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Título do Artigo: **“The Effects of Price and In-Store Promotion on Sales in Different Regions and Retail Formats”**

Autor(es): ***Jonny Mateus Rodrigues, Juan Machado Sanchez, Leandro Angotti Guissoni.***

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The Effects of Price and In-Store Promotion on Sales in Different Regions and Retail Formats

ABSTRACT

Price and in-store promotion strategies are important to consumer goods companies and retailers. Previous studies show that their effect on sales could vary according to some specific context (i.e., retail format). As market heterogeneity is a key characteristic of emerging markets, we investigate the effect of price and in-store temporary displays (i.e., with products on promotions) on sales volume in Brazil according to different regions with contrasts (i.e., northeast versus southeast) and store formats (self-service versus traditional mom&pop). Data for this study comes from retail market audit in the ready-to-drink juice category that spans three years broken down by region and channel. We specify a panel vector autoregression framework and an impulse-response function to verify short- and long-term effects on sales. Results suggest that price sensitivity is mainly influenced by the type of store format and not by regional differences. Effects of price on sales presented a similar pattern in both regions, whereas effects of temporary displays on sales presented different patterns according to each store format and region. This study also shows that especially in the lower-income region (i.e., northeast), in-store temporary displays with products on promotion could be more beneficial to companies than a price decrease in the traditional mom&pop format.

Keywords: Price, In-store promotion and temporary displays, Consumer package goods

INTRODUCTION

The increasing competition caused by globalization, the high growth of some emerging markets and the stagnation of developed economies are motivating Consumer Packaged Goods (CPGs) manufacturers to drive their attention to emerging markets (Forbes, 2011; Kumar, Sunder & Sharma, 2015). As these markets evolve from the periphery to the center position, it is necessary to understand the market features and prospects of these markets (Sheth, 2011). Indeed, an understanding of requirements for success in emerging markets is essential to achieve business growth through marketing initiatives (Burgess & Steenkamp 2013; Sheth 2011).

However, Burgess and Steenkamp (2006) highlight that most of the studies in the marketing literature has been conducted in high income and developed countries. These countries present more homogenous characteristics in terms of regions and retail formats; whereas, in emerging markets, companies need to acknowledge that market heterogeneity is a key characteristic within each of these economies (Sheth 2011). The success of a brand in an emerging market is potentially based on the extent to which its marketing mix is customized according to specific market characteristics (Kumar, Sunder, & Sharma, 2015). Variables such as price and its elasticity of demand are expected to be higher for these markets than developed ones due to budget constraints (Burgess and Steenkamp, 2006). Effects of distribution are different in emerging markets due to the prevalence of unorganized retailers with smaller independent-owned stores (Venkatesan et al., 2015; Kumar, Sunder, & Sharma, 2015). Thus, companies operating in the consumer goods and retail industries should develop an appropriate marketing mix approach, which can be different from the firms' marketing approach in developed markets (Sheth, 2011; Burgess & Steenkamp, 2006).

In the context of marketing mix, price promotions have received a considerable attention in the literature (Currim & Schneider 1991; Pauwels, Hanssens, & Siddarth, 2002; Srinivasan et al., 2004). In emering markets, price promotions are key elements to increase

sales as consumer packaged goods (CPG) companies have been challenged to serve price sensitive and resource constrained mass market (Burgess & Steenkamp, 2006). The effect of price and promotions in emerging markets and developed economies are potentially distinct and should be further investigated (Kumar, Sunder, & Sharma, 2015). Our study proposes to analyze the sales effect of price and in-store temporary displays with products on promotion in the Brazilian retail market. We propose to contrast the patterns of these effects in the northeast and southeast regions of Brazil motivated by contrasts between the regions.

Previous studies that have analyzed the effect of marketing-mix variables in an emerging economy market were conducted, however, in a single geographic region. This is an important gap, especially because emerging markets are heterogeneous (Sheth, 2011). These markets can show different features depending on the region in the country. Thus, our study contributes to the literature by analyzing the effect of price and in-store promotion according to different regions in an emerging market environment.

We also contrast two different retail formats in those regions: corporate self-service (CS) such as large supermarkets chains and traditional full-service (TF) such as mom and pop (grocery) stores. Indeed, several differences between TF and CS stores should be considered for a brand to design its marketing mix strategies because of different patterns observed when analyzing the effectiveness of marketing mix strategies in these two formats (Venkatesan et al., 2015).

We elaborate on the relevance of these three main reasons for this study First, disparities in incomes among different geographic regions in an emerging make price decisions and promotional intensity efforts especially challenging. Second, prevalence of nontraditional channels that offer convenient neighborhood shopping can make price sensitivity to be different compared to large self-service stores. Finally, price decisions reflect the economic perspective, whereas in-store temporary displays with products on promotions could lead the offerings to have more in-store visibility; thus, understanding their effects on sales could benefit both CPGs and retail companies. Our focus is to understand effects of price and in-store promotion from a brand manufacturer perspective that sells its products to consumer through different retail formats and regions. The proposed research questions are outlined bellow:

A) Do the effects of price and in-store promotions (i.e., products with promotions on displays) vary according to different regions in an emerging market? Specifically, to which extent do they vary from a market leader CPG company perspective?
B) How do the effects of price and in-store promotions (i.e., products with promotions on displays) vary in two different retail formats (i.e., CS and TF stores) across different regions?

In the following section, we address the literature related to price and in-store promotions. Then, we discuss relevant features to contextualize market heterogeneity in Brazil to present the hypotheses, describe the data and the empirical model. We conclude by discussing results from model estimation and managerial implications.

RELATED LITERATURE

In the context of marketing mix, price has a great impact on sales volume (Bijmolt, Heerde & Pieters, 2005). In addition, price is one of the most flexible marketing elements, being able to be altered rapidly (Diamantopoulos, 1991). Managers taking these characteristics into consideration make use of this tool to generate sales growth and consequently short-term profits.

Price plays a key role in generating profits and ensuring the company survival in the long-term (Taher & Basha, 2006; Indounas & Avlonitis, 2009). Consequently, executives

recognize that consumers may have distinct levels of price sensitivity in accordance to market segments (Rao, Bergen & Davis, 2000). On a similar level of relevance, sales promotions represent generally represent a relevant share of marketing budgets at many consumer packaged goods (Srinivasan, Pauwels, Hanssens & Dekimpe, 2004). Sales promotions are viewed as temporary incentives, which leverage consumer's brand choice (DelVecchio, Henard & Freling, 2006). Notwithstanding, consumers appreciate sales promotions more than companies realize (Farris & Ailawadi, 2013).

Authors defend sales promotion as a tool to reach short-term results (Rothschild, 1987; Gupta, 1988; Blattberg et al., 1995; Ehrenberg, Scriven & Barnard, 1997; Srinivasan, Pauwels, Hanssens & Dekimpe, 2004; Casielles & Alvarez, 2005). The sales promotion impact on sales can be propelled by exposing promoted products in temporary displays. Indeed, temporary displays have a considerable effect on brand sales (Bemmaor & Mouchoux, 1991; Pauwels, Hanssens, & Siddarth, 2002; Chandon et al., 2009). Temporary displays that expose products on promotion can enhance not only the brand choice but also the visual attention (Chandon et al., 2009).

On the other hand, some authors alert about disadvantages of sales promotions. The disadvantages encompass the decrease in brand loyalty and quality perception, increase in price sensitivity, and increase in brand switching (Keller, 1998; Gedenk & Neslin, 2000; DelVecchio, Henard & Freling, 2006). Based on that, the effects of promotion on sales in the long-term can be positive or negative (Keane 1997; Foekens, Leeflang, & Wittink, 1998; Jedidi, Mela, & Gupta, 1999; Ailawad et al., 2006; Ataman, Van Heerde, & Mela, 2010).

Marketing variables, such as price and promotion, have distinct effects on the different retail formats in emerging markets (Venkatesan et al. 2015). The retailing formats in emerging markets can be defined as chain self-service (CS) and traditional full-service stores (TF). As Brazilian retailing sales reached equal distribution between TF and CS stores in 2011 (Diaz, Magni & Poh, 2012), this study of marketing variables effect on sales volume will consider these two store formats in the analysis.

MARKET HETEROGENEITY IN BRAZIL

Brazil has two types of market heterogeneity important to our research. The first is related to regional specifics and the second is related to retail formats. First, Brazilian northeast and southeast regions present some contrasts. The southeast region holds the greatest spending per household, US$ 26,739, while the northeast region the lowest, US$ 14,974[1]. Additionally, the southeast region has the highest urbanization rate: 92.95%; whereas, the northeast region enjoys the lowest urbanization rate: 73.13%[2]. But both consumer markets are representative: the northeast region has the second biggest population with around 54 million people, just behind the southeast region with about 82 million[3]. The southeast total expenditure in 2013 was US$ 723 billion, being the first consumer market, and the northeast market reached the third place[4]. Such contrasts and potential for companies, because of their representative consumer markets, motivate the development of researches to properly understand how this can impact business strategies, mainly in the marketing field. Further, the Brazilian economy growth faced an income re-distribution instead of concentration. The result was a 45% reduction in people living below the poverty level from 2003 to 2009 and the emergence of a "new middle class" (Neri, 2010). Once the "new middle class" emerged, it required a repositioning of business in accordance to the growing interest and consumption of categories not previously consumed (Souza and Lamounier, 2010). Kamakura and Mazzon (2013) developed a study in Brazil to check how socioeconomic status can affect consumption. They identified that consumption can be affected by a budget effect and changes in consumption priorities.

Second, the retail environment in emerging markets is more fragmented due to importance of small owner-managed stores. Marketing through different retail channels ranging from smaller owner-managed (full-service) to larger corporate stores (self-service) is necessary for manufacturers (Venkatesan et al., 2015). The role of full-service stores in Brazil is less than China or India, but far more than the U.S. and Europe (Joseph et al., 2008). Therefore, Brazil is an emerging market that has a good mix between regions and retail formats that make it an interesting market (among the emerging economies) for a multichannel and cross-region study.

HYPOTHESES

Our hypotheses are related to the effects of price and promotion through temporary in-store displays between different regions (i.e., northeast versus southeast) and retail formats within these regions (i.e., self-service versus full service).

As a result of the lower spending per household, the northeast population has less income available after purchasing consumer products[5]. Price elasticity of demand is expected to be higher in regions with budget constraints (Burgess & Steenkamp, 2006). Indeed, the middle and lower socioeconomic strata may be more price-sensitive (Kamakura & Mazzon, 2013). Thus:

H_{1a}: In the chain self-service stores, price sensitivity is higher in the northeast market than in the southeast.

And,

H_{1b}: In the traditional full-service stores, price sensitivity is higher in the northeast market than in the southeast.

The level of unplanned purchases and shopping trip objective vary across retail formats (Bell, Corsten, & Knox, 2011). More specifically, it can vary from a self-service (big stores with large variety of assortments and price promotions) to both neighborhood and full-service stores (smaller stores with limited assortment and higher level of price). In emerging markets, shoppers may be motivated to shop groceries in both self-service and full-service formats, once there are a variety of channels offering different benefits. Full service stores are more convenient located in the cities, where infrastructure is better, making it easier for consumers to have access to these stores; products are often cheaper in the big self-service stores due to its high-volume sales environment. This evidence is clear when looking at Supercenter stores and every-day-low-price retailers such as Wal-Mart (Singh, Hansen & Blattberg, 2006; Cleeren et al., 2010). These stores offer a depth assortment and promotions, with the "one-stop-shopping" concept, including a variety of products and categories that cannot be found at smaller neighborhood supermarkets and full-service stores. Additionally, as TF stores have reduced brands availability, a lower in-store brand competition is expected in comparison to CS stores (Chernev, 2003). The greater product availability might bring higher price sensitiveness to CS stores consumers. Indeed, consumers can easily compare price among the brands range. Thus:

H_2: In both regions, northeast and southeast, price sensitivity is higher in chain self-service than in traditional full-service stores.

The category we analyze in this study (i.e., ready-to-drink juice) faced the greatest consumption increase over recent years. The increase was mainly motivated by the "new middle class" consumption[6]. This "new middle class" emergence is the current scenario of the Brazilian northeast market, offering good opportunities for companies (Souza & Lamounier,

2010; Atsmon, Child, Dobbs & Narasimhan, 2012). Based on that, companies are repositioning their brands to the growing interest of product categories not previously consumed by this new group of people (Souza & Lamounier, 2010).

Thus, in-store temporary displays with products on promotion can help brands to gain visibility, which is important for growing categories such as juice. In-store displays that exposure products beyond its category-related shelves can provide support to increase visual attention to influence consumer behavior at the point of purchase (Chandon et al., 2009). However, previous research found that in-store marketing activity could influence consumers only to a certain extent, because not every in-store attention drives choice (Chandon et al., 2009). Then, in-store displays that exposure product on discounts could drive choice because of the price promotion attractiveness besides visual attention. Further, the ready-to-drink juice category is considered more developed and concentrated in the southeast and the competition in the northeast due to recent developments has been increasing. Thus:

H_{3a}: In the traditional full-service stores, the effect on sales of an increase in the availability of stores with sales promotions for products on temporary displays is higher in the northeast than in the southeast

And,

H_{3b}: In the chain self-service stores, the effect on sales of an increase in the availability of stores with sales promotions for products on temporary displays is higher in the northeast than in the southeast.

The northeast market has faced many changes and developments as CPG companies start to target this region[7]. Sales promotion and price can stimulate a consumer to purchase a brand for the first time (Casielles & Alvarez, 2005; Ehrenberg, Scriven & Barnard, 1997), and then these marketing variables can be a powerful tool to increase awareness and expand sales in the northeast market. Furthermore, Bronnenberg, Mahajan & Wanhonacker (2000) informed that changes in brands' market-share in new categories could achieve larger persistent effects. In addition, the greater competitiveness observed in the southeast lead brands to broadly use promotions and price reductions (Blattberg & Neslin, 1990). Ultimately, as previously stated, the regular use of sales promotion can decrease brand loyalty and quality perception, increase price sensitivity, and increase brand switching (Keller, 1998; Gedenk & Neslin, 2000; DelVecchio, Henard & Freling, 2006; Ataman et al., 2010). Thus:

H_{4a}: In the traditional full-service stores, the persistency of price effect on sales is higher in the northeast than in the southeast.

H_{4b}: In the chain self-service stores, the persistency of price effect on sales is higher in the northeast than in the southeast.

And,

H_{5a}: In the traditional full-service stores, the persistency of an increase in the availability of stores with sales promotions for products on temporary displays effect on sales is higher in the northeast than in the southeast.

H_{5b}: In the chain self-service stores, the persistency of an increase in the availability of stores with sales promotions for products on temporary displays effect on sales is higher in the northeast than in the southeast.

RESEARCH DESIGN AND DATA

Data for this study spams three years, from January 2011 to January 2014, broken down by region (i.e., northeast and southeast) and channel (i.e., self-service and full-service). This database is a scanner data from store audits developed by a relevant global market research firm and made available to researchers by means of a beverage company. The beverage segment was selected to perform this study because of its relevance in the retailing market and its distribution characteristics. This segment corresponded to the third largest segment of revenue generating in the Brazilian retailing market in 2013[8]. In addition, beverage products are commercialized in a wide range of channels and situations, providing access for all type of consumers (Venkatesan et al., 2015). In the beverage category, it was selected the ready-to-drink juice category to develop this study. This category was selected because of its market growth and movements. In the last years the juice market faced positive variances. From 2012 to 2013, juice had the greatest market increase, being 11.7% in sales volume[9]. Moreover, this category demonstrated market dynamics and increasing competition[9].This market context could be an interesting one to model the effects of marketing variables.

Table 1 - Variable Operationalization and Descriptive Statistics

Variable	Southeast				Northeast			
	Chain Self-Service (51 SKUs)		Traditional Full-Service (34 SKUs)		Chain Self-Service (46 SKUs)		Traditional Full-Service (43 SKUs)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Unit Sales (market leader)[1]	1857,16	125,95	530,14	53,41	1431,92	159,54	678,56	212,97
In-Store Promotion (weighted distribution of display promotions)[2]	8,08	1,63	1,25	1,04	7,94	11,60	3,77	1,35
Relative Unit Price[3]	137,29	5,62	135,31	2,97	133,84	43,83	137,48	2,97
Unit Sales of Competitor 1	1066,03	137,97	266,44	42,29	738,48	160,95	452,13	85,43
Unit Sales of Competitor 2	1030,58	433,09	118,77	34,28	494,39	95,52	386,39	50,20

Unit sales to consumers (cases of 24 units of 8 ounces) of a relevant SKU. 2. Percentage of stores where a given SKU is on promotion which shows activation of promotion at the point of sales. 3. SKU price (to consumers and weighted by ounces) divided by the average price in the relevant category (to consumers and weighted by ounces). The Top Three manufacturers are not necessarily the same for the different channels and areas. Table 1 summarizes the operationalized variables.

The database is at SKU level (Stock keeping Unit). In retailing this is the level which many marketing decisions such as price and sales promotion are taken and implemented (Farris & Wilbur, 2014). The variables in our database correspond to: SKU (Stock Keeping Unit), month, Unit Sales of Leader, Unit Sales of competitor, Relative Unit Price, and In-store temporary display promotion. Although we included more than one brand manufacturer, we analyze the effects of the variables in this study from a market leader perspective, so we could have a more similar pattern in terms of the level of execution of their brands in different context.

It is relevant to clarify that the promotion data considered in this study is aggregated. No discrimination of the promotion's type in temporary displays used at the moment of purchase was done. The variable indicates the presence or not of promotion offered by retailers to consumers. To clarify the meaning of weighted distribution of display promotions (WDDP), one example is: if a SKU has 10% WDDP in a determined period, this means that the SKU presented promotions to end consumers among 10% in the most important retail stores to the specific category.

METHOD

The database of this study is classified as multivariate temporal. First, the database is established temporally in a month level. Second, the database contemplates a wide range of information for each category. Third, the database has information from the Brazilian northeast and southeast market.

Based on the database characteristics, a vector-autoregressive (VAR) approach was used in this study. Authors defend the use of vector-autoregressive (VAR) to analyze temporal series (Dekimpe & Hanssens, 1995; Pauwels, 2004; Bruggemann, 2004). Indeed, marketing literature recommends the usage of multivariate models such as VAR to analyze temporal series due to its capability of checking marketing variables relationship (Dekimpe & Hanssens, 1995; Pauwels, 2004).

The software STATA® was used to develop the model following the methodology structured by Love and Zicchino (2006) and the emerging market effect method by Venkatesan et. al (2015). In these studies the fixed effects can be correlated with the dependent variables and a bias into coefficients can occur. We used, as in previous studies, the forward mean-differencing procedure to accommodate this issue. Another point of attention is the month-specific fixed effect, especially for sales volume and price of SKU. In order to eliminate these fixed effects, we centered the mean of the forward differenced dependent variable across all SKUs in each month (Love & Zicchino, 2006; Venkatesan et al., 2015). The next step is to check stationarity in the data. By using Dickey-Fuller we identified that the unit root was a concern for promotion and we used the forward first difference for all areas and the condition of stability was acceptable. Thus, we determined the order of the model through AIC and BIC criterion, and both suggested one-period lag for all areas. We then included ales, price and promotion in a Panel VAR:

$$\begin{bmatrix} \Delta Sales_{hjit} \\ \Delta Price_{hjit} \\ lPromo_{hjit} \end{bmatrix} = \begin{bmatrix} \alpha_{1i} \\ \alpha_{2i} \\ \alpha_{3i} \end{bmatrix} + \begin{bmatrix} \gamma_{1t} \\ \gamma_{2t} \\ \gamma_{3t} \end{bmatrix} + \begin{bmatrix} \beta_{11j} & \beta_{12j} & \beta_{13j} \\ \beta_{21j} & \beta_{22j} & \beta_{23j} \\ \beta_{31j} & \beta_{31j} & \beta_{33j} \end{bmatrix} \times \begin{bmatrix} \Delta Sales_{hjit-1} \\ \Delta Price_{hjit-1} \\ lPromo_{hjit-1} \end{bmatrix} + \begin{bmatrix} s_{11} \\ s_{21} \\ s_{31} \end{bmatrix}$$
$$\times Seasonality_t + \begin{bmatrix} comp_{11j} \\ comp_{21j} \\ comp_{31j} \end{bmatrix} \times \left[Competitor1_{hjt-1} \right] + \begin{bmatrix} comp_{12j} \\ comp_{22j} \\ comp_{32j} \end{bmatrix}$$
$$\times \left[Competitor2_{hjt-1} \right] + \begin{bmatrix} e_{1_{hjit-1}} \\ e_{2_{hjit-1}} \\ e_{3_{hjit-1}} \end{bmatrix}$$

The structure purposed aims to replicate the first stage of Ventakesan et al (2015) model. $\Delta Sales_{hjit}$ represents the first difference of unit sales for SKU *i* in the channel *j* in month *t* for the area *h*. $\Delta Price_{hjit}$ is the first difference of relative price[10] for SKU *i* in the channel *j* in month *t* for the area *h*. $lPromo_{hjit}$ is the log of % of store with promotion of extra efforts for SKU *i* in the channel *j* in month *t* for the area *h*. Seasonality is a dummy variable when it is winter in the southeast, since the region reaches lower temperatures than the northeast during this time of the year. Competitor's sales represent the category unit sales for the top three largest manufacturers in the area *h* for the month t in the channel j. Finally, the vector $\{e_{1_{hjit-1}}, e_{2_{hjit-1}}, e_{3_{hjit-1}}\}$ is normally distributed random error.

The fixed effects $\{\alpha_{1i}, \alpha_{2i}, \alpha_{3i}\}$ accommodated the heterogeneity among the SKUs and the month fixed effects $\{\gamma_{1t}, \gamma_{2t}, \gamma_{3t}\}$ control the seasonality. Unobserved correlation among the variables is accommodated by specifying a common covariance matrix for the errors. The random errors are normally distributed with zero mean and a common covariance matrix $\sum$e. The coefficients β = {β11j , β12j , . . ., β33j } estimate the lagged, reinforcement and feedback effects among in-store marketing and sales (Ventakesan et al. 2015).

Furthermore, in order to estimate the short and the long-term effects of price and promotion on sales we applied the impulse-response factor after the estimation of panel VAR. Thus, we estimated the time it takes for the dependent variable to revert to its mean after being shocked by a price promotion or an extra effort in point-of-purchase (Pauwels, Hanssens & Siddarth, 2002).

RESULTS

The results from the VAR model are demonstrated in the following tables grouped by store formats. It is presented first the results for the northeast (Table 2) and then for the southeast region. Initially, taking sales volume as a dependent variable for CS and TF stores in the northeast region, it is possible to observe that sales volume is influenced by price, in-store promotion and by competitor's sales volume. For CS stores, one percent variance in the price in comparison to the market average results in reduction in sales volume ($\beta_{1\ 2\ 1}$ = -0.089, p < 0.1) (case of twenty four units of eight ounces). Price shows no significant statistical impact on sales at TF stores in the northeast region. On the other hand, one percentage increase in quantity of stores counting on promotion results in an increase sales volume (β_{132}=3.4625, p<0.01). Moreover, the increase of one percent in sales volume from Competitor1, results in a decrease in sales for CS ($comp_{111} = -3.9793, p < 0.05$) and for TF stores ($comp_{112} = -5.790, p < 0.1$). More expressively, the impact of one percent increase in sales volume of the Competitor2 results in a decrease in sales volume for TF stores ($comp_{122} = -12.174, p < 0.1$).

Table 2 – Results for the Northeast region

		Chain Self-Service (j=1)		Traditional Full-Service (j=2)	
Equation	**Coefficient**	**Mean**	**Std. Error**	**Mean**	**Std. Error**
Sales Volume	lagged sales (β_{11j})	-0.098*	0.059*	-0.117**	0.063**
	lagged price (β_{12j})	-0.089*	0.050*	n.s.	n.s.
	lagged promo (β_{13j})	n.s.	n.s.	3.462***	0.909***
	lagged sazonality (s_{11})	n.s.	n.s.	n.s.	n.s.
	lagged sales competitor 1 ($comp_{11j}$)	-3.979**	1.764**	-5.790*	3.375 *
	lagged sales competitor 2 ($comp_{12j}$)	n.s.	n.s.	-12.174*	6.909*

*Significant at α <= 10%.** α<= 5%.*** α <= 1%. Notes: n.s. = not significant at 10%

Turning to the southeast region, table 3 shows sales volume results to be influenced by price only in the CS stores ($\beta_{121} = -0.096, p < 0.1$). In addition, sales volume shows to be impacted by promotion at sales point in TF stores ($\beta_{132} = 1.010, p < 0.05$).

Table 3 – Results for the Southeast region

		Chain Self-Service (j=1)		Traditional Full-Service (j=2)	
Equation	**Coefficient**	**Mean**	**Std. Error**	**Mean**	**Std. Error**
Sales Volume	lagged sales (β_{11j})	-0.120**	0.054**	-0.283***	0.086***
	lagged price (β_{12j})	-0.096*	0.053*	n.s.	n.s.
	lagged promo (β_{13j})	n.s.	n.s.	1.010**	0.509**
	lagged sazonality (s_{11})	n.s.	n.s.	n.s.	n.s.
	lagged sales competitor 1 ($comp_{11j}$)	n.s.	n.s.	n.s.	n.s.
	lagged sales competitor 2 ($comp_{12j}$)	n.s.	n.s.	n.s.	n.s.

*Significant at α <= 10%. ** α <= 5%. *** α <= 1%. Notes: n.s. = not significant at 10%

DISCUSSION AND IMPLICATIONS

In this section, the differences observed in the short-term effect of price and in-store promotion for CS and TF stores are discussed first. Then, the discussion turns towards the comparison of the northeast and southeast regions, and at last, the long-term (persistent) results are introduced. The results demonstrate that sales volume is mainly influenced by price changes in CS and by promotional intensity in TF stores.

To discuss the long term (persistent effect), we used the impulse response function to determinate the impact of price and in-promo shock (impulse) on market leader sales along the time. The impulse response function estimates the total of sales in the future using the results obtained across the endogenous variables in the dynamic panel of VAR. The results discussed hereafter used the sum of total of months considered as long term. Using the same model of Venkatesan et al. (2015) we carried out the impulse response function with 6 periods ahead (t+6).

For CS, increases in price in comparison to the market impacts decrease in sales volume in Northeast (-0.089, $p < 0.05$) and in Southeast (-0.096, $p < 0.1$). By analyzing the impact of one percentage point decrease in price in comparison to the market average in CS stores, the southeast region shows a greater short-term response then northeast region. This

finding can possibly indicate greater price sensitivity in the southeast region. However, we cannot state that southeast region (-0.096, s.d. 0.053) has statistically greater price sensitivity than the northeast region (-0.089,s.d. 0.050). Consequently, there is no evidence to support the hypothesis H_{1a}, which affirms that price sensitivity is higher in the northeast region than in the southeast for CS stores. Hence, the claim that the middle and lower socioeconomic strata and regions with budget constraints may be more price-sensitive (Burgess & Steenkamp, 2006; Kamakura & Mazzon, 2013), might not always be applicable.

A possible explanation for the similar price sensitivity is the higher level of development of the juice category in the southeast market. As TF stores showed no sensitivity to price reductions, the hypothesis H_{1b} is rejected because it claims that price sensitivity is higher in the northeast region that in the southeast for TF stores. The absence of price sensitivity in TF stores can be linked to the lower in-store brand availability, reducing the consumer possibility to compare prices (Chemev, 2003; Venkatesan et al., 2015). Indeed, the difficulty in comparing prices shall reduce price sensitiveness (Venkatesan et al., 2015).

Thus, it is possible to observe that CS stores are more price sensitive and TF stores are more promotion sensitive for this relevant category. The finding that price affects CS sales volume can be supported by the greater brand competition faced in this store format. Indeed, consumers have more options when choosing a product in a CS store than in a TF (Chernev, 2003), being able to easily compare prices in this store format (Venkatesan et al., 2015). Taking into consideration that TF stores showed no sensitivity to price, this finding supports the H_2, which mentions that CS stores are more price sensitive than TF stores.

Regarding the finding that in-store promotion shows no significant impact on sales volume for CS stores but TF stores, this can be linked to the great shelf space in CS stores that allows retailers to expose the whole product category (Venkatesan et al., 2015). Hence, CS stores are more likely to offer SKUs on temporary displays that are already offered on the category's shelf space, reducing the impact of temporary displays on sales.

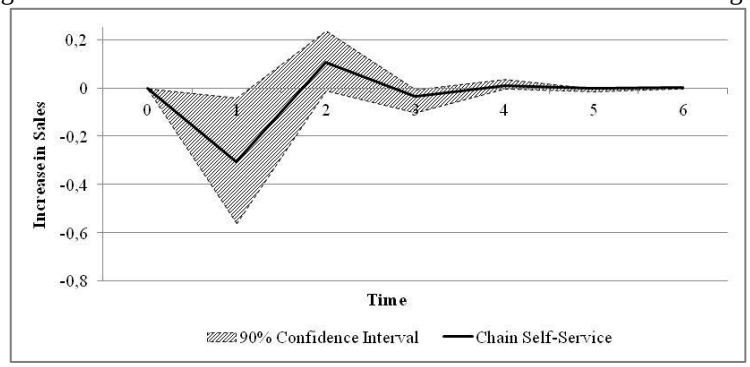
On the other hand, a major concern in the TF stores is product visibility in consequence of restricted available assortment. In some cases, products can even be stored behind the counter to optimize the stores internal space (Venkatesan et al., 2015). Then, temporary displays can frequently expose SKUs that were not available where the whole category is exposed. As in-store promotion provides support to raise products' visual attention (Chandon et al., 2009), its higher sensitivity in TF stores can be comprehended. Additionally, the finding that in-store promotion influences sales volume in TF stores is aligned with previous literature (Montgomery 1975; Rao & McLaughlin, 1989; Collins-Dodd & Louviere 1999; Klink & Smith 2001; Kaufman, Jayachandran & Rose 2006, Völckner & Sattler 2006), which states that advertising and promotion have great relevance in defining consumers' purchase decision in groceries stores.

Related to the in-store promotion effect on sales volume, we found a different patter when comparing the northeast and southeast regions. In-store promotion demonstrates greater effect on sales volume for TF in Northeast (3.462, $p < 0.01$) than in Southeast (1.010, $p < 0.05$). Considering 90% confidence interval, it is possible to state that the northeast region shows greater short-term effect of in-store promotion on sales volume for TF stores than the southeast. The overlap area between the northeast (3.462, s.d. 0,909) and southeast (1.010, 0.509) region effect is minimum. This finding supports the hypothesis H_{3a}, which mentions that the effect of in-store promotion on sales volume is higher in the northeast than southeast for TF stores. This factor is aligned with previous published studies (Blattberg, 1995; Casielles & Alvarez, 2005; Ehrenberg, Scriven & Barnard, 1997; Srinivasan, Pauwels, Hanssens & Dekimpe, 2004; Rothschild, 1987; Pauwels, Hanssens & Siddarth, 2002; Ataman et. al, 2010). In turn, the hypothesis H_{3b} that is related to the effect of in-store promotion on sales for CS stores is rejected. CS stores show no impact on sales when stimulated with an

increase in in-store promotion. As mentioned before in this section, a possible explanation for the absence of promotion effect on sales for CS stores is the promotion data considered in this study (temporary display of products on promotion).

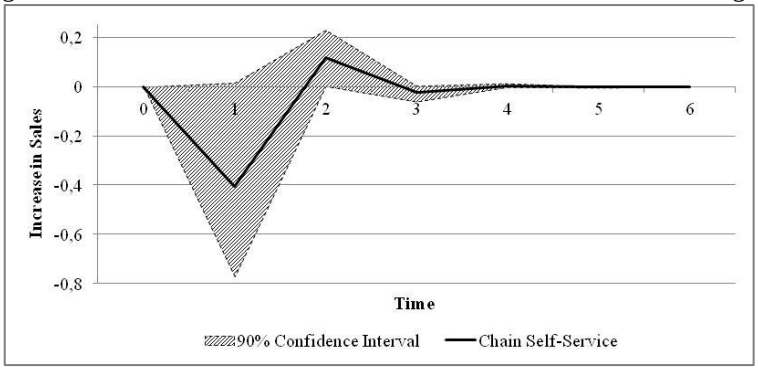
The persistency of price effect on sales is higher in the northeast than southeast for TF stores; however, TF stores demonstrate not to be influenced by price changes thus we rejected H_{4a}. Related to the persistency of price effect on sales volume for CS stores, the northeast (-0.22%) and southeast (-0.31%) regions present a negative effect. However, taking into consideration the 90% confidence level, the persistent effect on sales presents a great overlap area. Hence, it could not by inferred that that the results indicate that the northeast has a better persistency of price effect on sales volume than the southeast region for CS stores, rejecting the hypothesis H_{4b}. The persistent positive results of in-store promotion on sales in TF and the negative results of price in CS stores highlight a non-convergent finding. Indeed, both marketing variables of in-store promotion and price show short-term results in the same direction (positive) but divergent when considering the persistency of the effect. This persistency divergence is aligned with previous published studies, which were focused on developed economies (Keane, 1997; Foekens, Leeflang & Wittink, 1998; Jedidi, Mela & Gupta, 1999; Nijs, Dekimpe, Steenkamp & Hanssens, 2001; Ataman, Mela & Heerde, 2010). The following graphs illustrate the price variance effect on sales volume for CS stores in the southeast and northeast regions respectively.

Figure 1 – Price effect on sales volume in CS stores in the northeast region



Source: Author (2016)

Figure 2 – Price effect on sales volume in CS stores in the southeast region

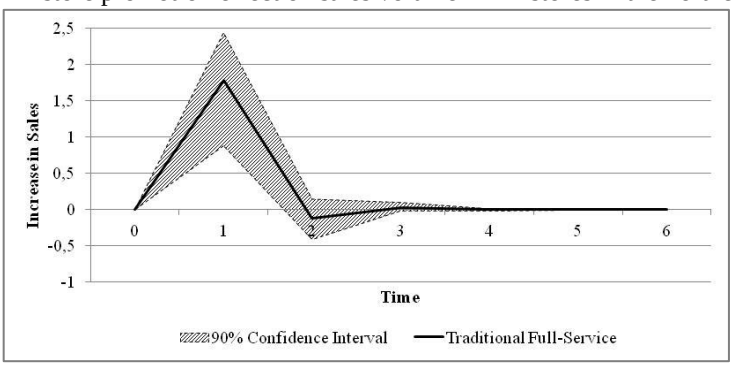


Source: Author (2016)

In order to determine the persistency of price and in-store promotion effect on sales the average sales volume change of the following six months after the price or in-promotion impulse was summed up, as suggested in the literature (Venkatesan et al, 2015). Regarding the persistency of in-store promotion effect on sales volume, the northeast region shows

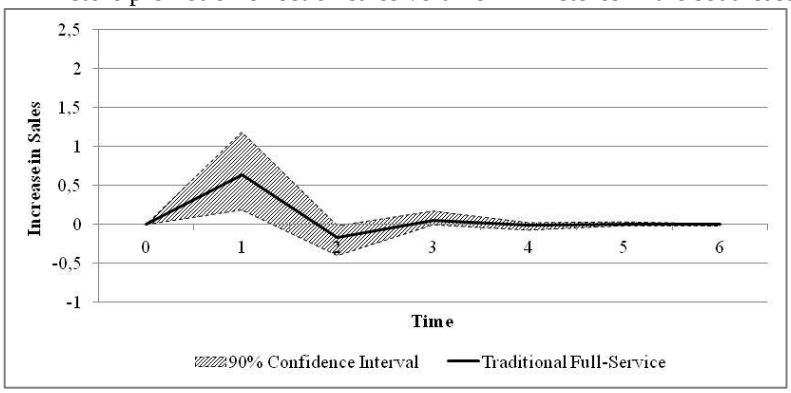
(Figure 3) a positive effect (1.68%) and the southeast (Figure 4) an effect (0.50%) for TF stores from the sum of each elasticity shown in the graph. This finding supports the hypothesis H_{5a} that claims that the persistency of in-store promotion effect is higher in the northeast for TF stores. As previously explained, the sales volume in CS stores shows not to be impacted by in-store promotion changes. Based on that, the hypothesis H_{5b}, which states that the persistency of in-store promotion effect on sales is higher in the northeast than southeast for CS stores, is rejected. The following graphs illustrate the in-store promotion effect on sales for TF stores in southeast and northeast regions respectively.

Figure 3 – In-store promotion effect on sales volume in TF stores in the northeast region



Source: Author (2016)

Figure 4 – In-store promotion effect on sales volume in TF stores in the southeast region



Source: Author (2016)

CONCLUSION AND MANAGERIAL IMPLICATIONS

This study calls the attention to the importance of in-store product visibility through temporary displays with products on promotion, especially in a smaller store environment such as TF stores. We analyze the variation in the effects of price and in-store temporary displays in two different regions in an emerging market. A greater sensitivity in the northeast market was expected, in consequence of the lower average income in the region. However, price sensitivity showed no significant difference between the northeast and southeast region for CS stores.

When comparing the price sensitivity for CS and TF stores, the results followed the ideas supported by previous researches. The greater product availability, the higher level of unplanned purchases and the facility to compare prices in the CS stores (Chernev, 2003; Bell, Corsten, & Knox, 2011; Venkatesan et al., 2015) also corroborates to our finding, that is, greater price sensitivity in this store format. The in-store temporary displays with products on

promotion followed the expected effects for TF stores, showing a positive effect on sales volume. This supports the idea that the greater visibility provided by in-store promotion is a relevant activity, once TF stores have limited space and products might be difficult to be visualized by consumers (Chandon et al., 2009; Kumar, Shah & Zhao, 2015; Venkatesan et al., 2015). Additionally, TF stores in the northeast region demonstrate higher in-store promotion sensitivity than in the southeast for the analyzed category. This aspect can be supported by the increasing consumption of juice by the "new middle class" in the northeast region, leveraging promotion efforts effect on sales.

Related to the persistency of price and in-store promotion effect on sales, price increase shows negative long-term results in CS stores, and in-store promotion shows a positive result for TF stores. This finding highlights the conventional wisdom as to the divergence between the effects of these two marketing variables. Prior studies (Keane, 1997; Foekens, Leeflang & Wittink, 1998; Jedidi, Mela & Gupta, 1999; Nijs, Dekimpe, Steenkamp & Hanssens, 2001; Ataman, Mela & Heerde, 2010) had revealed a divergent persistent effect in developed economies, in which the persistency of price and promotion effect on sales could be positive or negative.

In summary, these results contribute to the literature as we show that price sensitivity could be mainly influenced by store formats and not by some specifics contrasts in different regions in an emerging market at an aggregated level. Furthermore, in-store promotion shows to be influenced by store format and region characteristics. As TF stores in Brazil also have in-store displays, our study shows a relevant effect of this activity on sales in this channel, whereas we could not find a significant effect in the self-service (CS) stores. This is important to the domain of promotion and visibility at the point of sales, once visual attention can lead to higher sales in a smaller store environment rather than a larger store environment with several brands on temporary displays with promotions. From an overall perspective, the findings support previous findings of Bronnenberg, Mahajan & Vanhonacker (2000), explaining that characteristics of promotions effect in emerging markets and developed economies are potentially distinct.

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