 Research setting

This study empirically examines the effects of store-wide theme weeks at the leading Dutch grocery chain Albert Heijn between January 2009 and December 2011. Albert Heijn has a market share of 32.8% in 2009 which increased to 33.6% in 2010 and stays roughly the same at 33.5% in 2011[1]. Albert Heijn provides a good illustration for the different aspects of store-wide theme weeks, since Albert Heijn is market leader in the Dutch retailer market, renowned for its innovativeness, and is an established user of store-wide theme weeks. Throughout their grocery chain, Albert Heijn uses the same store-wide theme weeks for every store. 'Hamsterweken', a store-wide theme week, is characterized by real price promotions in which consumers buy one product and get one product for free (2 for 1) for several consecutive weeks[2]. The promoted products are from various different categories and usually include top A-brands to attract consumers to the retailer. This store-wide theme weeks is also supported by national advertising on television, newspapers, in their own app and further communicated with a promotion folder distributed among the Dutch population. Furthermore, 'Hamsterweken' is built around a central theme; the buying of more products for less money in order to stock at home. In sum, 'Hamsterweken' satisfies all five condition as described in 2.2, real price promotions, portfolio of products, supported by external media, built around a central theme and lasts for several weeks.

The total number of brand on promotion in one event week is estimated around 50.[3] This indicates that in an average event period of three weeks Albert Heijn offers roughly 150 brands across different categories on sale. Furthermore, the theme promotion 'Hamsteren' uses humorous imagery involving hamsters that are stuffing cars full of groceries, hamsters trying to escape an avalanche of products and hamsters getting hit on the head by grocery

[1] http://www.distrifood.nl/Service/Marktaandelen/
[2] http://www.distrifood.nl/Formules/Algemeen/2009/8/AH-scherpt-Hamsterweken-aan-DIS133654W
[3] http://www.distrifood.nl/Formules/Algemeen/2011/1/Nieuwjaarsoffensief-AH-en-C1000-DIS138695W/ (50 producten)

products (see appendix 4.1). While the promotion is still communicating that there is a lot to gain for the consumers, the hamsters in the promotions are acting in a fun and pleasant way. In the stores the point of purchase material (p-o-p material) and the decorations are in line with nationally advertised commercial and communicate the same message. On the banners and p-o-p material the hamsters again play a dominant role acting like actual people, doing the same activities as in the national commercial. Moreover, Albert Heijn produced during their store-wide theme week called 'Hamsteren', a hamster toy which can be bought by consumers and children can play and cuddle with them, thereby selling the corporate brand image just like Walt Disney (Kozinets et al., 2002). A theme promotion like 'Hamsteren' still communicates a price promotion but adds fun to the process as well. Albert Heijn was the first to start a store-wide promotion but other grocery chains such as C1000, Plus and Super de Boer followed quickly with respectively 'Euroweken', 'Klaverkorting' and 'Super Toeterweken'[4].

4.2 Data and sources

The data set is provided by GfK and contains panel scanner data collected by GfK in the Netherlands specifying household purchases of four different categories; beer, soft drinks, shampoo and chips. The data is then aggregated in order to create two different and smaller data sets, based on brand level (data set 1) and category level (data set 2). Data set 1 contains total weekly volume and revenues for each individual brands. In this study only the brands with a larger market share of <3% are analyzed since these brands have a combined market share of < 82%. Thus the analysis of the beer category consists of seven brands, the soft drink category has eight brands, the shampoo category consists of nine brands and the chips category has only four brands. The lower number of brands in the chips category is due to the large market shares of Smiths and private label brand Albert Heijn which have a combined market share of 77%. For each category the combined market share of the brands is at least 82% of the total volume sold in that category. In contrast, data set 2 contains the weekly category volumes and revenues summed across all brands within the category (no benchmark level of <3% in data set 2). Both data sets have similar variables such as the total volume sold in week t (milliliters or grams), the total revenues in week t (cents) and the computed unit price in week t (revenues divided by volume). They also share the same number of observations with T being equal to 157. Data set 1 on brand level has some shampoo brands

[4] http://www.distrifood.nl/Formules/Algemeen/2009/8/AH-scherpt-Hamsterweken-aan-DIS133654W

with value zero. This indicates that for those weeks no purchases were done by the panel for that specific brand throughout the retail chain of Albert Heijn.

Apart from the data set, GfK also provided an overview with the different store-wide theme weeks of various retailers. This study specifies on the retail chain of Albert Heijn and their store-wide theme week called 'Hamsterweken'. Figure 4 shows the exact starting date of these promotion periods. It is important to note that the promotion periods for 'Hamsterweken' are recurrent around the same period of the year, are mostly used after longer vacation periods in the Netherlands and typically last three to four weeks. 'Hamsterweken' appear 19 times during the analyzed three year period. Half of the promotion period of 'Hamsterweken' falls into the month January which, according to Dutch retail industry newsletter Distrifood, is a typical promotion month for various retailers[5].

Week	Date	Week	Date	Week	Date
1	29-12-2008	1	4-1-2010	1	3-1-2011
2	5-1-2009	2	11-1-2010	2	10-1-2011
3	12-1-2009	3	18-1-2010	3	17-1-2011
34	17-8-2009	34	23-8-2010	34	22-8-2011
35	24-8-2009	35	30-8-2010	35	29-8-2011
36	31-8-2009	36	6-9-2010	36	5-9-2011
				37	12-9-2011

Figure 4: Overview 'Hamsterweken'

As mentioned above, GfK provided a data set and a campaign overview for the retail chain of Albert Heijn. However, there is no additional data on when and which brands are promoted at the retail chain of Albert Heijn. In order to create this variable for data set 1 on brand level, this information is determined empirically. Specifically, a week is counted as a promotion week at Albert Heijn if the unit price of the brand is lower than the mean unit price (unit price across all weeks of the selected period) minus one times the standard deviation. This additional information is needed in order to compare regular price promotions weeks and price promotions during store-wide theme weeks.

4.3 Method

To determine whether store-wide theme weeks and price promotions during store-wide theme weeks are effective for manufacturers and/or retailers, the (adjusted) SCAN*PRO model is used. The SCAN*PRO model is a widely accepted model to evaluate promotion effectiveness and has been used across the world in many academic and commercial applications (see van Heerde, Leeflang and Wittink, 2002). It models volume as a function of price and store-wide theme weeks while controlling for various other variables. The model is

[5] http://www.distrifood.nl/Formules/Algemeen/2005/1/AH-opent-hamsterweken-met-unieke-actie-DIS120211W/

estimated separately for each brand (brand *i)* sold at Albert Heijn with a market share < 3% in one of the four categories of Albert Heijn included in this study.

4.3.1. Brand level model

$$S_{it} = \alpha \cdot [PI_{it}^{\beta 1i} \cdot \beta_{2i}^{Dhw_t} \cdot PI_{it}^{\beta 3i \times Dhw_t}] \cdot PI_{it-1}^{\beta 4i} \cdot CPI_t^{\beta 5i} \cdot T_t^{\beta_{6i}} \cdot \beta_{7i}^{Dwinter_t} \cdot \beta_{8i}^{Dspring_t} \cdot \beta_{9i}^{Dsummer_t} \cdot \beta_{10i}^{Dxmas_t} \cdot e^{U_{it}} \quad (1)$$

Where:

S_{it} = Volume sales of brand *i* in week *t*;

PI_{it} = Price Index of brand *i* in week *t* (= price per unit of brand *i* in week t divided by the baseline price of brand *i [baseline price = median price of brand i in non-promotion weeks]*);

Dhw_t = dummy variable for 'Hamsterweken' (store-wide theme weeks) =1 during event week and =0 during no event week;

PI_{it-1} = Price Index of brand *i* in week t-1. This variable is able to capture post-promotion dips in brand sales;

CPI_t = Competitive Price Index of all brands (price index of brand *i* in week *t* weighted by the corresponding market share of brand *i*, of the largest competitor brands [market share > 3%] available at Albert Heijn);

T_t = Trend variable for week *t* (=with weeks numbered consecutively from 1 to 157);

$Dsummer_t$ = 1 if at least four days of the week are in June, July, and August in week *t* and = 0 if otherwise;[6]

$Dspring_t$ = 1 if at least four days of the week are in March, April, and May in week *t* and = 0 if otherwise;

[6] Dsummer, Dspring and Dwinter are created upon the meteological start data indicated by the Dutch weather institute the KNMI with Dwinter starting December 1st, Dspring on March 1st and Dsummer on July 1st.

$Dwinter_t$ = 1 if at least four days of the week are in December, January, and February in week *t* and = 0 if otherwise;

$Dxmas_t$ = 1 if week contains Christmas or New Year (week 52 and 53) and 0 if otherwise;

U_{it} = Error term for brand *i* in week *t*.

To estimate the model, this study follows common practice by taking the logs on both sides of the model, and is estimated with the Ordinary Least Square method (Andrews, Currim, Leeflang and Lim, 2008). After logarithmic transformation the estimated model looks like this:

$$\ln(S_{it}) = \ln\alpha + \beta 1i \cdot \ln(PI_{it}) + \ln(\beta_{2i}) \cdot Dhw_t + \beta 3i \cdot Dhw_t \cdot \ln(PI) + \beta 4i \cdot \ln(PI_{t-1}) + \beta 5_i \ln\left(CPI_t^{\beta 5i}\right) + \beta 6 \ln(T_t) + \ln(\beta_{7i}) \cdot Dwinter_t + \ln(\beta_{8i}) \cdot Dspring_t + \ln(\beta_{9i}) \cdot Dsummer_t + \ln(\beta_{10i}) \cdot Dxmas_t + U_{it} \quad (2)$$

The key independent variables are placed between brackets in equation 1. These key variables are the price index (PI_{it}), the dummy for store-wide theme weeks (Hamsterweken: Dhw_t) and the interaction effect ($PI_{it}^{\beta 3i \times Dhw_t}$). In the linearized model, the estimate of β_{1i} indicates the regular price elasticity of brand *i* and explains the effectiveness of price promotions during non-store-wide theme weeks. The expectation $\beta_{1i} < 0$ indicates that a decrease in price leads to an increase in volume sold for brand *i (*Wittink, Hawkes, Porter, 1988*)*. The estimate of β_{2i} describes the effect of a store-wide theme week on brand sales and if $\beta_{2i} > 1$ this indicates that a store-wide theme week increases the volume sold of a brand *i*. The estimate of the interaction effect (β_{3i}) indicates whether a promotion in a store-wide theme week is more/less effective than compared to non-theme weeks. Indeed, the sum of β_3 + β_1 represents the total price elasticity for brand *i* during of price promotion during store-wide theme weeks. Since we expect that $\beta_{3i} < 0$, this indicates that a price promotion during a store-wide theme week increases the total price elasticity for brand *i*.

The model is completed by control variables. During the analyzed three years' time period, there are various events and influences which can affect sales. For starters, the post-promotional dip (PI_{it-1}) can influence sales after a promotion period. We expect that the post-promotional dip will be negative, indicating that a post-promotion dip will decrease sales after a promotion period, as specified by van Heerde, Leeflang and Wittink (2002). Each year there are four different seasons and recurrent holidays like Christmas and New Year which can positively/negatively influence grocery sales. Furthermore, competitors change their prices in the short-term (promotions) and long-term (permanent price decrease). To account for the possible influences of seasons, holidays, and the price of competitors, all these variables are integrated in the model. The following variables are included in equation 1: seasonal trends $(Dsummer_t, Dspring_t \text{ and } Dwinter_t)$, events $(Dxmas_t)$ and competitors' price (CPI_t).

Another control variable is the trend variable (T_t) which increases by 1 every period starting at 1 for the first week in both data sets. This variable indicates if a brand increases or decreases its volume during the selected time period at retail chain Albert Heijn. The unit price of competitors is (CPI_t) is also a control variable of equation 1 and consists for every week of all unit prices of competitors with market share >3% and is weighted against their corresponding market share to simulate the influences of a price increase/decreases of competitors' brands. By weighing the unit price with the market share, the effects of price change influences the sales of other brands more realistically.

4.3.2. Category level model

To evaluate whether store-wide theme weeks expands the volume of the category, the (adjusted) SCAN*PRO model is also used on the category level. The (adjusted) SCAN*PRO model is highly similar to equation 1. The model is estimated for the beer, chips, soft drink and shampoo category:

$$S_{ct} = \alpha \cdot PI_{ct}^{\beta 1c} \cdot \beta_{2c}^{Dhw_t} \cdot PI_{ct}^{\beta 3c \times Dhw_t} \cdot PI_{ct-1}^{\beta 4c} \cdot \beta_{5c}^{Dwinter_t} \cdot \beta_{6c}^{Dspring_t} \cdot \beta_{7c}^{Dsummer_t} \cdot \beta_{8c}^{Dxmas_t} \cdot e^{U_{ct}} \quad (3)$$

Where:

S_{ct} = Total volume sold of all brands in category *c* in week *t*;

PI_{ct} = Price Index of category *c* in week *t* (= price per unit category *i* in week t divided by the baseline price of category *c [baseline price = median price of brand i in non-promotion weeks])*;

all the other variables of equation 3 are defined as before in equation 1. However, CPI_t is not included in equation 3 since it was not significant for the categories (see paragraph 5.5.3). Again, after taken the log the estimated model looks like this:

$$\ln(S_{ct}) = \ln\alpha + \beta 1c \cdot \ln(PI_{ct}) + \ln(\beta_{2c}) \cdot Dhw_t + \beta 3c \cdot Dhw_t \cdot \ln(PI) + \beta 4c \cdot \ln(PI_{t-1})$$
$$+ \ln(\beta_{5c}) \cdot Dwinter_t + \ln(\beta_{6c}) \cdot Dspring_t + \ln(\beta_{7c}) \cdot Dsummer_t + \ln(\beta_{9c}) \cdot Dxmas_t + U_{ct} \quad (4)$$

4.4 Conclusion

Albert Heijn is the leading retail chain in the Netherlands which uses store-wide theme weeks. To analyze store-wide theme weeks, GfK provided an overall dataset which has been aggregated and divided into two datasets; one containing brands and the other categories. For both data sets the (adjusted) SCAN*PRO model is used and the most important variables for this study are placed between brackets. We expect for both models that β1 and β3 are negative and β2 is positive. This indicates for store-wide theme weeks (β2) that a positive value of β2 expands the volume of brands and categories while a negative value for a price promotion during store-wide theme weeks (β3) increases the total price elasticity for the brands (β1+β3). The models also contain various control variables to improve the reliability of the results.

Chapter 5. Empirical Results

In chapter 5 the empirical results of the SCAN*PRO model for all brands and the four analyzed categories are given. Chapter 5 starts with the summary statistics of the brands and categories. It is followed by a detailed description of the SCAN*PRO model results for the beer brands and in 5.3 the results for the other brands are described. The results of the SCAN*PRO model for the category are given in 5.4 while 5.5 will discusses some robustness checks. Afterwards, the results will be summarized in a conclusion.

5.1 Summary statistics

As can be seen in appendix 5.1.1 Grolsch and Heineken are the two market leaders in the beer category with respectively 16.90% and 16.52% market share and they are followed by Euroshopper with a market share of 14.38%. Albert Heijn and Euroshopper are both private label brands and are the cheapest brands in the category while Hertog-Jan is the most expensive one. All brands use price promotions during normal weeks and during store-wide theme weeks. Figure 5.1.1 shows the ratios for the beer brand which is the average volume sold during a store-wide theme weeks, divided by the average volume sold in other promotion weeks. This results in a ratio which indicates whether more volume is sold during a store-wide theme week than compared to a normal theme week (> 1). As can be seen the ratio of beer brands is mostly below 1 indicating that the average volume sold during store-wide theme week is lower than compared to normal promotion week.

Beer Category (Brands)	Ratio
Grolsch	0,85
Heineken	1,00
Euroshopper	0,62
Amstel	0,09
Bavaria	0,92
Albert Heijn	0,44
Hertog Jan	0,91

Figure 5.1.1: Ratio beer brands

In 5.1.2 the summary statistics for the soft drink category are presented which show that Coca-Cola is by far the largest brand with a market share of 28.46%. They are followed in terms of market share by the private labels Albert Heijn with 23.71% and Euroshopper with 10.26%. Also in this category the private labels, Albert Heijn and Euroshopper, are the cheapest brands. In this category all the 8 brands use price promotions during normal weeks and price promotions during store-wide theme weeks.

Softdrink Category (Brands)	Ratio
Coca-Cola	0,86
Albert Heijn	2,30
Euroshopper	1,03
Spa & Fruit	1,15
Fanta	0,31
Crystal Clear	0,22
Pepsi	1,56
Wicky	0,56

Figure 5.1.2: Ratio soft drink brands

Coca-Cola promotes mostly times during normal weeks while Fanta and Wicky promote five times during store-wide theme weeks. In contrast to the beer brands, some soft drink brands (see figure 5.1.2) have a ratio > 1 indicating an increase in weekly sales during a store-wide theme week compared to a regular price promotion week.

The summary statistics for the shampoo category are presented in appendix 5.1.3. This category also has a clear market leader which is Andrelon with a market share of 39.49%. The second largest market share is obtained by Elvive with only 8.27%. The price of Euroshopper is very low compared to the other brands. Palmolive is also fairly cheap, even cheaper than the Albert Heijn store brand. In contrast to the other categories, only eight of the nine brands use promotions. Euroshopper does not promote its brand with price promotions since it already has a very low price. Andrelon is the brand with the highest number (8 times) of price promotions during store-wide theme weeks. Figure 5.1.3 shows the ratios for the shampoo brands which are almost all much larger than 1 which indicates that most of the brands increase their weekly sales during a store-wide theme week compared to a normal promotion week. Only Albert Heijn and Nivea have a ratio < 1 indicating a loss of volume during a store-wide theme week.

Shampoo Category (Brands)	Ratio
Andrelon	3,09
Elvive	1,56
Head & Shoulders	2,97
Albert Heijn	0,59
Schwarzkopf	2,05
Nivea	0,64
Palmolive	2,75
Syoss	5,51
Euroshopper	/

Figure 5.1.3: Ratio shampoo brands

Finally, the chips category (appendix 5.1.4) has a low number of brands that meet the benchmark level since the top three brands (Smiths, Albert Heijn and Pringles) have a combined market share of 88.49%. The 4 brands that make the cut is market leader Smiths with a market share of 47.31% which is followed by Albert Heijn with a market share of 30.18%. Pringles has a market share of is 11.00% while Euroshopper has 7.10%. Pringles is the most expensive brand and private label Euroshopper has again the lowest price. Smiths only promotes during regular price promotion weeks while Pringles uses store-wide theme weeks seven times for price promotions. In figure 5.1.2 the ratios for the chips brands are given. Pringles and Euroshopper have a ratio > 1 indicating that, on average, Pringles and Euroshopper expand their weekly volume during a store-wide theme week in comparison to a regular price promotions week. The ratio for the private label

Chips Category (Brands)	Ratio
Smiths	/
Albert Heijn	0,41
Pringles	1,41
Euroshopper	1,01

Figure 5.1.4: Ratio chips brands

brand Albert Heijn is < 1 indicating a reduction in volume during a store-wide theme week.

The ratios for each category are given in figure 5.1.5. The ratios indicate again how effective store-wide theme weeks are. However, for the categories the store-wide theme weeks are divided by all other weeks. Ratios of > 1 indicate again that on average more volume is sold during store-wide theme weeks in comparison to all other weeks. The beer category ratio is only 0.81 indicating a reduction of sales of the total volume sold during store-wide theme weeks. The soft drink and chips category slightly increase their volume which is indicate by the ratios of 1.01 and 1.04 but the best performer during store-wide theme weeks is the shampoo category. The ratio is 2.14 indicating that the shampoo category sells twice as much during an store-wide theme week.

Category	Ratio
Beer	0,81
Softdrink	1,04
Shampoo	2,14
Chips	1,01

Figure 5.1.5: Ratio category

*5.2 Results SCAN*PRO model beer category*

Detailed results for the SCAN*PRO model for the beer brands can be found in appendix 5.2.1. As expected the coefficient of the price index ($\beta 1$) is negative for every brand. Especially the national brands (Grolsch, Heineken, Amstel, Bavaria and Hertog-Jan) have a larger negative price index coefficients varying between -3.82 and -5.31 which is steep but not abnormal (Wittink, Hawkes and Porter, 1988). The price elasticity for all these five brands are highly significant ($p < .01$). Grolsch has a negative price elasticity of -4.51 indicating that a 10% decrease in price increases the sales of Grolsch at Albert Heijn by 45.1%. The other two private label brands, Albert Heijn and Euroshopper, have a much smaller negative value for their price elasticity (-.31 and -.46) since they already have a low price which explains the insignificant price elasticity ($p > .10$) for these two brands.

The efficiency of store-wide theme weeks ($\beta 2$) varies among the brands. Heineken, Amstel and Albert Heijn increase their volume during 'Hamsterweeks' at retail chain Albert Heijn with positive coefficients of respectively 3.24, 5.53 and 4.43. However, only Heineken and Amstel are significant ($p < .05$) and Albert Heijn is only marginally significant ($p < .10$). Grolsch, Euroshopper, Bavaria and Hertog-Jan have insignificant ($p > .10$) results for β2.

The third important parameter for this study is the differential on effectiveness promotion during store-wide theme weeks captured with $\beta 3$. Heineken, Amstel and Albert Heijn have positive values for the interaction effect indicating that price promotions during store-wide theme weeks are less effective for these brands. The results for Heineken and

Amstel are 1.92 and 3.15 with significance level of $p < .05$ while Albert Heijn is marginally significant 1.98 with $p < .10$. Grolsch, Euroshopper, Bavaria and Hertog-Jan have again insignificant results.

The results for the control variables give further insight into the sales of beer at Albert Heijn. The variable which captures the post-promotion dip (β4) is highly positive significant for Heineken and Amstel ($p < .01$) and marginally positive significant for Grolsch, indicating that these three brands do not experience post-promotion effects. The price of competitors $(\beta 5)$ has a positive significant impact on Bavaria and Hertog-Jan with coefficients of 1.78 ($p < .10$) and 3.93 ($p < .01$) indicating that a price decrease of one of the competitor brands hurts the sales of these two brands.

The trend $(\beta 6)$ variable is overall small, indicating small changes in the beer sales of the retail chain of Albert Heijn. Amstel (-.02) and Albert Heijn (.01) are highly significant $p < .01$ indicating that Amstel loses sales over time and Albert Heijn increases its volume. The seasonal dummies of winter $(\beta 7)$ and spring $(\beta 8)$ are only significant for Heineken with winter .22 ($p < .10$) and spring .24 ($p < .05$) but also Amstel has a positive coefficient during spring (.28, $p < .10$). However, summer $(\beta 9)$ increases the sales for five of the seven brands with high significance levels ($p < .01$) for Heineken (.48), Euroshopper (.18) and Bavaria (.33). Hertog-Jan has a parameter of .26 with $p < .05$ and Albert Heijn .13 with $p < .10$. Christmas and New Year $(\beta 10)$ are only significant for Hertog-Jan with a positive coefficient of .66 ($p < .01$).

*5.3 Results SCAN*PRO model other categories*

For the other three categories (appendices 5.3.1, 5.3.2 and 5.3.3) almost all the price indices (β1) have highly significant negative coefficients. The values of β2 and β3 vary between positive and negative in the soft drink and chips category but for the shampoo category most of the shampoo brands have a significant negative coefficient for β3.

As mentioned, the coefficients of β2 and β3 vary in the soft drink category (appendix 5.3.1). However, only two brands have significant values for β2 and β3. These two brands are the private label brand of Albert Heijn and Fanta. The private label brand Albert Heijn has a marginally significant negative value for β2 (-2.49, $p < .10$) and a marginal significant negative coefficient for β3 (-.79, $p < .10$). Fanta has positive significant values for β2 and β3 with respectively 4.97 and 2.29 ($p < .10$). This indicates that during store-wide theme weeks,

Albert Heijn should use price promotions to increase the total price elasticity while Fanta should not use price promotion since it decreases the total price elasticity. Again for the post-promotion dip there does not seem to be a negative effect for sales after the price promotion period since the only significant results have positive values indicating no post-promotion dip.

In contrast to the soft drink category, the shampoo category (appendix 5.3.2.) shows promising results for price promotions during store-wide theme weeks (β3). Five brands have significant ($p < .05$) negative coefficients for $\beta 3$ ranging from -1.69 to -4.12. Therefore it is also no surprise that three brands have negative significant coefficients for store-wide theme weeks (β2). This indicates a loss of sales during these weeks since other brands are likely to successfully use price promote during store-wide theme weeks. Only Head and Shoulders is the exception which increases their volume from store-wide theme weeks with a positive coefficient of 1.48 ($p < .01$).

For the chips category (appendix 5.3.3), Smiths, private label brand Albert Heijn and Pringles have highly significant negative value for β1. Only the private label brand of Albert Heijn (3.52 and $p < .01$) increases its volume from store-wide theme weeks as captured by $\beta 2$. However, price promotions during store-wide theme weeks (β3) is not profitable for the private label brand Albert Heijn (4.72, $p < .01$). The other brands have no significant results for β2 and β3. An interesting value to note here is the post-promotion dip (β4) for Pringles which was expected to be negative. However, Pringles (2.08 with $p < .01$) has a positive value indicating that there is no post-promotion dip for Pringles.

5.4 Category level effects of price promotions

Appendix 5.4.1 shows the results for the categories. It can be concluded that the beer, chips and shampoo category are highly significant ($p < .01$) for their negative price elasticity (β1) while the estimate of β1 for the soft drink category is not significant. For store-wide theme weeks ($\beta 2$) only the chips category expands its volume at retail chain Albert Heijn (1.72 and $p < .05$). The other three categories have non-significant negative values. For price promotions during store-wide theme weeks ($\beta 3$), the chips and shampoo categories are significant ($p < .05$). However, shampoo increases its total negative price elasticity with -1.53 while the chips category decreases the total price elasticity with a positive value of 2.58.

The control variables show only five significant results. Trend is highly significant ($p < .01$) for the soft drink category indicating an increase in sales for the category. Spring and

summer are positive significant for the beer and chips categories which means that these two categories expand their volume during these two seasons.

5.5 Robustness checks

Several variables and measures were either changed or removed from equation 1 or/and equation 3 to evaluate the sensitivity of the results to these specific measures.

5.5.1 Alternative competitor's price index

In equation 1 the competitor's price (CPI_t) was constructed by evenly weighing every brand and each brand had the same impact. However, some brands are more important than others, as reflected in the higher marketshare at retail chain Albert Heijn. To account for this, the prices of the brands are weighted against the corresponding market share of the brands. This gives every brand its own corresponding influence on the competitors price index (and thus the other brands). The change of measurement resulted in a decrease of influence of β5, the parameter of the estimate of CPI_t, on the volume of the market leaders. For the smaller brands, especially Hertog-Jan, the coefficient of β5 increased indicating that Hertog-Jan is vastly influenced by the prices of competitors. This effect is similar to several studies which specify that larger national brands have a larger influence on other smaller national and private label brands (Allenby and Rossi, 1991; Blattberg and Wisniewski, 1989).

5.5.2 Separate analysis manufacturer brands and retailer brands

In the analyses there are also private brands (Albert Heijn and Euroshopper) that have a permanent lower price compared to the national brands. Especially Euroshopper is a nice example of such a private label with a low price. Throughout the analysis the private label brand Euroshopper has no significance levels ($p > .20$) for parameters β1, β2 and β3 while the private label brand Albert Heijn and national brands do. The reported differences validate the adjusted SCAN*PRO model since it is reported in the literature that private label brands and national label brands differ in various ways, especially on price parameters. In the beer category the private label, figure 5.5.2, Albert Heijn has an insignificant result for β1.

However, Albert Heijn has similar effects as national brands for estimates β2 and β3 which might indicate that for the beer category the private label brand Albert Heijn is seen as more equal to national brands.

In the soft drink category the private label brand Albert Heijn is the only brands which can use price promotions during store-wide theme weeks to increase its total price elasticity (β1 + β3). However, it is also the only brand which loses sales during store-wide theme weeks (β2). For the shampoo category, Albert Heijn only has a significant value for β1while most national brands have significant values for β2 and β3 (see figure 5.5.2). In this category it seems that the private label brand Albert Heijn is not seen as an equal to the national brands and is under pressure of the promotions of the other national brands.

Beer Category (Brands)	β1	β2	β3
Grolsch	-4.51***	-.29	-.03
Heineken	-4.98***	3.24**	1.92**
Euroshopper	-.31	.38	.38
Amstel	-5.31***	5.53**	3.15**
Bavaria	-3.82***	-2.02	-.94
Albert Heijn	-.46	4.43*	1.98*
Hertog Jan	-4.91***	-2.06	-1.12
Softdrink Category (Brands)	**β1**	**β2**	**β3**
Coca-Cola	-4.36***	-1.14	-.44
Albert Heijn	-2.31***	-2.49*	-.79*
Euroshopper	.16	1.18	.33
Spa & Fruit	-5.33***	1.77	.70
Fanta	-4.27***	4.97**	2.29**
Crystal Clear	-3.55***	5.85	2.25
Pepsi	-5.15***	-.47	-.19
Wicky	-5.13***	3.57	1.37
Shampoo Category (Brands)	**β1**	**β2**	**β3**
Andrelon	-3.47***	-1.30**	-3.19***
Elvive	-2.95***	.18	-1.12
Head & Shoulders	-2.11***	1.48***	-4.12***
Albert Heijn	-1.42***	.12	.34
Schwarzkopf	-1.77***	-.59*	-1.69***
Nivea	-2.21***	-.21	-.13
Palmolive	-.41	-2.23**	-2.09**
Syoss	-1.03**	-.57	-4.11**
Euroshopper	.01	.16	-.06
Chips Category (Brands)	**β1**	**β2**	**β3**
Smiths	-2.24***	.53	1.16
Albert Heijn	-2.36***	3.52***	4.72***
Pringles	-4.88***	-.12	-.65
Euroshopper	.15	-1.22	-.89

Figure 5.5.2: Private label brands versus national brands

In the chips category the private label brand Albert Heijn is the only analyzed brand which increases its volume from store-wide theme weeks (β2). However a price promotion during store-wide theme weeks (β3) is not profitable for private label brand Albert Heijn. In this category it seems that the private label brand Albert Heijn is still seen as a private label brand in terms of price (cheap) with Smiths as the normal brand/price choice and Pringles as the more expensive brand/choice. In sum, Euroshopper is the cheapest brand with no significant values for β1, β2 and β3 because of its low price. The private label brand of Albert Heijn has the same results in the beer category as national brands while the results in the soft drink and shampoo category are the opposite in comparison to national brands. However, in

the chips category the private label brand of Albert Heijn has a well-established position as the cheaper brand in comparison to Smiths and Pringles.

5.5.3 Other predictors of brand and category sales

Other variables that could be expected to influence brand and category sales are the World Cup 2010 and Easter. During the selected time period the World Cup 2010 was played and Easter reoccurs every year. These two events are leisure events which could increase the volume of brands and categories. However, after several models, it showed that the Easter and the World Cup 2010 variables are insignificant. This resulted in the removal of these two dummies in equation 1 and 3 which led to an increase in adjusted R^2 for the brands.

For equation 3, a competitor's category price index (CPI_t) was created in order to determine if the four analyzed categories (beer, soft drink, shampoo and chips) could be complement or substitutes categories. The focus was especially on the impact of volume changes of the beer and soft drink category and its influences on the volume changes of the chips category since these product categories might be complements. However, the results varied from a negative coefficient of -2 to a positive coefficient of 2 between all four categories with no significant ($p > .20$) effect of complements/substitutes. Therefore, the variable was removed from equation 3.

5.5.4 Data points with no sales

Three of the four categories consist of T=157 data points for every brand. However, the shampoo category misses some data points due to a lack of sales or a brand was not yet available on the market. These observations were initially removed from the date. However if we assume sales = 0 and PI = 1, the post-promotion dip could still be calculated. This indicated that the missing values needed for the analysis were set to 0, indicating no change in price in the previous week. This means that for brand *i* in week 38, with week 37 missing/ value '0', P_{t-1} is 1 which indicated that the price in week 38 is the same as it was in week 37.

5.5.5 Influences of number of brands in a promotion on brand and category sales

The variable $CPI^{\beta 5c \times Dhw_t}$ was created for equation 1 and 3 to determine what the influence is of an increase in number of brands in a store-wide theme week and its effect on brand and category sales. This variable was implemented for every brand and category but insignificant ($p > .20$). Furthermore, implementing the variable resulted in a steep decrease of the adjusted R^2 for every brand and therefore the variable was not included in both equations.

5.6 Conclusions

The significant results of the SCAN*PRO model (equation 1) show that brands increase their volume during store-wide theme weeks (β2) in the beer, soft drink, and chips category. For the shampoo category only one of the four brands showed an increase while three other experience a decrease in volume. Almost all brands (except Euroshopper) have significant negative coefficients for β1. These detailed findings of the SCAN*PRO model are supported by the calculated average results of all analyzed brands in this study (all β1, β2 and β3 of the analyzed brands / # of brands) which are given in figure 5.6.1. It can be seen that β1 is, on average for the analyzed brands, negative for every category. In contrast, β2 is, on average for the analyzed brands, positive for every category except the shampoo category. Moreover, β3 is only negative for the shampoo category which indicates that price promotions during store-wide theme weeks increase the total price elasticity in the shampoo category. The other categories, beer, soft drinks, and chips, decreases their total price elasticity during store-wide theme weeks because of the positive coefficient.

Average Brands	N	β1	β2	β3	Ratio
Beer	157	-3.47	1.32	0.77	0,81
Softdrink	157	-3.74	1.66	0.69	1,04
Shampoo	157	-1.71	-0.33	-1.79	2,14
Chips	157	-2.33	0.68	1.09	1,01
Mean	157	-2,8125	0,8325	0,19	1,25

Figure 5.6.1: Overview means β1, β2 and β3 of brands per category

The results of the SCAN*PRO model (equation 3) for categories can be seen in figure 5.6.2. Most of the key parameters of β2 and β3 are insignificant which means that store-wide theme weeks (β2) are only effective for the chips category which expands its volume

Category	N	β1	β2	β3
Beer	157	-2.11***	-1.76	-.81
Softdrink	157	-.62	-1.70	-.65
Shampoo	157	-1.14***	-.14	-1.53**
Chips	157	-1.13***	1.72**	2.58**
Mean	157	-1.25	-.47	-.10

Figure 5.6.2: Overview β1, β2 and β3 of categories

during store-wide theme weeks. For price promotions during store-wide theme weeks (β3) the chips category has a positive coefficient indicating that the total price elasticity decreases in the chips category when making use of price promotions during store-wide theme weeks. In contrast, the shampoo has a significant negative coefficient for β3 indicating an increase in the total price elasticity if price promotions are used during store-wide theme weeks. Figure 5.6.2 also shows the average results for the key variables of the categories which are negative for β1 (-1.25), β2 (-0.47) and β3 (-0.10).

Chapter 6. Conclusion, implications and limitations

In the first part of chapter 6 the conclusions for this study will be given. These conclusions first focus on the brand sales. Afterwards, the conclusion will be given for the category sales. The conclusions are followed by implications for retailers and manufactures and the chapter ends with limitations and indications of future research.

6.1.1 Conclusion brand sales

The first research questions regarding duration, frequency and time of year is answered in paragraph 4.2 which shows that store-wide theme weeks are in the beginning of January and half of August, last three or four consecutive weeks after longer Dutch holidays periods.

The second research question is about the positive influence of store-wide theme weeks on brand sales and the effectiveness of price promotions during store-wide theme weeks. Hypothesis 1 predicted that a store-wide theme week would positively affect brand sales which is the case for the significant beer (3 brands), soft drink (2 brands) and chips brand (1 brand) which indeed increase their volume during store-wide theme weeks. However, for shampoo brand only one of the four significant brands increases its volume during store-wide theme weeks while the three other shampoo brands experience a decrease in volume. This indicates that hypothesis 1 is partially supported. For brands sales, hypothesis 3 specified that a price promotion during store-wide theme weeks are more effective than compared to regular price promotion weeks. This is only supported by the shampoo brands which increases their total price elasticity from price promotions during store-wide theme weeks while the beer, soft drink and chips brands reduce their total price elasticity when promotion. All in all, hypothesis 3 is marginally supported. Furthermore, hypothesis 5 predicted that a supportive non-price promotion during a store-wide theme week would increase the effectiveness of a price promotion and therefore brand sales. Although there was no data available for this hypothesis, a store-wide theme week is always supported by external media and point of purchase material. This knowledge combined with the literature in 3.1.2 that non-price promotions increase brand sales, differentiate from competitors and attract new/extra consumers, it implies that a supporting non-price promotion increases the effectiveness of a price promotion during store-wide theme weeks and thus increases brand sales.

6.1.2 Conclusions category sales

Research question three focused on the effectiveness of store-wide theme weeks and its effect on total category sales. Therefore, hypothesis 2 predicted that store-wide theme weeks would positively affect category sales. Hypothesis 2 is supported since the chips category expands its volume during store-wide theme weeks. A general remark here is that the other three categories had no significant results. Hypothesis 4 specified that a price promotion during store-wide theme weeks would be more effective for increasing category sales than a regular price promotion week. This hypothesis is partially supported since the shampoo category indeed increases it volume from price promotions during store-wide theme weeks but the chips category experiences a decrease in volume if price promotions are used during store-wide theme weeks. Furthermore, hypothesis 6 predicted that a supportive non-price promotion during a store-wide theme week would increase the effectiveness of a price promotion and therefore increase category sales. Again, a store-wide theme week is always supported by external media and point of purchase material which implies (as in 3.1.2) that a supporting non-price promotion increases the effectiveness and attraction of a store-wide theme week and thus positively affect category sales.

6.2 Implications retailers and manufacturers

For the manufacturers the conclusion in previous paragraph holds. Brands should not use price promotions during store-wide theme weeks if the products are beer, soft drink or chips brands. These beer, soft drink and chips brands already experience an increase in volume during store-wide theme weeks and price promotions during store-wide theme weeks only decreases the total price elasticity. However, manufacturers should use price promotions during store-wide theme weeks for their shampoo brands since price promotions are a successful strategy for expanding the volume of shampoo brands.

The retailer, in this case Albert Heijn, has implication on two different levels; the brand level and the category level. Their private label brand Albert Heijn increases its volume during store-wide theme weeks in the beer and chips category (4.43 and 3.52) but suffers a loss in the soft drink category (-2.49). The soft drink category is the only category in which the brand Albert Heijn increases its total price elasticity of price promotions during store-wide theme weeks (-.79) which indicates that the private label brand Albert Heijn should only use price promotions during store-wide theme weeks in this category. In contrast, Euroshopper

does not have significant values for β1, β2 and β3 which is logical (see 5.5.2).

For the category level, only the chips category expands its volume (1.72) during store-wide theme weeks. However, retailer can emphasize that price promotions during store-wide theme weeks works well for the shampoo brands (-1.53). However, price promotions in the chips category have a contrary effect (2.58).

6.3 Limitations and future research directions

The first limitation is that store-wide theme weeks are well-known in the Dutch retailer market. Although the Dutch market is a European market, there are still other European countries in which store-wide theme weeks are less known. Moreover, many researches demonstrate differences between European and American, Asian, African, and Indian markets. Investigating store-wide theme weeks in other fast moving consumer goods industries with different cultures and habits contributes to an increase in the generalization of the effects of store-wide theme weeks and the effectiveness of price promotions during store-wide theme weeks.

The second limitation is that the retail chain used for this study is the largest retail chain in the Netherlands. Although Albert Heijn is a quite representative retail chain to use, it can add value to increase the number of retail chains. This determines whether store-wide theme weeks have the same brand and category effects for retailers and manufacturers in retail chains with differences in size, attraction, image, store lay-out, advertising and positioning. Moreover, by adding more retail chains it can be determined whether brands and categories suffer from clutter of other store-wide theme weeks from different retail chains.

The last limitation for this study is the measurement of promotion weeks in which the brands are promoted. This information is created with the mean price and the standard deviation but the promotions of brands would be more accurate if this information is already available. This way the analysis and the results might be more accurate and show stronger effects of store-wide theme weeks and price promotions during store-wide theme weeks.

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Appendices

Appendix 4.1 Examples of ‘Hamsterweken’

Appendix 4.1 Examples of ‘Hamsterweken’ (continued)

Some commercials of Albert Heijn with Hamsters doing all kind of funny things:

https://www.youtube.com/watch?v=kUAIcOgQOaY

https://www.youtube.com/watch?v=RwxzciMdu5Q

https://www.youtube.com/watch?v=q3xV2CP4rfY

https://www.youtube.com/watch?v=JPS-79kXEgA&list=PLkwq1jx-1K6t181JsxvSJmPMqF9f_SU3J

https://www.youtube.com/watch?v=mu7RvSCWeeM&index=3&list=PLkwq1jx-1K6t181JsxvSJmPMqF9f_SU3J

https://www.youtube.com/watch?v=K7lxd7mq5Ic&index=4&list=PLkwq1jx-1K6t181JsxvSJmPMqF9f_SU3J

https://www.youtube.com/watch?v=TJXjcmYt12o&index=14&list=PLkwq1jx-1K6t181JsxvSJmPMqF9f_SU3J

https://www.youtube.com/watch?v=-dPZcL34cU8&index=5&list=PLkwq1jx-1K6t181JsxvSJmPMqF9f_SU3J

Appendix 5.1.1 Summary statistics: beer brands

Beer Category (Brands)	Marketshare	# Promoweeks	# of HW	Mean unit price NW	Mean unit price PW	Mean unit price HW	Ratio
Grolsch	16,90	24	4	0,1677	0,1251	0,1214	0,85
Heineken	16,52	29	2	0,1699	0,1362	0,1360	1,00
Euroshopper	14,38	15	4	0,0741	0,0738	0,0675	0,62
Amstel	11,88	27	1	0,1561	0,1315	0,1364	0,09
Bavaria	7,68	20	3	0,1311	0,1047	0,1089	0,92
Albert Heijn	7,65	11	2	0,0994	0,1100	0,0846	0,44
Hertog Jan	7,56	23	4	0,1892	0,1573	0,1315	0,91
Total Marketshare	82,57						

Promoweeks = Total number of promotion weeks

in HW = Number of promotion weeks during store-wide theme weeks (Hamster Weeks)

Mean unit price NW = Mean unit price Normal Weeks (without all Promotion Weeks and Hamster Week)

Mean unit price PW = Mean unit price Promotion Weeks (without Hamster Weeks)

Mean unit price HW = Mean unit price Hamster Week (only unit price of Hamster Weeks)

Ratio = Average volume sold during Hamster Weeks divided by average volume sold Promotion Weeks

Appendix 5.1.2 Summary statistics: soft drink brands

Softdrink Category (Brands)	Marketshare	# Promoweeks	# of HW	Mean unit price NW	Mean unit price PW	Mean unit price HW	Ratio
Coca-Cola	28,46	32	4	0,1031	0,0898	0,0848	0,86
Albert Heijn	23,71	9	2	0,0497	0,0449	0,0377	2,30
Euroshopper	10,26	22	2	0,0276	0,0234	0,0235	1,03
Spa & Fruit	6,43	18	3	0,0763	0,0705	0,0540	1,15
Fanta	4,88	23	5	0,1026	0,0934	0,0874	0,31
Crystal Clear	4,01	20	1	0,0703	0,0551	0,0619	0,22
Pepsi	3,44	23	2	0,0848	0,0649	0,0593	1,56
Wicky	3,33	28	5	0,0736	0,0646	0,0639	0,56
Total Marketshare	84,53						

Promoweeks = Total number of promotion weeks

in HW = Number of promotion weeks during store-wide theme weeks (Hamster Weeks)

Mean unit price NW = Mean unit price Normal Weeks (without all Promotion Weeks and Hamster Week)

Mean unit price PW = Mean unit price Promotion Weeks (without Hamster Weeks)

Mean unit price HW = Mean unit price Hamster Week (only unit price of Hamster Weeks)

Ratio = Average volume sold during Hamster Weeks divided by average volume sold Promotion Weeks

Appendix 5.1.3 Summary statistics: shampoo brands

Shampoo Category (Brands)	Marketshare	# Promoweeks	# of HW	Mean unit price NW	Mean unit price PW	Mean unit price HW	Ratio
Andrelon	39,49	24	8	0,6774	0,4764	0,4782	3,09
Elvive	8,27	26	4	1,1058	0,7989	0,7654	1,56
Head & Shoulders	7,66	26	3	1,2312	0,7942	0,8786	2,97
Albert Heijn	6,73	51	6	0,4055	0,1838	0,1855	0,59
Schwarzkopf	6,06	19	3	0,7213	0,4467	0,3991	2,05
Nivea	5,19	23	2	1,0153	0,6374	0,6868	0,64
Palmolive	4,99	21	2	0,3199	0,2159	0,2347	2,75
Syoss	4,81	13	1	0,7462	0,5265	0,5372	5,51
Euroshopper	4,73	0	0	0,0909	/	/	/
Total Marketshare	203,00						

Promoweeks = Total number of promotion weeks

in HW = Number of promotion weeks during store-wide theme weeks (Hamster Weeks)

Mean unit price NW = Mean unit price Normal Weeks (without all Promotion Weeks and Hamster Week)

Mean unit price PW = Mean unit price Promotion Weeks (without Hamster Weeks)

Mean unit price HW = Mean unit price Hamster Week (only unit price of Hamster Weeks)

Ratio = Average volume sold during Hamster Weeks divided by average volume sold Promotion Weeks

Appendix 5.1.4 Summary statistics: chips brands

Chips Category (Brands)	Marketshare	# Promoweeks	# of HW	Mean unit price NW	Mean unit price PW	Mean unit price HW	Ratio
Smiths	47,31	23	0	0,5124	0,4480	/	/
Albert Heijn	30,18	18	2	0,4632	0,3786	0,4006	0,41
Pringles	11,00	22	7	0,8673	0,6735	0,6210	1,41
Euroshopper	7,10	26	5	0,2845	0,2643	0,2662	1,01
Total Marketshare	95,59						

Promoweeks = Total number of promotion weeks

in HW = Number of promotion weeks during store-wide theme weeks (Hamster Weeks)

Mean unit price NW = Mean unit price Normal Weeks (without all Promotion Weeks and Hamster Week)

Mean unit price PW = Mean unit price Promotion Weeks (without Hamster Weeks)

Mean unit price HW = Mean unit price Hamster Week (only unit price of Hamster Weeks)

Ratio = Average volume sold during Hamster Weeks divided by average volume sold Promotion Weeks

Appendix 5.2.1 Results SCAN*PRO model 1: beer brands

Beer Category	Grolsch (std. error)	Heineken (std. error)	Euroshopper (std. error)	Amstel (std. error)	Bavaria (std. error)	Albert Heijn (std. error)	Hertog-Jan (std. error)	Mean 7 brands
Constant (α)	11.94***	11.46***	12.07***	11.51***	11.00***	11.27***	10.66***	
	(0.88)	(.43)	(.06)	(.09)	(.11)	(.07)	(.13)	
PI_{it} $(\beta 1)$	-4.51***	-4.98***	-.31	-5.31***	-3.82***	-.46	-4.91***	-3.47
	(0.23)	(0.34)	(.37)	(.30)	(.36)	(.47)	(.34)	
Dhw_t $(\beta 2)$	-.29	3.24**	.38	5.53**	-2.02	4.43*	-2.06	1.32
	(0.57)	(1.63)	(2.68)	(2.78)	(2.28)	(2.50)	(1.37)	
$PI_{it}^{Dhw_t}$ $(\beta 3)$	-.03	1.92**	.38	3.15**	-.94	1.98*	-1.12	.77
	(0.57)	(.93)	(1.03)	(1.49)	(1.12)	(1.09)	(.79)	
PI_{it-1} $(\beta 4)$	.36*	.93***	-.18	.82***	.30	-.39	.24	
	(.21)	(.32)	(.36)	(.29)	(.34)	(.45)	(.29)	
CPI_{it} $(\beta 5)$	.97	-.22	.20	1.30	1.78*	.35	3.93***	
	(.75)	(.62)	(.60)	(.83)	(.92)	(.62)	(1.12)	
T_t $(\beta 6)$	-.01*	-0.01*	-.01	-.02***	.01	.01***	.01	
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	
$Dwinter_t$ $(\beta 7)$	-.12	0.22*	.01	.15	-.01	.08	-.25	
	(.09)	(.13)	(.06)	(.09)	(.11)	(.07)	(.13)	
$Dspring_t$ $(\beta 8)$	-.01	0.24**	.07	.18*	.16	.09	.11	
	(.08)	(.12)	(.06)	(.09)	(.11)	(.08)	(.12)	
$Dsummer_t$ $(\beta 9)$	-.01	0.48***	.18***	.13	.33***	.13*	.26**	
	(.08)	(.12)	(.06)	(.09)	(.10)	(.07)	(.12)	
$Dxmas_t(\beta 10)$	-.19	.08	-.13	-.14	-.20	-.15	.66***	
	(.15)	(.21)	(.11)	(.18)	(.19)	(.12)	(.23)	
R^2	.784	.644	.163	.724	.532	.198	.735	

*** $p < .01$. ** $p < .05$. * $p < .10$ (two-sided).

Appendix 5.3.1 Results SCAN*PRO model 1: soft drink brands

Softdrink Category	Coca - Cola (std. error)	Albert Heijn (std. error)	Euroshopper (std. error)	Spa & Fruit (std. error)	Fanta (std. error)	Crystal Clear	Pepsi	Wicky	Mean 8 brands
Constant (α)	13.21***	13.45***	12.45***	12.03***	11.57***	10.28***	10.66***	11.35***	
	(.06)	(.04)	(.70)	(.09)	(.08)	(.12)	(.13)	(.10)	
PI_{it} $(\beta 1)$	-4.36***	-2.31***	.16	-5.33***	-4.27***	-3.55***	-5.15***	-5.13***	-3.74
	(.22)	(.38)	(.29)	(.42)	(.33)	(.36)	(.38)	(.58)	
Dhw_t $(\beta 2)$	-1.14	-2.49*	1.18	1.77	4.97**	5.85	-.47	3.57	1.66
	(1.29)	(1.39)	(2.19)	(1.98)	(1.99)	(3.70)	(1.81)	(2.84)	
$PI_{it}^{Dhw_t}$ $(\beta 3)$	-.44	-.79*	.33	.70	2.29**	2.25	-.19	1.37	0.69
	(.57)	(.46)	(.61)	(.76)	(.86)	(1.41)	(.73)	(1.09)	
PI_{it-1} $(\beta 4)$	.53**	.85***	-.02	.63*	.60	1.14***	.57*	1.63***	
	(.21)	(.26)	(.28)	(.34)	(.32)	(.35)	(.34)	(.53)	
CPI_{it} $(\beta 5)$	-.40	.01	-.024	.04	-.18***	.13	.32	.80	
	(.09)	(.06)	(.14)	(.20)	(.17)	(.25)	(.27)	(.85)	
T_t $(\beta 6)$	.02***	-.01***	.02***	-.03***	.01	.01***	.01	.01	
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	
$Dwinter_t$ $(\beta 7)$	.04	.03	-.01	-.22*	.08	.42***	.22*	-.09	
	(.06)	(.04)	(.07)	(.10)	(.09)	(.12)	(.13)	(.09)	
$Dspring_t$ $(\beta 8)$	.04	.14***	-.01	.04	.06	.53***	.35***	.07	
	(.05)	(.03)	(.06)	(.09)	(.08)	(.11)	(.12)	(.09)	
$Dsummer_t$ $(\beta 9)$	.05	.13***	.09	.17	.18**	.45***	.17	-.17*	
	(.06)	(.03)	(.06)	(.09)*	(.08)	(.11)	(.12)	(.09)	
$Dxmas_t(\beta 10)$	.02	-.15**	-.02	.17	.24	-.09	-.06	-.59***	
	(.09)	(.06)	(.11)	(.17)	(.14)	(.21)	(.22)	(.17)	
R^2	.482	.605	.297	.647	.617	.619	.737	.433	

*** $p < .01$. ** $p < .05$. * $p < .10$ (two-sided).

Appendix 5.3.2 Results SCAN*PRO model 1: shampoo brands

Shampoo Category	Andrelon (std. error)	Elvive (std. error)	Head&Shoulders (std. error)	Albert Heijn (std. error)	Schwarzkopf (std. error)	Nivea (std. error)	Palmolive (std. error)	Syoss (std. error)	Euroshopper (std. error)	Mean 9 brands
Constant (α)	8.19***	6.69***	6.71***	6.09***	6.90***	6.76***	7.23***	7.19***	6.66***	
	(.21)	(.22)	(.24)	(.33)	(.19)	(.24)	(.19)	(.41)	(.19)	
PI_{it} $(\beta 1)$	-3.47***	-2.95***	-2.11***	-1.42***	-1.77***	-2.21***	-.41	-1.03**	.01	-1.71
	(0.45)	(.33)	(.34)	(.19)	(.25)	(.27)	(.33)	(.49)	(.25)	
Dhw_t $(\beta 2)$	-1.30**	.18	1.48***	.12	-.59*	-.21	-2.23**	-.57	.16	-0.33
	(.52)	(.23)	(.31)	(.42)	(.33)	(.25)	(1.09)	(.64)	(2.79)	
$PI_{it}^{Dhw_t}$ $(\beta 3)$	-3.19***	-1.12	-4.12***	.34	-1.69***	-.13	-2.09**	-4.11**	-.06	-1.79
	(0.96)	(.97)	(1.15)	(.34)	(.61)	(.98)	(.97)	(1.61)	(1.12)	
PI_{it-1} $(\beta 4)$	.44	-.26	-.03	.01	.26	.60	.08	.85	-.24	
	(.40)	(.33)	(.34)	(.18)	(.26)	(.28)	(.33)	(.58)	(.26)	
CPI_{it} $(\beta 5)$	.24	-2.31	.14	1.14	.95	-.69**	.67	-1.88*	-.39	
	(.58)	(1.8)	(2.01)	(1.34)	(1.66)	(2.03)	(1.59)	(.98)	(.56)	
T_t $(\beta 6)$	-.01*	0.01	-.01	.01**	-.01	-.01	-.01	-.01	.01**	
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	
$Dwinter_t$ $(\beta 7)$	.02	-0.17	-.01	.20	.41**	-.13	.03	-.56	-.02	
	(.20)	(.21)	(.26)	(.17)	(.19)	(.22)	(.19)	(.36)	(.18)	
$Dspring_t$ $(\beta 8)$	.31	.16	.23	.22	-.02	-.18	.12	.01	.25	
	(.20)	(.22)	(.23)	(.18)	(.19)	(.23)	(.18)	(.37)	(.17)	
$Dsummer_t$ $(\beta 9)$	.45**	-.32	.02	.11	.33*	-.05	-.07	.19	.16	
	(.19)	(.20)	(.23)	(.47)	(.18)	(.21)	(.18)	(.33)	(.16)	
$Dxmas_t(\beta 10)$	-.01	.43	-.23	-.11	-.99***	-.38	.25	.06	.26	
	(.34)	(.36)	(.46)	(.28)	(.33)	(.37)	(.33)	(.55)	(.40)	
R^2	.482	.481	.434	.486	.463	.383	.093	.347	.129	
N	157	145	130	149	137	137	133	69	130	

*** $p < .01$. ** $p < .05$. * $p < .10$ (two-sided).

Appendix 5.3.3 Results SCAN*PRO model 1: chips brands

Chips Category	Smiths (std. error)	Albert Heijn (std. error)	Pringles (std. error)	Euroshopper (std. error)	Mean 4 brands
Constant (α)	10.65***	10.35***	8.91***	8.93***	
	(.09)	(.06)	(.15)	(.07)	
PI_{it} $(\beta 1)$	-2.24***	-2.36***	-4.88***	.15	-2.33
	(.39)	(0.23)	(.36)	(.53)	
Dhw_t $(\beta 2)$	.53	3.52***	-.12	-1.22	0.68
	(.97)	(.46)	(.24)	(1.40)	
$PI_{it}^{Dhw_t}$ $(\beta 3)$	1.16	4.72***	-.65	-.89	1.09
	(1.46)	(.61)	(.72)	(1.10)	
PI_{it-1} $(\beta 4)$	.44	.28	2.08***	.68	
	(.29)	(.22)	(.31)	(.49)	
CPI_{it} $(\beta 5)$	0.28	.23	-1.11	.65	
	(.38)	(.38)	(.90)	(.38)	
T_t $(\beta 6)$	.01	0.01	-0.01	.01**	
	(.01)	(.01)	(0.01)	(.01)	
$Dwinter_t$ $(\beta 7)$	-.13	0.24***	.19	.10	
	(.09)	(0.6)	(.15)	(.07)	
$Dspring_t$ $(\beta 8)$	-.03	.18***	-.04	.15**	
	(.08)	(0.06)	(.14)	(.06)	
$Dsummer_t$ $(\beta 9)$	.10	.09	.19	.01	
	(.08)	(.06)	(.14)	(.06)	
$Dxmas_t(\beta 10)$	.17	-.15	-.16	-.17	
	(.14)	(.11)	(.26)	(.11)	
R^2	.278	.552	.664	.114	

*** $p < .01$. ** $p < .05$. * $p < .10$ (two-sided).

Appendix 5.4.1 Results SCAN*PRO model 2: category

Category	Beer (std. error)	Soft drink (std. error)	Shampoo (std. error)	Chips (std. error)	Mean 4 categories
Constant (α)	13.94***	14.73***	9.89***	11.64***	
	(.05)	(.05)	(.12)	(.06)	
PI_{ct} $(\beta 1)$	-2.11***	-.62	-1.14***	-1.13***	-1.25
	(.32)	(.38)	(.28)	(.24)	
Dhw_t $(\beta 2)$	-1.76	-1.70	-.14	1.72**	-0.47
	(1.92)	(1.49)	(.36)	(.66)	
$PI_{ct}^{Dhw_t}$ $(\beta 3)$	-.81	-.65	-1.53**	2.58**	-0.10
	(.99)	(.57)	(.74)	(1.03)	
PI_{ct-1} $(\beta 4)$	.06	.08	-.04	-.46	
	(.30)	(.27)	(.26)	(.24)	
T_{ct} $(\beta 5)$	.01	.01***	.01	.01	
	(.01)	(.01)	(.01)	(.01)	
$Dwinter_t$ $(\beta 6)$	-.01	.07	-.01	.01	
	(.05)	(.05)	(.12)	(.06)	
$Dspring_t$ $(\beta 7)$	.131**	.14***	.13	.02	
	(.05)	(.05)	(.12)	(.06)	
$Dsummer_t$ $(\beta 8)$	.27***	.20***	.14	.04	
	(.05)	(.04)	(.12)	(.06)	
$Dxmas_t(\beta 9)$	.12	-.02	-.23	-.08	
	(.08)	(.08)	(.21)	(.10)	
R^2	.417	.230	.314	.168	

*** $p < .01$. ** $p < .05$. * $p < .10$ (two-sided).