

# AN EMPIRICAL ANALYSIS OF THE COMPETITION BETWEEN NATIONAL BRANDS AND PRIVATE LABELS ACROSS ONLINE AND OFFLINE CHANNELS

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## ABSTRACT

*This paper analyses competition between private labels and national brands across the online channel and the offline channel. We measure the competitive strengths of the brands by means of three dimensions: market share, conquering power and intrinsic loyalty (Colombo and Morrison's, 1989). We estimate these measures of the brands in 36 product categories across online and offline channels of a grocery retailer. The key results indicate that both the private label and national brands increase their intrinsic loyalty online, but only the private label increases its conquering power and market share online. These findings indicate a general improvement of the private label's competitive position online, overall in terms of conquering power, what may increase retailers' negotiating leverage at this channel.*

## KEYWORDS

Private label, multichannel retailing, electronic commerce

## 1. Introduction

Private labels or store brands are becoming a dominant feature in the Western world markets. There are several interrelated factors boosting private label's growth: increased concentration in retailing, which enables grocery chains to operate with their own brands, a much more positive attitude of consumers towards its quality, and, finally, its price, given that private labels are significantly cheaper than national brands (Steenkamp and Dekimpe 1997, AC Nielsen 2005). Current economic crisis has even reinforced this trend.

Not surprisingly then, these circumstances have induced a fierce battle between private labels and national brands to see who proclaims as the key player at grocery markets. This interesting topic has not escaped the notice of academicians and practitioners and several papers have investigated the increasing importance of private labels (e.g., Steenkamp and Dekimpe 1997), or the factors influencing private label market share (e.g., Hoch and Banerji 1993, Rubio and Yagüe 2009).

Besides the increasing presence of private labels in grocery markets, another issue attracting interest is electronic commerce. The availability of the Internet as a shopping channel has allowed marketers to identify new market gaps by the discovery of new types of consumers and shopping behaviors associated to this channel. Nowadays, all marketers understand that, in our high-tech world, firms' success is closely related to a good knowledge of market structure across online and offline channels.

This work investigates private label and national brands' competition across online and offline channels. Despite the growing importance of private label and national brands competition and the increasing use of the Internet as a shopping channel, to the best of our knowledge, no prior empirical research has examined the effects of both streams together. We investigate competition between private labels and national brands across the offline and the online channel. We compare, across both channels, the performance of the private label (PL) a) against the national brand leader in market share in the category (NBL), and b) against a reference brand, an aggregation of all the national brands in the category (RB). We do this comparison for different categories of the grocery industry. To measure performance we use market share and two other measures previously used in the literature (Colombo and Morrison, 1989; Steenkamp and Dekimpe, 1997): intrinsic loyalty and conquering power. We do not use price because for the data we use, price is identical in both channels.

Preliminary results indicate the following. First, Private labels increase, in general, market share online. Second, both private labels and national brands increase their intrinsic loyalty online. And third, whereas, generally, private label increases its conquering power online, national brands do not.. These findings suggest that private label is benefiting from its "empowered" conquering power online to gain market share at this channel. Category- level results show that the online channel does not affect competition among private label and national brands homogeneously across categories.

## 2. Data and Methodology

Market share of a brand will be computed as the share of unit sales of a brand against all unit sales in the category. Intrinsic loyalty and conquering power of a brand will be tackled from the building of Colombo and Morrison (1989)'s model, which will be mathematically described in the following subsection. Then, to compare results across channels and brands, we perform several Paired Samples T-tests and Independent Samples t-tests.

Our data come from a grocery chain that has an important presence in the Spanish geography and that was a pioneer at online sales in Spain. In particular, this grocery chain started its online operations in 2001. From this grocery chain, we obtained the purchases made by a group of 2742 consumers with residence in the city of Barcelona over the 12 month period from December 2002 to November 2003. To be included in the panel, the households needed to have made at least one purchase at the retailer's online store. For these households, we observe all their trips both to the online and offline stores of this grocery chain. For each trip, we observe the entire shopping basket, and for every item in the basket, its price, brand, size and also, depending on the item, other characteristics such as its flavor or

color. The offline data were collected as scanner data while the online data were registered by the Web site. We analyze 36 categories, with a total of 366 brands.

We use the model by Colombo and Morrison (1989) to build the measures of intrinsic loyalty and conquering power. The key underlying assumption of the Colombo and Morrison's model is therefore that there are two kinds of consumers: consumers who are intrinsically loyal and stay with the same brand, and potential switchers, who on every purchase occasion choose between all brands in the market according to a zero-order process. All potential switchers are assumed to have the same probability to buy a specific brand, but this probability may differ across brands. The proportion of loyal consumers and the potential switchers' choice probabilities are linked to the elements of the observed switching matrix through the equations  $p_{ii} = \alpha_i + (1 - \alpha_i)\pi_i$ ,  $i = 1, 2, \dots, I$ , and  $p_{ij} = (1 - \alpha_i)\pi_j$ ,  $i \neq j$ ,  $i, j = 1, 2, \dots, I$ , where  $p_{ij}$  is an element of the switching matrix,  $\pi_i$  the proportion of potential switchers buying brand  $i$ , and  $\alpha_i$  the proportion of the current buyers of brand  $i$  who is intrinsically loyal. We derivate the reader to Colombo and Morrison (1989) or Steenkamp and Dekimpe (1997) for more details of the model.

The reference brand's market share, intrinsic loyalty and conquering power are calculated as follows:

$$\text{MarketShare}_i = \frac{\sum_i \text{MarketShare}(\text{percent})_i \cdot \text{MarketShare}_i}{\sum_i \text{MarketShare}_i} \quad \text{IntrinsicLoyalty}_i = \frac{\sum_i \text{IntrinsicLoyalty}_i \cdot \text{MarketShare}_i}{\sum_i \text{MarketShare}_i}$$

$$\text{ConqueringPower}_i = \frac{\sum_i \text{ConqueringPower}_i \cdot \text{MarketShare}_i}{\sum_i \text{MarketShare}_i}$$

where  $i$  = all brands in the market except the private label and therefore  $\sum_i \text{MarketShare}_i \neq 1$ .

### 3. Empirical Results

Table 1 provides the values of the market shares and prices, and the estimation results of the intrinsic loyalty and conquering power from de Colombo and Morrison model for the private label, the reference brand and the national brand leader, across offline and online channels. It also shows the results of the paired-samples t-tests for the differences across channels, at the  $p=0,01$  level.

The results show that the private label's market share increases significantly online (significance of the difference:  $p=0,010$ ). In particular, it increases from 33,513% offline to 35,803% online, what implies a growth of 6,833%. Private label's conquering power and intrinsic loyalty do also increase online in statistical terms. Private label's conquering power increases from 29,0% offline to 33,6% online (significance of the difference:  $p=0,001$ ) and intrinsic loyalty, from 63,8% offline to 74,5% online (significance of the difference:  $p=0,000$ ).

The results for the reference brand show significant differences across channels for this brand only at the intrinsic loyalty dimension. Reference brand's market share is found to be equal across online and offline channels with a share of 32,291% offline and 32,767% online (significance of the difference:  $p=0,516$ ). Similarly, reference brand's conquering power is found to be equal across online and offline channels with a value of 31,3% offline and 29,9% online (significance of the difference:  $p=0,104$ ). By contrast, reference brand's intrinsic loyalty is found to significantly increase online (significance of the difference:  $p=0,000$ ), varying from 57,1% offline to 69,0% online.

The results for the national brand leader are similar to those for the reference brand. National brand leader's market share is found to be equal across online and offline channels with a share of 38,109% offline and 39,213% online (significance of the difference:  $p=0,318$ ). Analogously, national brand leader's conquering power is found to be equal across online and offline channels with a value of 34,8% offline and 34,0% online (significance of the difference:  $p=0,431$ ). Finally, national brand leader's intrinsic loyalty is found to significantly increase too online (significance of the difference:  $p=0,000$ ), varying from 60,2% offline to 73,1% online.

In summary, we have found that the private label improves its competitive position online compared to offline in terms of market share, conquering power and intrinsic loyalty. However, the national brands seem to improve their competitive position just in terms of intrinsic loyalty: the reference brand and the national brand leader present similar market shares and conquering power estimates across both channels, whereas clearly increase their intrinsic loyalty online. These findings support that, in general, both private labels and national brands have a greater base of intrinsically loyal consumers online than offline.

However, would intrinsic loyalty increase proportionately more online for the private label than for the reference brand? Similarly, would intrinsic loyalty increase proportionately more online for the private label than for the national brand leader? To answer these questions we compare the effects of online channel shift on the intrinsic loyalty dimension for the private label, the reference brand and the national brand leader. To do so, we measure the growth on intrinsic loyalty for these brands by means of an online/offline ratio across all 36 product categories. These ratios are shown on the last three columns of Table 7. The last line of the table shows the mean values of the ratios across the 36 product categories.

The mean values show that whereas the intrinsic loyalty is 1,229 times greater online than offline for the private label, it is 1,349 times greater for the reference brand, and 1,481 times greater for the national brand leader. These figures seem to suggest that the effects of online channel shift on intrinsic loyalty are stronger for the national brands than for the private label. However, an statistical test must be used to provide evidence of the significance of these results.

Table 8 presents the results for the test of the differences in intrinsic loyalty's growth between the private label and the reference brand, and the private label and the national brand leader. Given the low paired-samples correlations between the variables in comparison, we use the independent samples t-test methodology instead of the paired samples t-test methodology. Results for the private label and the reference brand's differences show that intrinsic loyalty's growth rate does not differ between these two brands (significance of the difference:  $p=0,310$ ). This result suggests that both the private label and the reference brand increase their intrinsic loyalty at the online channel in a similar fashion. In addition, the test for the private label and the national brand leader's differences also replicates this result. The test shows that intrinsic loyalty's growth rate does not differ between the private label and the national brand leader (significance of the difference:  $p=0,196$ ). This result indicates that both the private label and the national brand leader increase their intrinsic loyalty at the online channel at a similar rate. From these findings we can conclude that both private labels and national brands similarly increase their base of intrinsically loyal consumers online.

#### **4. Discussion of Results, Implications for Management, and Limitations**

Our findings indicate a general improvement of the private label's competitive position online, what may increase retailers' negotiating leverage at this channel. If online grocery purchases continue with their current steady increase, the competitive position of private labels online could improve even more. That is, the online channel appears as a tool which can strength the fierce competition among private labels and national brands that marketing research has traditionally identified offline. Producers shall therefore take this characteristic into consideration while determining its general strategy against private labels across online and offline channels.

Our study presents some limitations that strive into new open questions regarding to the competition of private labels and national brands at the online channel. For instance, a comparison of private labels and national brands' competitive strengths online in terms of price related measures (e.g., price differential, price sensitivity, effects of promotion policies, etc.) would be interesting. Similarly, an investigation of brand competition at the online channel which evaluated the effects of light, medium and heavy private label consumers on private label's market share, conquering power and intrinsic loyalty's level and increase with regard to the offline channel would also be interesting. Our study does not consider the effect of these consumer groups on these brand competition measures, but an analysis such the one proposed would provide interesting results for retailers. Moreover, we have

selected two concrete brands to evaluate the role of national brands in the market, the reference brand and the national brand leader; however, other investigations could propose new national brand measures to check whether our results are supported when other measures are considered.

**TABLE 1.**  
**Market shares, Intrinsic Loyalty and Conquesting Power's Values and prices for PL, RB and NBL. Means across categories and statistical significance of the differences across channels at the  $p=0,01$  level**

		Means across categories	Online-Offline differences statistical comparison at the p=0,01 level
# Brands by category		5.08	
PL Market Position*		2.11	
Market Shares			
PL mk. share (%)	Offline	33.51	Significant
	Online	35.80	
	Total	34.59	
RB mk. share (%)***	Offline	32.29	Non significant
	Online	32.77	
	Total	32.29	
NBL mk. share (%)	Offline	38.11	Non significant
	Online	39.21	
	Total	38.79	
Intrinsic Loyalty and Conquesting Power			
PL Int. Loyalty	Offline	0.64	Significant
	Online	0.75	
	Total	0.70	
PL Conq. Power	Offline	0.29	Significant
	Online	0.34	
	Total	0.31	
RB Int. Loyalty	Offline	0.57	Significant
	Online	0.69	
	Total	0.64	
RB Conq. Power	Offline	0.31	Non Significant
	Online	0.30	
	Total	0.31	
NBL Int. Loyalty	Offline	0.60	Significant
	Online	0.73	
	Total	0.68	
NBL Conq. Power	Offline	0.35	Non Significant
	Online	0.34	
	Total	0.35	
Prices			
PL Price		1.89	
RB Price**		2.72	
NBL Price		2.88	
PL vs RB Price Reduction (%)		28.37	
PL vs NBL Price Reduction (%)		30.52	

\*Position of private label at the ranking of brands with highest market share. \*\*Weighted mean price of all brands in the category except PL. Market shares are used as weights. \*\*\*Weighted market share for all brands except for PL.

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