國立交通大學

經營管理研究所

碩士論文

零售商價格促銷下影響快速流通商品品牌替代性與互補性商品購買之研究

The Effect of Retailer Price Promotion on FMCG Brand Substitution and Use Complementary Purchase

研究生：王郁玫

指導教授：唐瓔璋 教授

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研 究 生：王郁玫　　　　　Student：Yu-Mei, Wang

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摘　　要

以前的文獻研究零售商價格促銷大多限制在食品類別，而且對於消費者價格敏感度高低對品牌替代性以及互補性商品購買結果並無探討。本研究延伸研究產品類別屬快速流通商品的牙刷以及牙膏，更重要的是，研究對於不同價格敏感度的消費者，對於價格促銷在購買互補性商品以及品牌替代性的研究，希望能彌補以往研究的不足，以及未來零售商價格促銷時可以針對不同消費族群作適當的策略制訂。

研究資料來源為 Dominick's Database，包含美國芝加哥地區 85 家商店、29 個產品類別的商品掃瞄資料。因為資料庫太過龐大，以及符合研究主題考量，本研究選取其中的牙刷牙膏類別作分析，並篩選出 277~328 週（為期一年）的資料，依價格高低以及品類分別作出 12 條複迴歸式。研究結果發現價格促銷對於高價牙刷牙膏，在互補性商品購買以及品牌替代性並無太大影響，但是價格促銷對於低價牙刷牙膏卻是提高銷售額很有用的工具。

成功的零售商價格促銷決定於某些因素，就像促銷品項的利潤(或虧損)、顧客轉換購買促銷品項，以及非促銷品項的銷售額增加。如果零售商能運用掃描資料以及雇用專業行銷人員，使用科學方法制定行銷策略及規劃來因應環境變遷及消費者特性，這對於零售商追求利潤成長以及目標市場增加是有幫助的。

關鍵字:互補，替代，價格促銷，價格敏感度。

The Effect of Retailer Price Promotion on FMCG Brand Substitution and Use Complementary Purchase

Student：Yu-Mei, Wang   Advisors：Dr. Edwin, Tang

Institute of Business and Management
National Chiao Tung University

ABSTRACT

The past studies are limited in foods and do not prove whether price sensitive buyers purchase complementary or not. We will extend the study of promotional effects to FMCG category and, more importantly, to be empirical work on different price level of substitution and complementary products to advance promotional and merchandising practice.

The data is collected by Dominick's Database, which contains canner data of 85 stores, 29 categories in the US. Because the database is so huge and based on the topic which is about brand substitution and complementary, we only choose toothbrush and tooth paste for our sample in this study from 277 to 328 week.

Our finding shows that price promotion appears to be an effective tool for brand substitute and full-margin complementary purchase of low unit price but do not useful for brand substitution of high unit price. There are a few possible of high price brand in tooth brush category may have complementary purchase. Most retailers do not consider the effect of promotion on sales of non promoted product. As a consequence, retailers may draw misleading conclusions about promotional effectiveness.

The success of retail price promotions depends on such factors as the ability of the promoted items to draw customers to the store, the profit (or loss) on the promoted item, the cannibalization that occurs when consumers switch away from regular-priced items to promoted items, and the boost in sales volumes of non-promoted items. If retailers can use scanner data and have professional marketing employee to suit consumer characteristics and environment changes with scientific method to make a market strategy and planning, it is expected to meet strong sales and growth targets, achieved through strategies for retailers.

Key words: price promotion, substitution, complementary.

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I. Introduction

FMCGs, common abbreviation for "Fast moving consumer goods", are products that have a quick shelf, at relatively low cost and do not require a lot of thought, time and financial investment to purchase. Fast Moving Consumer Goods is also a classification that refers to wide range of frequently purchased consumer products including: safety matches, food items, bathing soaps, cosmetics, teeth cleaning products, hand-wash detergent powder, tinned food, food paste, towels, table salt, edible oil, tomato paste, monosodium glutamate, food seasonings, butter, margarine, breakfast beverages. Three of the largest and best known examples of Fast Moving Consumer Goods companies are Nestlé, Unilever and Procter & Gamble. Examples of FMCG brands are Coca-Cola, Kleenex, Pepsi and Mars. According to the study of Ministry of Economic Affairs (MOEA) and Institute for Information Industry, the FMCG sale is approximately 20,000million US dollars every year.

In the retailer grocery industry, category management is the process of managing category of products for greater profitability and customer value. The concept of efficient store assortments addresses the critical interface between distributors and consumers, and attempts to improve sales, shelf-space utilization and customer value. It is based on category management, ie managing categories (groups of closely related complementary products) for greater profitability and customer value, rather than managing individual brands or the vendor's gross margin by purchase (Gruen and Shah, 2000). This process consists of category definition, establishing product hierarchies (taxonomies); category execution, applying strategies for assorting, pricing and promotion products; and category performance measurement.

Category management is a data-driven process and, as a result, can benefit from point-of-sale (POS) scanner data. (Peter et al. 2004) The recent availability of scanner data to retail chains has resulted in a shift in power from manufacturers to retailers (Kumar & Leone, 1988). Research on UPC scanner data has been actively pursued by marketing academics since the mid-1980s and many papers have been published in the major marketing journals since then. One reason is that scanner data is easy to acquire and can give practitioners better tools for understanding their markets (e.g., approaches to analyze consumer response and market segmentation) and for making marketing mix decisions (e.g., setting prices and determining promotion spending).

Several academic studies address particular aspects of category management, including partner relationships for category management and category performance (Gruen and Shah, 2000); key determinants (eg assortment breadth) of effective category management (Dhar et al. 2001); and profitability of category management under an everyday low price (EDLP) strategy (Hoch et al. 2001). But little is known about the breadth and depth of brand substitution and complementary across product categories (Walter, 1991). The study will focus on the breadth and depth of retail price promotions on FMCG brand substitution and use complementary purchase using scanner data. For instance, when buying toothbrushes which are on price promotion, we will also consider if a tooth paste is needed. Shampoo and bath soap is another example. It is because one who is used to soap will not use bath soap to take a bath and the other more complex factors that we will not consider product substitution. The present study which is different from the past stands on product pricing and investigates the effect of retailer price promotion on FMCG brand substitution and use complementary. It is expected to meet strong sales and growth targets, achieved through strategies for retailers.

The study is organized as follows. First, we briefly introduce the background that included what FMCG is, research motive and objective. The next section presents the theoretical and summary of empirical research on price promotion effects. The research method—data estimate procedure and methodological aspects of price promotion in substitution and complementary purchase—is in the third section, followed by the research hypotheses. The forth section presents the results of this study that is the most important section. The final section is a discussion of the results, an analysis of the study's limitations, and suggestions for directions of future research.
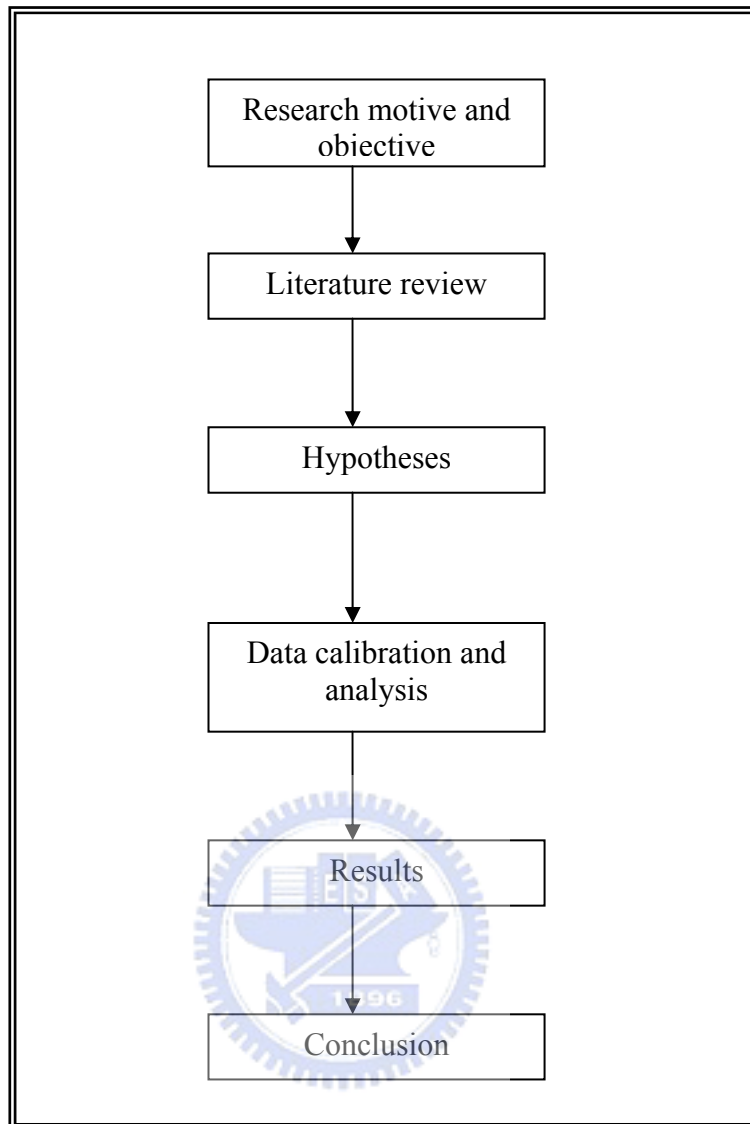
FIGURE 1 Flow chart

II. Literature review

A. Buying behavior

Consumer decision making varies with the type of buying decision. The decision to buy toothpaste, a tennis racket, a personal computer, and a new car are all very different. Blackwell, Miniard, and Engel (2001) mention that individual characteristics and purchase characteristics are the evaluative criteria in purchase decision process. These determinants of purchase characteristics are type of product, timing variables, price/quality, and situation. And there are many events showing consumer's involvement is not high among frequently purchasing product. In this study, FMCGs are products that have a quick shelf, at relatively low cost, and do not require a lot of thought, time and financial investment to purchase. FMCG also refers to wide range of frequently purchased consumer products. Generally speaking, customers are most price-sensitive to products that cost a lot or are bought frequently. They are less price-sensitive to low-cost items or items they buy infrequently. They are also less price-sensitive when price is only a small part of the total cost of obtaining, operating, and servicing the product over its lifetime. Companies, of course, prefer to work with customers who are less price-sensitive. Tom Nagle offers a list of factors associated with lower price sensitivity, for instance, buyers are less aware of substitutes and the product is assumed to have more quality, prestige, or exclusiveness. We assume that price/quality is the important purchase variable among FMCG in this study.

We group buyers into price sensitivity, low price sensitivity and others. In this study, we are interesting in price sensitivity and low price sensitive buyers. For price sensitive buyers, the price is only what they care. For example, they would like to buy the cheapest product or pay a lot of attention to what is on promoted. They scrimp on purchasing. But for low price sensitive buyers, they are loyalty to specific brand or pay attention to high quality products that always associate with high price. However, the past studies do not take notice of product pricing. Companies need to understand the price sensitivity of their customers and prospect and the trade-offs people are willing to make between price and product characteristics.

As we know, the complementary purchase of technical products is common. For example, while buying a digital camera, we will purchase a memory card which is use complementary as well. Also, the past studies are also limited in foods (eg. spaghetti and

spaghetti sauce) and do not prove whether price sensitive buyers purchase complementary or not. We will extend the study of promotional effects to FMCG category and, more importantly, to be empirical work on different price level of substitution and complementary products to advance promotional and merchandising practice.

In this article, we did not use questionnaire but scanner data. The reasons is that scanner data is easy to acquire, can give practitioners better tools for understanding their markets, and purchase intension is still different from purchase behavior which accords with actual situation.

B. Price promotion

The retail price promotions affect sales of non-promoted products and competitor performance is critical to retailers as they attempt to increase the effectiveness of promotion and improve their competitive position in the marketplace (Progressive Grocer 1989).

Kumar & Leone (1988) mention for manufacturers and retailers, they all expect to increase their sales. The manufacturer's primary objective in promoting a brand is to increase sales. In contrast, the retailer's primary objective is to maximize store profit. A retailer's promotional strategy could affect sales by causing category switching, increased consumption, stockpiling, brand substation, and/or store substitution. Retail promotion enables both retailer and manufacturer to meet objectives when brand substitution occurs within the store and customers from other stores switch, or cross-shop, to take advantage of the promotion.

Gupta's (1988) finding that the increasing sales on the promotion period are resulted from brand switching, purchase time acceleration and stockpiling. The important of brand choice is that brand switching accounts for 84% of the overall sales increase due to promotions in the coffee category.

Bell et al.(1999) work on Gupta's study and generalize two effects that are secondary demand effect(brand switching effect) and primary demand expansion. Their finding is also support that secondary demand effect accounts for 75% of the overall sales increase due to promotions.

The success of retail price promotions depends on such factors as the ability of the promoted items to draw customers to the store, the profit (or loss) on the promoted item, the cannibalization that occurs when consumers switch away from regular-priced items to promoted items, and the boost in sales volumes of non-promoted items.

C. Brand substitute

Treating brands within a product category as substitutes is also consistent with the economic definition of substitutes proposed by Henderson and Quandt (1958): "…two commodities are substitutes if both can satisfy the same need." From economist perspective, the relationship between substitution and complementary is about the change of relative price.

Classic examples of substitute goods include margarine and butter, or petroleum and natural gas (used for heating or electricity). The fact that one good is substitutable for another has immediate economic consequences: insofar as one good can be substituted for another, the demand for the two kinds of good will be bound together by the fact that customers can trade off one good for the other if it becomes advantageous to do so. Thus, an increase in price for one kind of good (ceteris paribus) will result in an increase in demand for its substitute goods, and a decrease in price (ceteris paribus, again) will result in a decrease in demand for its substitutes. Thus, economists can predict that a spike in the cost of wood will likely mean increased business for bricklayers, or that falling cellular phone rates will mean a fall-off in business for public pay phones.

In other words, good substitution is an economic concept where two goods are of comparable value. Car brands are an example. While someone could argue that Ford trucks are much different from Toyota trucks, If the price of Ford trucks goes up enough, some people will buy Toyota trucks instead.

In brand substitution area of researches, it is starting with Frank and Massy's (1967) work. And Moriarty (1985) examined the brand substitution effects of retail promotions and found some evidence that promotions enhance substitution.

Kumar and Leone (1988) use store-level scanner data and investigate the effect of retail store price promotion, featuring, and displays on sales of brands of disposable diapers within a city. Featuring refers to the retailer advertising the brand at a specific price in a weekly store circular. Displayed refers to the retailer providing a specific in-store presentation of the product, either through in-aisle or end-of-aisle displays. Price-cut refers to the retailer reducing the price of the product in comparison to its regular everyday price. Within a store,

price promotion produced the largest amount of brand substitution, followed by featuring and displays. They all indicate that price promotion is positively associated with one brand's sales. But little empirical research has been done on complementary effects of promotions.

Walters (1991) indicates the presence of substitution effects within a product category and supports conventional wisdom (Davidson, Sweeney, and Stampfl). His study showing that substitution effects are asymmetrical and the brands with high market shares often gain sales at the expense of their low share competitors.

D. Complement

Balderson (1956) describes two types of complementary relationship. Products are use complements if they are consumed together; products are purchase complements if they are purchased together. From a retail perspective, the purchase complementary of all items included in a consumer's shopping basket.

Product complements are products that are used in conjunction with one another to satisfy some particular need (Henderson and Quandt 1958). Complement or complementary good is defined in economics as a good that should be consumed with another good; its cross elasticity of demand is negative. This means that, if goods A and B were complements, more of good A being bought would result in more of good B also being bought. An example of complement goods is hamburgers and hamburger buns. If the price of hamburgers falls, more hamburger buns would be sold because the two are usually used together.

In marketing, complementary goods give additional market power to the company. It allows vendor lock-in as it increases the switching cost. A few types of pricing strategy exist for complementary good and its base good: Pricing the base good at a relatively low price to the complementary good - this approach allows easy entry by consumers (e.g. consumer printer vs ink jet cartridge). Pricing the base good at a relatively high price to the complementary good - this approach creates a barrier to entry and exit (e.g. golf club membership vs green fees)

A basic notion in retailing is that promotions also affect consumer purchasing patterns by stimulating purchases of non-promoted complements to the promoted products (Berman and Evans 1989; Walters 1988). Promotions also can cause consumers to substitute a reduced-margin brand for a full-margin brand. Complementary effects created by promotions are of special interest to retailers because significant increase in sales of full-margin complementary products can offset decreases in sales of full-margin substitute brands (Walters 1991). McAlister and Totten (1985) indicates that the level of interaction often is substantial and the promoted brand can influence significantly both competitive brands (decrease their sales) and complementary products (increase their sales). Mulhern (1989) and Walters (1991) also show the promotion of one product can stimulate sales of complement.

TABLE 1 Summary of Empirical Research on Price Promotion Effects

Price promotion effect on	Reason for effect	Selected literature	Demonstrated effect
Promoted category			
Promoted brand	A. Stockpiling B. Brand switching C. primary demand D. store switching	A. Neslin, Henderson, and Quelch (1985) Blatterg Eppen, and Lieberman (1981) B. McAlister and Struse (1988) Guadagni and little (1983) C. Moriarty (1985) D. Kumar and Leone (1988)	Sales increase
Nonpromoted brands	Brand switching	Blattberg and Wisniewski (1989) Guadagni and Little (1983) Mulhern (1989), Walters (1991)	Sales decrease
Nonpromoted category			
substitutes	Category switching	None Sales	decrease
complements	Purchase for join consumption	Mulhern (1989) Walters (1988, 1991) Berman and Evans (1989) McAlister and Totten (1985)	Sales increase
Store performance			
	A. Portfolio of item on deal B. Numbers and size of discounts C. Store switching	I. Walters and MacKenzie (1988) Walters and Rinne(1986) II. Mulhern and Leone (1990) III. Lewison and DeLozier(1986) Kumar and Leone (1988)	Increase in store sales, customer volume, store profit

III. Method

A. Data

The data is collected by Dominick's Database, which contains canner data of 85 stores, 29 categories in the US. The Dominick's database covers store-level scanner data collected at Dominick's Finer Foods over a period of more than seven years.

TABLE 2 summary for each category in Dominick's database

no	Category	Code	UPC Code	Observation
1	Analgesics	Ana	641	7204604
2	Bath soap	Bat	600	1538840
3	Beer	Ber	790	3846701
4	Bottled juices	Bjc	511	6016137
5	Cereals	Cer	490	6417055
6	Cheeses	Che	667	9175101
7	Cigarettes	Cig	868	10441124
8	Cookies	Coo	960	13021115
9	Crackers	Cra	330	3506239
10	Canned soup	Cso	445	7011243
11	Dish detergent	Did	287	3737855
12	Front-end-candies	Fec	505	6561190
13	Frozen dinners	Frd	283	2597193
14	Frozen entrees	Fre	900	11347587
15	Frozen juices	Frj	175	3085057
16	Fabric softeners	Fsf	318	4029615
17	Grooming products	Gro	1599	10005386
18	Laundry detergency	Lnd	582	6606408
19	Oatmeal	Oat	96	1301870
20	Paper towels	Ptw	164	1847017
21	Refrigerated juices	Frj	228	2975031
22	Soft drink	Sdr	1746	17069092
23	Shampoos	Sha	2713	14204186
24	Snack crackers	Sna	425	5310005
25	Soaps	Soa	337	3203880
26	Toothbrushes	Tbr	431	4529484
27	Canned tuna	Tna	278	3763229
28	Toothpastes	tpa	608	6132438

29	Bathroom tissues	tti	128	1571901

Because the database is so huge and based on the topic which is about brand substitution and complementary, we only choose toothbrush and tooth paste for our sample in this study. The reason is sales of toothbrush and tooth paste will not change a lot by season. And for many categories, the identification of product complements is difficult. Toothbrush and tooth paste are simple and suitable in this study.

Although the data in Dominick's Database covered a period of 399 weeks, we only selected 52 weeks to investigate the two categories. First, we calculate total sales of each brand from 277 to 328 week (we show the calendar in appendix A). Second, we calculate unit price of each brand. In this study, the prices of toothpaste are per ounce and the prices of toothbrush are one unit. Third, we choose the high unit price with high market share in the categories and the low unit price is in the same process. Table 3 and Table 4 show the three toothbrush and toothpaste brands with high unit price. Table 5 and Table 6 show the three toothbrush and toothpaste brands with low unit price. The information of stores was included in our study (appendix D & E).
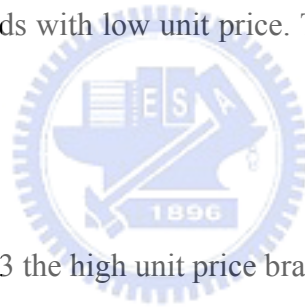
TABLE 3 the high unit price brand of toothbrush

UPC	BRAND	SALE	UNIT PRICE
3500055300	COLGATE(CO)	30167.92	2.99
30041085562	ORAL B(OB)	21700.94	2.99
3700000869	CREST (CR)	20805.15	2.69

TABLE 4 the high unit price brand of tooth-paste

UPC	BRAND	Sale	unit price
3834109379	COLGATE (KCO)	6849.29	2.363333
34167041720	TOPOL (KTO)	6233.36	1.497059
30041037017	ORAL-B (KOB)	6401.94	1.023333

TABLE 5 the low unit price brand of toothbrush

UPC	BRAND	SALE	UNIT PRICE
7094240409	BUTLER(BU)	10279.07	1.245
30041083518	ORAL-B (OB)	7869.09	1.245
1111383159	PEPSODENT(PE)	10765.28	0.99

TABLE 6 the low unit price brand of tooth-paste

UPC	BRAND	sale	unit price
3700000391	CREST (KCR)	103585.08	0.389063
3500050900	CLGT(KCL)	79939.88	0.373438
3500057100	COLGATE (KCO)	67609.78	0.373438

B. Modeling procedure

To measure the effect of retail price promotion on sales of substitutes and complements, retail price promotional activities on the brand and its substitutes and complements within a store are in the model. In this study, dependent variable is sales of one brand and independent variables are the retail prices of competing or substitute brands and complement brands in tooth brush and toothpaste category.

(1) $\quad$ $Sales_i = \sum \chi_i \beta_i$ $\quad$ where β_i = retail price of high-priced brand 1 to 6

It is specified here for high price level brand CO.

$$Sales_{CO} = X_1 \beta_{CO} + X_2 \beta_{OB} + X_3 \beta_{CR} + X_4 \beta_{KCO} + X_5 \beta_{KOB} + X_6 \beta_{KTO}$$

Where β_{CO} = retail price of toothbrush Brand CO

β_{OB} = retail price of toothbrush Brand OB

β_{CR} = retail price of toothbrush Brand CR

β_{KCO} = retail price of toothpaste Brand KCO

β_{KOB} = retail price of toothpaste Brand KOB

β_{KTO} = retail price of toothpaste Brand KTO

(2) $\quad$ $Sales_j = \sum \gamma_j \alpha_j$ $\quad$ where α_j = retail price of low-priced brand 1 to 6

For example,

$Sales_{PE} = \gamma_0 + \gamma_1 \alpha_{PE} + \gamma_2 \alpha_{BU} + \gamma_3 \alpha_{OB} + \gamma_4 \alpha_{KCR} + \gamma_5 \alpha_{KCL} + \gamma_7 \alpha_{KCO}$

The equation contains variables pertaining to the brand itself (α_1), the brand's substitutes in the product category (α_2 and α_3), and the brand's complements (α_4, α_5 and α_6).

TABLE 7 Summary the method and sample of substitute and complement literature.

Selected literature	Topic	Study Result	Product category of sample
Kumar & Leone (1988)	Measuring the effect of retail store price promotion, featuring, and displays on sales of brands of disposable diapers within a city.	Within a store, price promotion produced the largest amount of brand substitution, followed by featuring and displays. Similarly, these activities produced store substitution in certain instances.	disposable diapers
$Sales_t(A)=b_0+b_1Pr_t(A)+b_2F_t(A)+b_3D_t(A)+b_4[Pr_t(A)xF_t(A)]+\ldots+b_{21}[Pr_t(C)xF_t(C)xD_t(C)]$			
Walters (1991)	The impact of retail price promotions on consumer purchasing patterns and the performance of competing retailers.	Inter-store promotional effects also were detected in several cases s the promotions of the products in one store significantly decreased sales of substitutes and complements in a competing store.	Spaghetti and spaghetti sauce. Cake mix and cake frosting.
$Sales(BC)=a_0+a_1BC+a_2PL+a_3DH+a_4FBC+a_5FPL+a_6KBC+a_7KPL+a_8KDH+a_9KFBC+a_{10}KFPL$			
Mulhern & Leone (1991)	Retail pricing and promotion policies based on the implicit price bundling of related products.	They calibrate how the regular and deal prices of individual brands influence the sales of substitute and complementary item. They also demonstrate how retailers can maximize profitability the interdependences in demand that present among retail products.	Cake mix and cake frosting.
$lnQ_{it}=\alpha_1+\beta_{1i}/DP_{it}+\alpha_2X_{it}+\Sigma(\gamma_{1k}/RP_{kt}+\gamma_{2k}/DP_{kt})+\mu_{it}$			

In economics, elasticity is the proportional change in one variable relative to the proportion change in another variable. The concept of elasticity can be used whenever there is a cause and effect relationship.

In economics, the price elasticity of demand (PED) is an elasticity that measures the nature and degree of the relationship between changes in quantity demanded of a good and changes in its price.

Price elasticity of demand is measured as the percentage change in quantity demanded that occurs in response to a percentage change in price. For example, if, in response to a 10% fall in the price of a good, the quantity demanded increases by 20%, the price elasticity of demand would be 20%/(− 10%) = −2. (Case & Fair, 1999).

In general, a fall in the price of a good is expected to increase the quantity demanded, so the price elasticity of demand is negative as above. Note that in economics literature the minus sign is often omitted and the elasticity is given as an absolute value. (Case & Fair, 1999). Because both the denominator and numerator of the fraction are percent changes, price elasticities of demand are dimensionless numbers and can be compared even if the original calculations were performed using different currencies or goods.

An example of a good with a highly inelastic demand curve is salt: people need salt, so for even relatively large changes in the price of salt, the amount demanded will not be significantly altered. Similarly, a product with a highly elastic demand curve is red cars: if the price of red cars went up even a small amount, demand is likely to go down since substitutes are readily available for purchase (cars of other colors).

It may be possible that quantity demanded for a good rises as its price rises, even under conventional economic assumptions of consumer rationality. Two such classes of goods are known as Giffen goods or Veblen goods. Another case is the price inflation during an economic bubble. The unicist approach to price elasticity solved the problem integrating the demanded quantity, its subjective value and the price.

The formula used to calculate the coefficient of price elasticity of demand is

$$E_d = \left| \frac{\% \text{ change in quantity demanded of product X}}{\% \text{ change in price of product X}} \right| = \frac{\Delta Q_d / Q_d}{\Delta P_d / P_d}$$

Using all the differential calculus:

$$E_d = \frac{P}{Q}\frac{\partial Q}{\partial P}$$

where: P = price, Q = quantity

When the price elasticity of demand for a good is elastic (Ed > 1), the percentage change in quantity is greater than that in price. Hence, when the price is raised, the total revenue of producers falls, and vice versa.

When the price elasticity of demand for a good is inelastic (Ed < 1), the percentage change in quantity is smaller than that in price. Hence, when the price is raised, the total revenue of producers rises, and vice versa.

When the price elasticity of demand for a good is unit elastic (or unitary elastic) (Ed = 1), the percentage change in quantity is equal to that in price. Hence, when the price is raised, the total revenue remains unchanged. The demand curve is a rectangular hyperbola.

When the price elasticity of demand for a good is perfectly elastic (Ed = ∞), any increase in the price, no matter how small, will cause demand for the good to drop to zero. Hence, when the price is raised, the total revenue of producers falls to zero. The demand curve is a horizontal straght line. A ten-dollar banknote is an example of a perfectly elastic good; nobody would pay $10.01, yet everyone will pay $9.99 for it.

When the price elasticity of demand for a good is perfectly inelastic (Ed = 0), changes in the price do not affect the quantity demanded for the good. The demand curve is a vertical straight line; this violates the law of demand.

Elasticity is an important concept in understanding the different types of goods as they relate to the theory of consumer choice. In economics, the cross elasticity of demand or cross price elasticity of demand measures the responsiveness of the quantity demanded of a good to a change in the price of another good.

It is measured as the percentage change in demand for the first good that occurs in response to a percentage change in price of the second good. For example, if, in response to a

10% increase in the price of fuel, the quantity of new cars that are fuel inefficient demanded decreased by 20%, the cross elasticity of demand would be -20%/10% = -2.

In the example above, the two goods, fuel and cars, are complements - that is, one is used with the other. In these cases the cross elasticity of demand will be negative. In the case of perfect complements, the cross elasticity of demand is negative infinity.

Where the two goods are substitutes the cross elasticity of demand will be positive, so that as the price of one goes up the quantity demanded of the other will increase. For example, in response to an increase in the price of fuel, the demand for new cars that are fuel efficient (hybrids for example) will also rise. In the case of perfect substitutes, the cross elasticity of demand is positive infinity.

Where the two goods are independent the cross elasticity demand will be zero, as the price increase the quantity demanded will be zero, an increase in price 'zero quantity demanded'. In case of perfect independence, the cross elasticity of demand is zero.

(3) Cross-Price Elasticity = (percentage change in amount of A bought) divided by (percentage change in price of B).

Take low price brands for example,

$$Sales_{TP}= \gamma_0+ \gamma_1 \alpha_{PE} + \gamma_2 \alpha_{BU} + \gamma_3 \alpha_{OB} + \gamma_4 \alpha_{KCR} + \gamma_5 \alpha_{KCL} + \gamma_7 \alpha_{KCO}$$

$$Sales_{TB}= \gamma_0+ \gamma_1 \alpha_{PE} + \gamma_2 \alpha_{BU} + \gamma_3 \alpha_{OB} + \gamma_4 \alpha_{KCR} + \gamma_5 \alpha_{KCL} + \gamma_7 \alpha_{KCO}$$

$$Sales_{TOTAL}= \gamma_0+ \gamma_1 \alpha_{PE} + \gamma_2 \alpha_{BU} + \gamma_3 \alpha_{OB} + \gamma_4 \alpha_{KCR} + \gamma_5 \alpha_{KCL} + \gamma_7 \alpha_{KCO}$$

It is measured as the percentage change in demand for the toothpaste that occurs in response to a percentage change in price of the toothpaste and tooth brush. Where the two goods are substitutes the cross elasticity of demand will be positive, so that as the price of one goes up the quantity demanded of the other will increase.

TABLE8 A brief summary of the literature estimating price elasticity

Study	Product category	Price elasticity	Type of data	Functional specification
Guadagni & Little (1983)	Ground coffee	-1.9 to -3.4	Household data	Logit models
Krishnamurthi & Raj (1988)	NA	-1.0 to -1.9	Household data	Logit models
Wittink & colleagues (1988)	Tuna	-1.3 to -4.3	Store data	Log-log
Kumar & Leone (1988)	Disposable diapers	NA	Store data	Linear
Kamakura & Russell (1989)	NA	-2.2 to -4.6	Household data	Logit models
Bolton (1989)	Frozen waffles, liquid bleach, toulet tissue, catsup	-0.5 to -2, -2.3 to -3.9, -1.9 to -4.9, -0.8 to -5.4	Store data	Linear multip;icative exponential
Blatterg & Wisnitewski (1989)	Semi-log	-5.0 to -6.5	Store data	Several
Allenby & Rossi (1991a)	Margarine	-1.8 to -5.9	Household data	Logit models
Gonul & Srinivasan (1993)	Disposable diapers	-1.7 to -3.9	Household data	Logit models
Zenor & Srivastava (1993)	NA	NA	Store data	Latent segment logit
Jain, Vilcassim & Chintagunta (1994)	Saltine crackers, Catsup, Yogurt	-0.7 to -3.0, -1.5 to -3.8, -1.0 to -2.1	Household data	Logit models
Hoch & colleagues (1994)	18 categories	-0.8 to -2.6	Store data	Log-log
Christen & colleagues (1995)	Peanut butter, powdered detergents	-2 to -2.4, -1.7	Store data	Log-log

C. Hypotheses

1. Promotional effects

For manufacturers and retailers, they all expect to increase their sales. The manufacturer's primary objective in promoting a brand is to increase sales. In contrast, the retailer's primary objective is to maximize store profit (Kumar & Leone, 1988). Most of studies support by conventional wisdom and past empirical research (Neslin, Henderson, and Quelch ,1985; Blatterg Eppen, and Lieberman ,1981; McAlister and Struse ,1988; Guadagni and little, 1983; Moriarty ,1985). The first hypothesis is that retail promotional activity stimulates significant increases in sales of the promoted product—no matter the product pricing is high or low. Therefore,

H1: retail price promotional activities conducted on a brand of high price level have a significant positive impact on sales of the promoted brand.(+)

H2: retail price promotional activities conducted on a brand of low price level have a significant positive impact on sales of the promoted brand. (+)

2. Brand substitution effects

Numerous studies with diary panel data (Dodson, Tybout, and Sternthal, 1978) and aggregate sales data (Kumar and Leone, 1988) indicate that price promotions enhance brand substitution effects (Chevalier, 1975; Moriarty, 1985). We assume that:

H3: retail price promotional activities conducted on a brand of high price level have a significant positive impact on sales of brand substitutes in the product category. (+)

H4: retail price promotional activities conducted on a brand of low price level have a significant positive impact on sales of brand substitutes in the product category. (+)

3. Use complementary effects

A basic notion in retailing is that promotions also affect consumer purchasing patterns by stimulating purchases of non-promoted complements to the promoted products (Berman and Evans 1989; Walters 1988). Complementary effects created by promotions are of special interest to retailers because significant increase in sales of full-margin complementary products can offset decreases in sales of full-margin substitute brands (Walters 1991). McAlister and Totten (1985) indicates that the level of interaction often is substantial and the promoted brand can influence significantly both competitive brands (decrease their sales) and complementary products (increase their sales). Mulhern (1989) and Walters (1991) also show the promotion of one product can stimulate sales of complement.

H5: retail price promotional activities conducted on a brand of high price level have a significant positive impact on sales of brand complements.(+)

H6: retail price promotional activities conducted on a brand of low price level have a significant positive impact on sales of brand complements. (+)

At the first, we have the tooth brush and tooth paste scanner data from 277 to 328 week and save as two EXCEL that one is the dataset of high price brands and the other is low price brands. We use SAS program to analysis data. The equation 1 ($Sales_i = \sum \chi_i \beta_i$) is for hypothesis 1,3, and5. The equation 2 ($Sales_j = \sum \gamma_j \alpha_j$) is for hypothesis 2,4, and 6. The equation 3, Cross-Price Elasticity = (percentage change in amount of A bought) divided by (percentage change in price of B), can measured as the percentage change in demand for the item that occurs in response to a percentage change in price of the toothpaste and tooth brush.

IV. Results

TABLE 9 un-standardized regression coefficients pertaining to brand substitution and complementary effects: high price brand

I.V.	Independent variables affect sales of					
	Tooth-brush			Tooth-paste		
	CO	OB	CR	KCO	KOB	KTO
CO	-4.01265***	-0.74387	-0.69059	-0.69855	0.72392**	-1.13796
OB	-1.87465	-12.28643***	0.13324	0.73054	0.41935	2.28050*
CR	1.95698*	-1.48930*	-4.79020***	-0.22362	0.22077	-1.04523
KCO	11.24828	-18.87500**	1.96878	4.49549	-2.00635	-15.08916
KTO	0.37944	1.33600	-3.06794**	1.04178	0.12853	0.70934***
KOB	4.06715	4.94271*	1.35682	4.49549	-3.73944***	0.70934**
F	3.62***	15.69***	12.55***	0.26	2.46**	3.18***
R^	0.04	0.15	0.12	0.003	0.03	0.03

* $p<0.10$. ** $p<0.05$. *** $p<0.01$.

TABLE 10 cross elasticity: high price brand

I.V.	Independent variables affect sales of		
	Tooth-brush	Tooth-paste	Total
CO	-5.44710***	-1.11260	-6.55970***
OB	-14.02784***	3.43038	-10.59746**
CR	-4.32253***	-1.04807	-5.37059**
KCO	-5.65794	-12.60002	-18.25796
KTO	-1.35249	-4.31080	-5.66329
KOB	10.36668*	0.35900	10.72568
F	6.51***	0.79	3.08***
R^	0.07	0.01	0.03

* $p<0.10$. ** $p<0.05$. *** $p<0.01$.

TABLE 11 correlation matrix: high price brand

	CO	OB	CR	KCO	KTO	KOB
CO	1					
OB	0.11152***	1				
CR	-0.19423***	-0.01573	1			
KCO	-0.27334***	0.05646	-0.22230***	1		
KTO	0.20533***	-0.05469**	0.14519***	-0.50990***	1	
KOB	0.06102***	0.11671***	-0.10651***	0.15344***	-0.23934***	1

* p<0.10. ** p<0.05. *** p<0.01.

TABLE 12 un-standardized regression coefficients pertaining to brand substitution and complementary effects: low price brand

	Independent variables affect sales of					
I.V.	Tooth-brush				Tooth-paste	
	BU	**OB**	**PE**	**KCR**	**KCL**	**KCO**
PE	1.82597**	0.88746	-9.42893***	-1.90476	3.39055	2.35186
BU	-2.23360***	-0.02169	0.12412	-0.85112	-0.46530	-0.85653**
OB	-3.20102***	-15.56952***	0.77781**	7.82740***	-4.76324***	-4.26724***
KCR	-1.61840***	0.27128	-0.42014*	-38.87343***	5.65675***	4.81442***
KCL	-0.97797	-0.70307	1.82145	24.44965***	-14.22192**	-10.25474*
KCO	0.09022	2.23207	-2.17173	-16.15968**	-14.18679**	-24.52308***
F	58.96***	84.65***	62.06***	139.78***	97.49***	176.66***
R^	0.11	0.15	0.11	0.22	0.17	0.26

p<0.10. ** p<0.05. *** p<0.01.

TABLE 13 cross elasticity: low price brand

I.V.	Independent variables affect sales of		
	Tooth-brush	Tooth-paste	Total
BU	-2.13117***	-2.17295**	-4.30412***
OB	-17.99273***	-1.20308	-19.19581***
PE	-6.71549***	3.83765	-2.87784
KCR	-1.76726***	-28.40227***	-30.16952***
KCL	0.14041	-0.02701	0.11340
KCO	0.15056	-54.86955***	-54.71899***
F	83.53***	103.54***	89.75***
R^	0.15	0.17	0.15

* $p<0.10$. ** $p<0.05$. *** $p<0.01$.

TABLE 14 correlation matrix: low price brand

	BU	*OB*	*PE*	*KCR*	*KCL*	*KCO*
BU	1					
OB	0.24219***	1				
PE	0.01553	-0.00423	1			
KCR	0.06122***	-0.22968***	-0.10195***	1		
KCL	0.12730***	-0.19588***	-0.12627***	-0.19553***	1	
KCO	0.12728***	-0.19553***	-0.12553***	0.34968***	0.98453***	1

* $p<0.10$. ** $p<0.05$. *** $p<0.01$.

A. Promotional effects

H1 and H2 state that price promotions on a brand stimulate brand sales. The hypothesized sign associated with the relationship is negative – that is, as prices decrease (increase), sales increase (decrease). The results indicate that price promotions had a significant impact on brand sales for all promoted brands. In this type of research, collinearity may exits to reduce our explanation. TABLE 10 and TABLE 13 show cross elasticity. TABLE 11 is the correlation matrix for high price level brands, and TABLE 14 is for low price level brands. The finding shows that the data support H1 and H2, that is, retail price promotional activities conducted on a brand of high and low price level have a significant positive impact on sales of the promoted brand, expect for high price brands (KCO and KTO) in the toothpaste category. Over all speaking, in the tooth brush and toothpaste category, as prices decrease (increase), sales increase (decrease).

B. Brand substitution effects

H3 states that price promotions on one brand of high price level have a positive impact on sales on substitute brands in the category, and H4 states that price promotions on one brand of low price level have a negative impact on sales on substitute brands. The hypothesized sign associated with this relationship is positive – that is, high (low) prices on one brand mean high (low) sales of substitute brands. In low price level of the tooth brush category, for example, PE gained sales at the expense of OB (TABLE 12 and TABLE 13). In particular, we find a strong correlation between KCL price and KCO price (TABLE 14). Therefore, it must be careful to explain the brand substitution effect of KCL and KCO.

The results show that the number of substitution effects varied among product category and among brands of high (low) price level. For example, for low price level brands, significant substitution effects were found in 67% of possible cases when price promotions were conducted in tooth brush category, whereas significant substitution effects were found in 100% of the cases in toothpaste. For high price level brands, only price promotions on CR toothbrush resulted in significant decreases in sales of CO tooth brush in high price level, whereas there is no significant evidence to indicate that price promotions impact on sales of brand substitutes in toothpaste category. The overall pattern of results provides modest rejects

H3 but supports H4, that is, price promotions on one brand of high price level have a negative impact on sales on substitute brands in the category, and price promotions on one brand of low price level have a positive impact on sales on substitute brands.

So far as we have seen that there are several interesting substitution patterns. First, most of the substitution effects were asymmetrical, as one brand built sales at the expense of another brand but did not lose sales as a result of that brand's price promotion activities. For example, for low price level brands, price promotion on PE tooth brush significantly reduced sales of BU tooth brush, yet price promotion on BU did not significantly reduce sales of PE tooth brush. Only in toothpaste of low price level, price promotion on KCR toothpaste significantly reduced sales of KCL toothpaste, and price promotion on KCL toothpaste significantly reduced sales of KCR toothpaste as well. Second, price promotions appear to be effective in enhancing substitution of low unit price brands in the toothpaste category. That is very different from Walters's study. In 1991, Walter's study indicates that in no instance did a low market share brand gain sales at the expense of a brand with higher market share. But in our study, KCR toothpaste is the popular brand with high market share in toothpaste category, and price promotions enabled KCL toothpaste, a brand with lower market share and lower unit price, to gain sales at the expense of KCR toothpaste. And PE toothpaste is at the same situation. Hence, price promotion appears to be an effective tool for brands of low unit price in their categories. The overall pattern of results provides modest rejects H3 but supports H4.

C. Use complementary effects

The hypothesized sign associated with this relationship is negative (i.e., low prices on a brand mean high sales of complementary products). H5 posits that price promotions on a high price level brand have a significant positive impact on sales of brand complements to the promoted brand. And H6 posits that price promotions on a low price level brand have a significant positive impact on sales of brand complements to the promoted brand.

As brand substitution effects, the results show that the number of substitution effects varied among product category and among brands of high (low) price level. For example, for low price level brands, significant substitution effects were found in 67% of possible cases when price promotions were conducted in tooth brush and toothpaste category. For high price

level brands, significant substitution effects were found in 67% of possible cases when price promotions were conducted in tooth brush category, whereas there is no significant evidence to indicate that price promotions impact on sales of brand substitutes in toothpaste category.

The patterns of results pertain to complementary effects provides some interesting insights into price promotional effects. First, like substitution effects, substitution effects were not symmetrical. That is, in toothpaste of low price level, price promotion on KCR toothpaste significantly increased sales of BU tooth brush, and price promotion on BU toothpaste do not increase sales of KCR toothpaste as well. Second, price promotions did not appear to enhance complementary purchase of high unit price brands. Hence, price promotion appears to be an effective tool for complementary purchase of low unit price in their categories but do not useful for complementary purchase of high unit price. The overall pattern of results provides modest reject H5 but support H6.

V. Conclusion

The study focus on the breadth and depth of retail price promotions on FMCG brand substitution and use complementary purchase using scanner data. For instance, when buying toothbrushes which are on price promotion, we will also consider if a tooth paste is needed. Shampoo and bath soap is another example. The present study is different from the past and stands on product pricing and investigates the effect of retailer price promotion on FMCG brand substitution and use complementary.

The finding shows that the data support H1 and H2, that is, retail price promotional activities conducted on a brand of high and low price level have a significant positive impact on sales of the promoted brand, expect for high price brands (KCO and KTO) in the toothpaste category. Over all speaking, in the tooth brush and toothpaste category, as prices decrease (increase), sales increase (decrease).And the study provides modest rejects H3 but supports H4, that is, price promotions on one brand of high price level have a negative impact on sales on substitute brands in the category, and price promotions on one brand of low price level have a positive impact on sales on substitute brands. Third, price promotion appears to be an effective tool for complementary purchase of low unit price in their categories but do not useful for complementary purchase of high unit price. The overall pattern of results provides modest reject H5 but support H6.

The finding shows that price promotions on a brand stimulate brand sales. The results indicate that price promotions had a significant impact on brand sales for all promoted brands in tooth brush and toothpaste categories. In other words, as prices decrease (increase), sales increase (decrease). The result also shows price promotions on one brand of low price level have a positive impact on sales on substitute brands in the category, but price promotions on one brand of high price level have a negative impact on sales on substitute brands. And, it shows most of the substitution effects were asymmetrical, as one brand built sales at the expense of another brand but did not lose sales as a result of that brand's price promotion activities. The most interesting is that the result is very different from Walters's study. In 1991, Walter's study indicates that in no instance did a low market share brand gain sales at the expense of a brand with higher market share.

Complementary effects of promotions were called by one retail executive in the study "the essence of merchandising," yet complementary effects rarely have been explored

by researchers and probably are not exploited enough by retailers. We find that price promotion appears to be an effective tool for complementary purchase of low unit price in their categories but do not useful for complementary purchase of high unit price, especially for toothpaste of high price.

The study results have some interesting implication for retailers and manufactures. For manufacturers and retailers, they all expect to increase their sales. The manufacturer's primary objective in promoting a brand is to increase sales. In contrast, the retailer's primary objective is to maximize store profit (Kumar & Leone, 1988). Jack Trout, author of positioning, cautions that some product categories tend to self-destruct by always being on sale. They must do carefully or find that their profits are much less than planned. The success of retail price promotions depends on such factors as the ability of the promoted items to draw customers to the store, the profit (or loss) on the promoted item, the cannibalization that occurs when consumers switch away from regular-priced items to promoted items, and the boost in sales volumes of non-promoted items.

In this article, FMCGs are having a quick shelf, at relatively low cost and do not require a lot of thought, time and financial investment to purchase. Because of FMCG product characteristics, most of retailers will set a low price or promotions frequently and think it is useful. In the words of marketing consultant Kevin Clancy, those who target only the price-sensitive are "leaving money on the table." Our finding shows that price promotion appears to be an effective tool for brand substitute and full-margin complementary purchase of low unit price but do not useful for brand substitution of high unit price. There are a few possible of high price brand in tooth brush category may have complementary purchase. Most retailers do not consider the effect of promotion on sales of non promoted product. As a consequence, retailers may draw misleading conclusions about promotional effectiveness.

Scanner data is easy to acquire and can give practitioners better tools for understanding their markets (e.g., approaches to analyze consumer response and market segmentation) and for making marketing mix decisions (e.g., setting prices and determining promotion spending). If retailers can use scanner data and have professional marketing employee to suit consumer characteristics and environment changes with scientific method to make a market strategy and planning, it is expected to meet strong sales and growth targets, achieved through strategies for retailers.

Certain limitations of our work and database provide opportunities for future research. First, the price promotional effects investigated may be particular to the product categories examined. Second, all of these factors ,for example, retailing advertising , promotional frequency, the degrees of discount and channel power may enhance or inhibit substitution and complementary effects, and future research should include these variables in studies of promotional effects. Third, thought we examine two types of buyer that all are associated with price. It would be interesting to understand how category characteristics influence purchase characteristics. Future research can make a questionnaire to evaluate attribute and combine scanner data to analyze. Therefore, the promotions we analyze reflect the real world

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Appendix A

Week#	start	end	Special events
280	01/19/95	01/25/95	
281	01/26/95	02/01/95	
282	02/02/95	02/08/95	
283	02/09/95	02/15/95	
284	02/16/95	02/22/95	Presidents Day
285	02/23/95	03/01/95	
286	03/02/95	03/08/95	
287	03/09/95	03/15/95	
288	03/16/95	03/22/95	
289	03/23/95	03/29/95	Easter
290	03/30/95	04/05/95	
291	04/06/95	04/12/95	
292	04/13/95	04/19/95	
293	04/20/95	04/26/95	
294	04/27/95	05/03/95	
295	05/04/95	05/10/95	
296	05/11/95	05/17/95	
297	05/18/95	05/24/95	
298	05/25/95	05/31/95	Memorial Day
299	06/01/95	06/07/95	
300	06/08/95	06/14/95	
301	06/15/95	06/21/95	
302	06/22/95	06/28/95	
303	06/29/95	07/05/95	4th of July
304	07/06/95	07/12/95	
305	07/13/95	07/19/95	

306	07/20/95	07/26/95	
307	07/27/95	08/02/95	
308	08/03/95	08/09/95	
309	08/10/95	08/16/95	
310	08/17/95	08/23/95	
311	08/24/95	08/30/95	
312	08/31/95	09/06/95	Labor Day
313	09/07/95	09/13/95	
314	09/14/95	09/20/95	
315	09/21/95	09/27/95	
316	09/28/95	10/04/95	
317	10/05/95	10/11/95	
318	10/12/95	10/18/95	
319	10/19/95	10/25/95	
320	10/26/95	11/01/95	Halloween
321	11/02/95	11/08/95	
322	11/09/95	11/15/95	
323	11/16/95	11/22/95	
324	11/23/95	11/29/95	Thanksgiving
325	11/30/95	12/06/95	
326	12/07/95	12/13/95	
327	12/14/95	12/20/95	
328	12/21/95	12/27/95	Christmas

Appendix B

UPC	DESCRIP	SIZE	sale	unit price
3500055300	CLGATE PLUS #2 FULL	EA	30167.92	2.99
3500055800	CLGT PLUS #1 FULL ME	EA	26917.62	2.69
30041085562	ORAL B ADVANTAGE C/G	1 CT	21700.94	2.99
3700000869	CREST T.B. #4 MED AN	1 CT	20805.15	2.69
3500056210	ALADDIN TOOTHBRUSH F	EA	20043.79	2.49
3500056000	CLGT PLUS CHARACTER	EA	19603.67	2.69
30041085561	ORAL B ADVANTAGE C/G	1 CT	19444.93	2.89
30041085120	ORAL-B ADVANTAGE 40	EA	19213.38	2.99
38137007202	REACH ADVANCED FULL	1 CT	19035.82	2.59
3700000290	CREST CMPLT CHILD SS	1 CT	18594.19	2.59
3700000885	CREST T.B. #6 SOFT S	1 CT	18505.07	2.59
3500068400	COLGATE PRECISION ME	1 CT	18417.32	2.87
3700000867	CREST T.B. #8 SOFT A	1 CT	17844.67	2.59
30041080200	ORAL B REGULAR #40 T	EACH	17373.01	2.39
30041084100	ORAL B ANGLE REGULAR	EACH	17353.33	2.69
3500068500	COLGATE PRECISION SO	1 CT	16710.17	2.87
38137007201	REACH ADVANCED FULL	1 CT	16497.2	2.59
38137007206	REACH TOOTHBRUSH WON	1 CT	16453	2.59
30041080140	ORAL B REG MEDIUM #4	EACH	16120.11	2.39
30041080160	ORAL B LARGE MEDIUM	EACH	15738.25	2.39
30041085115	ORAL-B ADVANTAGE 60	EA	15670.42	2.99
30041084300	ORAL B ANGLE 40 REG	1 CT	15464.17	2.39
30041080100	ORALB LARGE #60 TOOT	EACH	15422.41	2.39
30041081465	~ORAL B SESAME ST T/	EA	15388.99	2.39
3700000889	CREST T.B. #2 MED ST	1 CT	14692.92	2.59
3700000879	CREST T.B. #3 MED AN	1 CT	14675.65	2.59
30041085112	ORAL-B ADVANTAGE 40	EA	14235.54	2.99
3500057900	COLGATE PLUS #5 SOFT	EA	13759.79	2.69
30041085121	ORAL-B ADVANTAGE 40	EA	13729.46	2.99
7094240411	BUTLER ADULT REG BOG	2 CT	13535.22	2.29
30041084000	ORAL B ANGLE COMPACT	EACH	13245.04	2.69
5310000121	AQUA FRESH FLEX T/B	1 CT	12894.95	2.79
3500065800	COLGATE TB RIPPLED B	EA	12692.01	2.69
3700000912	CREST TB IMAGES MAL	1 CT	12594.28	2.59
5310000120	AQUA FRESH FLEX T/B	1 CT	12437.44	2.79
3500057800	COLGATE PLUS #4 CMPC	EA	12151.76	2.69
38137007122	REACH FULL MED	EA	11972.21	2.29

5310000160	AQUAFRESH FLX DIR SO	1 CT	11774.26	2.99
38137007222	REACH BETWEEN MEDIUM	1 CT	11650.84	2.29
3500068600	COLGATE PRECISION X-	1 CT	11535.78	2.87
3500061500	CLGT PLUS #17 T/B WL	1 CT	11303.84	2.69
3500065900	COLGATE TB RIPPLED B	1 CT	11284.1	2.69
38137007126	REACH FULL FIRM	EA	11266.17	2.29
7094240111	BUTLER JR CRITTERS B	EA	11244.11	2.29
1111383259	PEPSODENT T/B MEDIUM	1 CT	11234.68	0.99
3500053900	CLGT PLUS #14 ANGL T	1 CT	11117.89	2.69
5310000170	AQUAFRESH FLEX DIREC	1 CT	10774.95	2.99
1111383159	PEPSODENT T/B SOFT P	1 CT	10765.28	0.99
5310000126	AQUA FRESH FLEX KIDS	1 CT	10572.94	2.79
38137007120	REACH FULL SOFT	EA	10432.23	2.29
7094240409	BUTLER COMPACT SOFT	2 CT	10279.07	2.29
30041085118	ORAL-B ADVANTAGE 35	EA	9963.83	2.99
1111383359	PEPSODENT T/B HARD P	1 CT	9960.26	0.99
3500054000	CLGT PLUS #15 ANGL T	1 CT	9907.76	2.69
3828160057	DOMINICKS GEM HEAD-M	1 CT	9899.97	1.79
30041085114	ORAL-B ADVANTAGE 60	EA	9898.9	2.99
3500068800	COLGATE PRECISION CO	1 CT	9594.61	2.87
3700000895	CREST T.B. #5 SOFT S	1 CT	9582.8	2.59
3500055332	CLGT PLUS GRIP FULL	EA	9553.5	2.59
30041081200	ORAL B NOVELTY 20 SO	1 CT	9191.27	2.39
38137007130	REACH CMPCT SOFT	EA	8782.79	2.29
3828160049	DOM ORAL ANGLE FIRM	EACH	8738.08	1.59
7094240311	BUTLER SLENDER SOFT	2 CT	8729.3	2.29
38137007134	REACH GLOW AGE 1-5 T	1 CT	8645.67	2.17
38137007203	REACH ADVANCED FULL	1 CT	8596.04	2.59
3828160045	DOM ORAL ANGLE MEDIU	EACH	8576.43	1.59
3828160041	DOM ORAL ANGLE SOFT	EACH	8522.49	1.59
5310000122	AQUA FRESH FLEX T/B	1 CT	8496.82	2.79
3828160073	DOM COMPLETE PERF/ST	1 CT	8335.48	1.59
3828160053	DOMINICKS GEM HEAD-S	1 CT	8063.8	1.79
3500055322	CLGT PLUS GRIP FULL	EA	8062.18	2.59
3828160077	DOM COMPLETE PERF/AN	1 CT	7933.39	1.59
30041083518	ORAL-B P-SERIES B1G1	2 CT	7869.09	2.59
30041083519	ORAL-B P-SERIES B1G1	2 CT	7506.14	2.79
30041080400	ORAL B COMPACT #35 T	EACH	7438.71	2.39
38137007220	REACH BETWEEN SOFT	1 CT	7304.92	2.29

3500068700	COLGATE PRECISION CO	1 CT	7291.22	2.87
3828160069	DOM SOFT CLASSIC TB	1 CT	7230.91	0.69
3828160065	DOM MED CLASSIC TB	1 CT	6976.31	0.69
30041085113	ORAL-B ADVANTAGE 40	EA	6848.15	2.99
3500056200	CLGT JR #9 T/B X/SOF	EA	6734.1	2.19
3500068506	CLGT PRCSN E/G TB FU	EA	6701.03	2.79
3828160061	DOM FIRM CLASSIC TB	1 CT	6356.85	0.69
30041085117	ORAL-B ADVANTAGE 35	EA	6118.45	2.99
38137007140	REACH CMPCT MED	EA	6071.32	2.29
3500055199	COLGATE CLASSIC MED	EA	5894.67	0.99
38137007137	REACH GLOW AGE 6-12	1 CT	5741.2	2.17
3500055200	COLGATE CLASSIC T-BR	EA	5663.55	1.19
30041084200	ORAL B ANGLE COMPACT	EACH	5598.74	2.69
38137007136	REACH YOUTH 6-12 T/B	1 CT	5496.61	2.17
3700000874	CREST T.B. #7 SOFT A	1 CT	5422.36	2.59
38137007245	REACH ADV DSGN CMPCT	EA	5382.55	2.59
30041085107	ORAL-B ADVANTAGE 35	EA	5281.81	2.99
3500055599	COLGATE T/B SOFT PP.	EA	5152.35	0.99
3700000916	CREST T.B. #10 XSFT	1 CT	5139.52	2.59
38137007246	REACH ADVANCE DSGN C	EA	5011.59	2.59
3700000285	CREST COMPLETE YOUTH	1 CT	4933.47	2.59
3700000896	CREST CMPLT TB IMAGE	1 CT	4889.65	2.59
5310000140	AQUAFRESH FLX DIRCT	1 CT	4860.69	2.99
38137007218	REACH BETWEEN SENSIT	1 CT	4841.13	2.29
3700000280	CREST CMPLT IMAGES S	1 CT	4735.05	2.59
5310000150	AQUAFRESH FLEX DIREC	1 CT	4713.22	2.99
30041081539	F/S ORAL B ANGLE B1G	1 CT	4605.9	2.59
30041080135	ORAL BCOMPACT #35 ME	EACH	4440.12	2.39
3700000275	CREST CMPLT TB IMAGE	1 CT	4320.48	2.59
30041085539	CONTURA REGULAR ANGL	1 CT	4299.91	1.99
38137007247	REACH ADVANCE DSGN C	EA	4154.65	2.59
3500068805	CLGT PRCSN E/G TB CO	EA	4145.63	2.87
7094200153	BUTLER NYLON TRAVEL	EA	3808.05	2.29
3700000898	CREST T.B. #1 MED ST	1 CT	3721.99	2.59
38137007133	REACH CHILDS	EA	3617.69	2.17
30041085108	ADVANTAGE 35 MEDIUM	EA	3551.59	2.99
5310000123	AQUA FRESH FLEX T/B	1 CT	3544.7	2.79
38137007142	REACH CMPCT FIRM	EA	3226.05	2.29
30041085540	CONTURA REGULAR ANGL	1 CT	2983.17	1.99

3500068900	COLGATE PRECISION CO	1 CT	2972.46	2.87
7094200432	BUTLER ANGLE TB FULL	1 CT	2751.95	2.19
30041085109	ADVANTAGE 40 XSFT TB	EA	2334.87	2.99
7094261612	BUTLER PROXBRSH TRVL	EA	2218.48	1.93
3500055299	COLGATE T/B FIRM PP.	EA	2121.3	0.99
30041085104	ADVANTAGE 35 XSFT	EA	2062.69	2.99
7094200430	BUTLER ANGLE TB FULL	EA	2015.44	2.19
7094200433	BUTLER ANGLE TB COMP	EA	1883.22	2.19
7094200431	BUTLER ANGLE TB COMP	1 CT	1714.3	2.19
3500053800	COLG PLS ANGL T/B CM	1 CT	1638.98	2.69
7094200434	BUTLER ANGLE TB FULL	1 CT	1623.09	2.19
5310000127	AQUA FRESH FLEX COMP	1 CT	1238.06	2.79
4167067200	JORDAN ADULT V MAGIC	1 CT	1187.73	2.49
4167000000	F/S JORDAN MAGIC T/B	1 CT	1108.05	2.49
3828178049	DOM BRICK ORAL ANGLE	6 PK	934.44	5.99
38137137200	ADVNCE DSGN REACH TB	2-1 CT	906.29	2.49
7094200612	BUTLER PROXABRUSH #6	EACH	786.17	1.99
4167067000	JORDAN MAGIC CHILD T	1 CT	684.75	2.49
7094261614	BUTLER PROXBRSH TRVL	EA	606.29	1.93
4167067050	JORDAN MAGIC CHILD V	1 CT	580.17	2.49
4167067350	JORDAN ADULT MGC T/B	1 CT	557.76	2.49
5310012023	F/S AQUAFRESH FLEX B	1 CT	521.73	2.79
5310012022	F/S AQUAFRESH FLEX B	1 CT	456.76	2.79
5310012026	F/S AQUAFRESH FLEX B	1 CT	354.14	2.79
3500055500	COLGATE CLASSIC T-BR	EA	330.64	1.19
7094200111	GUM JR. CRITTERS	EA	323.34	2.29
3500055100	COLGATE CLASSIC T-BR	EA	317.52	1.19
7094200123	BUTLER 123 ORTHODONI	EA	313.55	1.99
5310012027	~AQUA FRESH FLEX COM	1 CT	312.03	2.79
3500055610	CLGT+ TB W/FREE CASE	EA	277.36	2.69
4167067300	JORDAN MAGIC TODDLER	1 CT	249	2.49
3834106588	ORABASE-B W/BENZOCAI	1/2 OZ	243.65	5.89
7094200411	GUM ADULT REG 4 ROW	EA	224.52	2.29
3500055611	CLGT+ TB W/FREE CASE	EA	212.9	2.69
5310000128	~AQUA FRESH FLEX COM	1 CT	120.78	2.79
7094200311	GUM ADULT 3 ROW	2 CT	107.26	2.29
7094200409	GUM COMPCT 4 ROW	2 CT	105.1	2.29
38137117200	ADVNCE DSGN REACH TB	2-1 CT	72.21	2.49
7094200614	BUTLER PROXABRUSH	1 CT	53.73	1.99

Appendix C

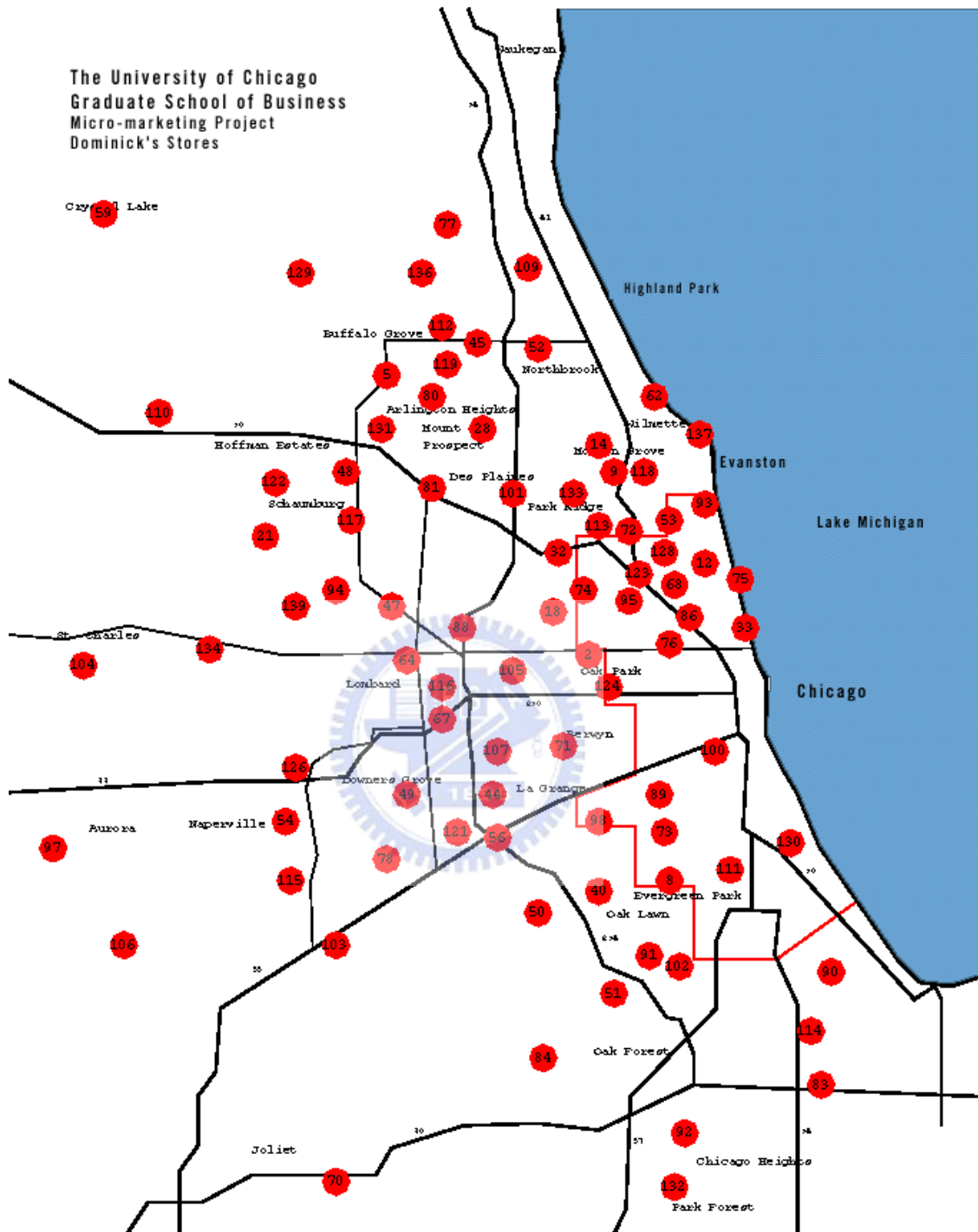| UPC	DESCRIP	sale	unit price
4933603600	REMBRANDT PEROXIDE B	105930.7	3.526667
3700000391	*CREST TRT REG	103585.08	0.389063
1111363961	MENTADENT TARTER CON	90325.55	0.690385
3500050900	*CLGT REG	79939.88	0.373438
1111363761	MENTADENT REFILL-FRE	76679.89	0.690385
3700000309	*CREST TRT GEL	69555	0.389063
3500057100	*COLGATE TARTAR REG	67609.78	0.373438
3700000321	*CREST REG	66420.88	0.389063
1111363861	MENTADENT REFILL-COO	63017.57	0.690385
1111363901	MENTADENT TARTER CON	61525.42	1.025714
3500051300	CLGT REG	56732.06	0.337805
3700000392	CREST TARTAR REG	53982.7	0.345122
4933600111	REMBRANDT WHITENING	49549.51	2.83
1111363701	MENTADENT TOOTHPASTE	48960.91	1.025714
3500056685	ULTRA BRITE	48923.44	0.365
1111374102	CLSUP RED	48280.12	0.417188
3320018840	ARM&HAMMER PEROXICAR	45995.16	0.797778
3500075903	CLGT BS&PEROX X-FRES	45750.78	0.373438
3500057200	COLGATE TARTAR REG	44689.31	0.341975
3700072823	CREST TAT SMOOTH MIN	43089.55	0.389063
5310032210	*AQUA FRESH TOOTHPAS	41647.26	0.417188
3500076003	CLGT B.SODA&PEROXIDE	39936.84	0.373438
3700000306	CREST TARTAR GEL	39125.34	0.345122
5310032420	AQUAFRESH SENSITIVE	37778.18	0.644186
3700072941	~CREST STND UP KIDS	37200.68	0.415
1111363801	MENTADENT TOOTHPASTE	36377.75	1.025714
3700000345	*CREST MINT	33636.8	0.389063
3700000328	CREST NEAT SQUEEZE T	33277.27	0.471667
3700000337	CREST TARTER GEL NEA	33230.74	0.471667
3500059600	*COLGATE TARTAR GEL	31825.76	0.373438
1111341101	PEPSODENT W/FLORIDE	31357.19	0.248438
3500078800	COLGATE B SODA TARTA	30991.73	0.538095
3700000310	CREST REG	30974.31	0.345122
3700072862	CREST SENSITIVITY PR	30970.66	0.546774
3700072939	~CREST STND UP TAR G	30910.72	0.415
4933600125	REMBRANDT MINT WHITE	30796.33	2.996667
3700072979	CREST TARTAR CNTRL B	30610.38	0.389063
3700072940	~CREST STND UP TAR S	30579.23	0.415

3700072938	~CREST STND UP TARTA	30252.44	0.415
3700072825	CREST NEAT SQUEEZE S	29762.86	0.471667
3320018650	A&H DENTL-CARE TARTA	28790.96	0.558
3700072830	CREST TARTAR CNTRL B	28474.11	0.389063
1111363951	MENTADENT TARTER CON	27931.07	0.805769
3500072600	COLGATE STAND-UP REG	27789.63	0.398333
3320018860	ARM&HAMMER PEROXICAR	27427.02	0.665079
3500072800	COLGATE STAND-UP TAR	27065.4	0.398333
1111379161	CLOSE-UP TARTAR CONT	26658.95	0.417188
3500075904	COLGATE BS& PEROX X-	26629.85	0.337805
1111323101	AIM X/S GEL	26404.9	0.217188
1111363751	MENTADENT TOOTHPASTE	25771.35	0.805769
5310032500	AQUAFRESH TOOTHPASTE	24933.21	0.364634
3700072828	CREST TAR SMOOTH MIN	24898.95	0.345122
3700072829	CREST TARTAR CNTRL B	24558.35	0.35
3320018290	A&H TARTAR CNTRL GEL	23901.62	0.467901
5310033300	*AQUA FRESH TARTAR T	23538.38	0.445
3320018390	~A&H DNTL CARE REG P	23529.8	0.41
1111320202	AIM REGULAR GEL	23443.81	0.217188
5310000318	AQUA FRSH TPLPRTCTN	23304.23	0.417188
3700072935	~CREST STD UP REG	23272.71	0.415
3320018690	A&H TARTAT CNTRL PAS	23153.29	0.41
3828160017	DOM BAKING SODA TOOT	22914.04	0.378
1111319120	PEPSODENT TP W/BAKIN	22840.78	0.265
3500058700	*CLGT GEL	22300.63	0.373438
3500076001	COLGATE BS&PEROX TS	22195.63	0.398333
3700000312	CREST GEL	22108.69	0.389063
3700073091	CREST TARTR W/FREE 2	22080.3	0.345122
3700000338	CREST NEAT SQUEEZE K	21851.21	0.471667
3700072936	~CREST STND UP MINT	21837.5	0.415
3500072900	COLGATE STAND-UP TAR	21789.07	0.398333
3500075901	COLGATE BS&PEROX ST	21615.34	0.398333
3700072924	F/S CREST BAKING SOD	21554.8	0.389063
1111363851	MENTADENT TOOTHPASTE	21192.96	0.805769
5310032920	AQUAFRESH BAKING SOD	20639.93	0.417188
3320018350	A/H DENTAL CARE TOOT	20296.81	0.558
3500059700	COLGATE TARTAR GEL	19925.27	0.324691
1111329780	AIM GEL BAKING SODA	19658.93	0.231667
3500078100	COLGATE STAND-UP JUN	19444.45	0.454348
3700072917	F/S CREST BAKING SOD	18906.33	0.389063
3828160025	DOM TARTAR GEL	18589.65	0.295313

1111367051	CLOSE UP BAKING SODA	18317.02	0.417188
3700000311	CREST GEL	17943.75	0.345122
3500000603	COLGATE BAKING SODA	17823.26	0.538095
30041086143	SESAME ST FRUITY STA	17342.38	0.521429
3700072978	CREST TARTAR CNTRL B	17125.42	0.35
3500078900	COLGATE B SODA T/C G	16952.69	0.538095
3700000390	*CREST TRT REG	15533.44	0.493478
3500072700	COLGATE STAND-UP GEL	15448.72	0.398333
3700073092	CREST TRTR GEL W/2 T	14593.42	0.345122
3700000334	CREST MINT	14164.9	0.345122
3320018490	A&H REG GEL 15% FREE	13906.36	0.519178
3320018370	ARM & HAMMER DENTAL	13735.71	0.541429
3700072937	~CRST STND UP GEL	13641.06	0.415
3828160021	DOM TARTAR CONTROL T	13637.35	0.295313
5310033400	AQUA FRESH TARTAR TU	12904.95	0.393421
3700073089	CREST REGULAR W/FREE	12482.83	0.345122
1111325381	AIM TARTER GEL #	12399.75	0.217188
3700072923	CREST BAKING SODA GE	11578.03	0.345122
3500058800	CLGT GEL	11558.7	0.337805
3700000325	CREST NEAT SQUEEZE R	11403.64	0.471667
3700073093	CREST TC SMTH GEL W/	11304.72	0.345122
1851527612	~#PLUS+WHITE ONE STE	11144.85	1.996667
3700000278	GLEEM GOLD TOOTHPAST	11024.3	0.426563
3320018270	ARM&HAMMER TARTAR CO	10915.79	0.601587
3700000315	*CREST TRT GEL	10847.73	0.493478
3500051400	*CLGT REG	10770.08	0.454348
3700000322	*CREST REG	10507.58	0.493478
5310000430	AQUA FRESH TARTAR PU	10236.71	0.378333
5310000311	AQFR PUMP ADULT	10226.96	0.493478
3500056687	ULTRA BRITE BS & PER	9773.68	0.365
3500051377	CLGT REG	9680.13	0.337805
3500057277	COLGATE SUPER W/PLUS	9445.18	0.341975
3700073090	~CREST ICY MINT W/FR	9065.61	0.345122
3320018670	A&H DENTAL CARE TAR	9048.27	0.541429
3700000326	CREST NEAT SQUEEZE M	8914.04	0.471667
3500056700	ULTRA BRITE GEL TUBE	8911.35	0.365
3700073095	CREST TC BKS W/2.5 G	8820.71	0.35
3700072926	CREST B SODA GEL NEA	8717.23	0.471667
3500057000	*COLGATE TARTAR REG	8659.03	0.454348
5310000303	AQUA FRESH KIDS PUMP	8450.81	0.493478
3500077200	COLGATE BAKING SODA	8391.97	0.538095

3700072916	CREST BAKING SODA T/	7740.3	0.345122
3320018250	~ARM&HAMMER TARTER C	7740.17	0.637778
3700072918	CREST B SODA PASTE N	7695.41	0.471667
3500059777	COLGATE T/P TAR GEL	7554.98	0.341975
5310032100	AQUA FRESH T/P	7520.71	0.476087
30041037012	ORAL-B TP TTH & GUM	7424.67	0.614
5310032125	~AF SUT TRIPLE PROTE	7411.33	0.461667
3320018470	ARM & HAMMER DENTAL	7392.93	0.601587
3500058877	COLGATE T/P GEL FREE	7365.1	0.337805
3500056647	ULTRA BRITE PASTE ST	7336.36	0.365
3700072824	CREST TAR SMOOTH MIN	7162.69	0.493478
1111374801	CLOSE-UP RED	6946.6	0.364634
1111388450	CLOSE UP CRYSTAL CLE	6905.69	0.417188
1851527246	~PLUS WHITE GEL-STAN	6862.39	0.855714
3834109379	COLGATE PLATINUM	6849.29	2.363333
3500077800	COLGATE STAND-UP TAR	6713.22	0.454348
5310032250	*AQUA FRESH EXTRA FR	6618.77	0.417188
5310000420	AQUA FRESH TARTAR PU	6490.41	0.527907
30041037017	ORAL-B SENS W/FLOURI	6401.94	1.023333
31158862000	TOPOL TOOTHPASTE SPE	6394.76	1.085294
3320018450	ARM & HAMMER DENTAL	6311.35	0.62
3320018145	~A&H STAND-UP REG GE	6277.09	0.62
34167041720	TOPOL TP + BAKING SO	6233.36	1.497059
3828160002	DOM COOL FRESH TOOTH	6177.6	0.27
3500077600	COLGATE STAND-UP REG	6156.15	0.454348
5310033225	~AF SUT TARTAR CONTR	6132.05	0.494643
3500073600	~COLGATE BAKING SODA	5905.51	0.568085
3500078300	~COLGATE STAND-UP BA	5801.35	0.568085
3320018135	~A&H STANDUP TUBE RE	5685.64	0.558
3500077700	COLGATE STAND-UP GEL	5405.8	0.454348
3500078200	~COLGATE ST UPTP-B S	5370.26	0.568085
3500073500	~COLGATE ST UPTB-BS	5287.97	0.568085
5310032550	AQUA FRSH X/F #	5254.78	0.340244
3700000382	CREST KIDS TUBE	5225.71	0.493478
3500000604	COLGATE B.SODA-PASTE	5135.56	0.337805
3500078600	COLGATE B SODA TARTA	5065.3	0.611364
5310032450	AF STAND UP TUBE SEN	4910.53	0.469643
3500056747	ULTRA BRITE GEL STAN	4905.35	0.365
5310032980	AQUAFRESH BAKING SOD	4830.61	0.352439
3320018125	~A&H S/U TUBE TARTAR	4637.54	0.62
1851527244	~PLUS WHITE TP-STAND	4476.5	0.855714

5310033200	AQUA FRESH TARTAR TU	4430.81	0.509302
3500050200	~T/S COLGATE REGULAR	4340.81	0.552941
3500077900	COLGATE STAND-UP TAR	4234.1	0.454348
5310032900	~AQUA FRESH BAKING S	3986.04	0.454348
3500000602	COLGATE BAKING SODA	3982.09	0.606818
76314100111	WHITE STEP WHITENING	3949.35	2.33
2260063531	~PEARL DROPS BAK SOD	3903.74	1.625926
3500059500	*COLGATE TARTAR GEL	3753.76	0.454348
3320018165	~A&H STAND-UP TUBE T	3734.46	0.558
5310032850	AQUA FRESH KIDS TUBE	3551.75	0.493478
3700000327	$ CREST NEAT SQZ GEL	3355.04	0.471667
3500052300	COLGATE JUNIOR TOOTH	3348.56	0.454348
5310032075	~AF STAND UP TUBE EX	3334.78	0.461667
3320018211	T/S A&H TARTAR CONTR	3140.2	0.522222
3500058600	*CLGT GEL	2910.85	0.454348
3500077000	COLGATE BAKING SODA	2898.62	0.606818
5310000360	AQUA FRESH EXTRA FRE	2871.52	0.493478
3500078700	COLGATE B SODA T/C G	2617.2	0.611364
5310032050	AQUA FRESH EXTRA FRE	2397.74	0.476087
1851527241	TRIPLEX FLUOR W/BS &	2164.02	1.54
31158868000	TOPOL TOOTHPASTE SPE	2092.52	1.366667
3700072863	CREST TARTAR CNTRL B	2082.47	0.454348
3700072856	CREST TARTAR CNTRL B	2035.88	0.454348
30041037018	~ORAL-B SENS W/FLORI	1640.19	0.858
3700000335	CREST GEL	1281.47	0.493478
30041037015	~ORAL-B TP TTH & GUM	1181.76	0.57
1111364510	~CLOSE UP STAND UP C	881.23	0.534
3700000346	*CREST MINT	698.86	0.493478
1111388040	~CLOSE UP STAND UP B	413.68	0.534
3500052500	~COLGATE JR T/P	397.69	0.357813
30041037010	T/S TOOTH & GUM TOOT	355.26	0.442857

Appendix D

The University of Chicago
Graduate School of Business
Micro-marketing Project
Dominick's Stores

Crystal Lake

Waukegan

Highland Park

Buffalo Grove

Northbrook

Arlington Heights

Mount Prospect

Hoffman Estates

Wilmette

Morton Grove

Evanston

Des Plaines

Park Ridge

Lake Michigan

Schaumburg

St. Charles

Lombard

Oak Park

Chicago

Berwyn

Downers Grove

La Grange

Aurora

Naperville

Evergreen Park

Oak Lawn

Oak Forest

Joliet

Chicago Heights

Park Forest

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Appendix E

Store	City	Zip Code	Address
2	River Forest	60305	7501 W. North Ave.
5	Palatine	60067	223 Northwest HWY.
8	Oak Lawn	60435	8700 S. Cicero Ave.
9	Morton Grove	60053	6931 Dempster
12	Chicago	60660	6009 N. Broadway Ave.
14	Glenview	60025	1020 Waukegan Rd.
18	River Grove	60171	8355 W. Belmont Ave.
21	Hanover Park	60103	1440 Irving Park Rd.
28	Mt. Prospect	60054	1145-55 Mt Prospect Pz.
32	Park Ridge	60068	1900 S. Cumberland Ave.
33	Chicago	60657	3012 N. Broadway Ave.
40	Bridgeview	60455	8825 S. Harlem Ave.
44	Western Spring	60558	14 Garden Market St.
45	Wheeling	60090	550 W. Dundee Rd.
47	Addison	60101	545 W. Lake St.
48	Schaumburg	60193	20 E. Golf Rd.
49	Downers Grove	60515	120 E. Ogden Ave.
51	Palos Heights	60463	6401 W. 127th St.
52	Northbrook	60062	4125 Dundee Rd.
53	Chicago	60662	3145 W. Pratt Ave.
54	Naperville	60540	1295 E. Ogden Ave.
56	Countryside	60525	6704 Joliet Rd.
59	Crystal Lake	60014	6000 Northwest Hwy.
62	Northfield	60093	1822 Willow Rd.
64	Villa Park	60181	302 W. North Ave.
67	Oak Brook Terrace	60521	17W675 Roosevelt Rd.
68	Chicago	60625	5233 N. Lincoln Ave.
70	Joliet	60435	2132 Jefferson St.
71	North Riverside	60546	7401 W 25th St.
72	Lincolnwood	60646	7225 N. Cicero Ave.
73	Chicago	60629	7050 S. Pulaski Rd.
74	Norridge	60634	7000 W. Forest Preserve

75	Chicago	60640	5235 N. Sheridan Rd.
76	Chicago	60618	3300 W. Belmont
77	Vernon Hills	60061	Hawthorne Village Comns
78	Downers Grove	60516	7241 Lemont Rd.
80	Arlington Heights	60005	325 Palatine Rd.
81	Mt. Prospect	60056	1042 S. Elmhurst Rd.
83	Lansing	60438	17365 Torrence Ave.
84	Orland Park	60462	15080 S. La Grange Rd.
86	Chicago	60618	3350 Western Ave.
88	Bensenville	60106	1145 S. York Rd.
89	Chicago	60632	4700 S. Kedzie Ave.
90	Chicago	60617	3454 E. 118th St.
91	Oak Lawn	60453	11024 S. Cicero Ave.
92	Hazel Crest	60429	3330 W. 183rd St.
93	Evanston	60202	525 Chicago Ave.
94	Bloomingdale	60108	166 E. Lake St.
95	Chicago	60634	3649 N. Central Ave.
97	Aurora	60506	1971 W. Galena Blvd.
98	Chicago	60638	5829 S. Archer Ave.
100	Chicago	60698	3145 S. Ashland Ave.
101	Des Plaines	60016	1555 Lee St.
102	Merrionette Park	0655	3243 115th St.
103	Bolingbrook	60439	271 S. Bolingbrook Dr.
104	St. Charles	60174	2063 State Route 38
105	Melrose Park	60160	4200 W. Lake St.
106	Montgomery	60538	1840 Douglas Rd.
107	Westchester	60153	3020 S. Wolf Rd.
109	Bannockburn	60015	2503 Waukegan Rd.
110	East Dundee	60118	535 Dundee Ave.
111	Chicago	60620	122 W. 79th St.
112	Buffalo Grove	60090	1160 Lake Cook Rd.
113	Chicago	60646	6312 N. Nagle Ave.
114	Calumet City	60409	1968 Sibley Blvd.
115	Naperville	60540	1300 S. Naper Blvd.
116	Elmhurst	60126	535 W. St. Charles Rd.
117	Schaumburg	60193	580 S. Roselle Rd.
118	Morton Grove	60053	5747 Dempster St.

119	Buffalo Grove	60090	45 E. Dundee Rd.
121	Willowbrook	60514	6300 S. Robert Kingery
122	Hoffman Estates	60194	2575 W. Golf Rd.
123	Chicago	60630	4014 W. Lawrence
124	Oak Park	60302	259 Lake St.
126	Wheaton	60187	Danada Square East
128	Chicago	60645	6623 N. Damen Ave.
129	Lake Zurich	60047	345 S. Rand Rd.
130	Chicago	60649	2101 E. 71st St.
131	Rolling Meadows		2801 Kirchoff Rd.
132	Matteson	60443	4233 W. 211th St.
133	Niles	60648	8900 Greenwood Ave
134	West Chicago		RT.59/North Ave
136	Buffalo Grove	60089	450 Half Day Rd.
137	Evanston	60201	2748 Green Bay Rd.
139	Bloomingdale	60108	144 S. Gary Ave.