Consumers' decision between private labels and national brands in a retailer's store: a mixed multinomial logit application

- Very Preliminary Version -

Fabian Bergès-Sennou[*], Daniel Hassan[*],
Sylvette Monier-Dilhan[*] and Hélène Raynal[*]

Institut National de la Recherche Agronomique (Inra)
Department of Economics
University of Toulouse

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Abstract

We propose to analyze the determinants of consumers' brand decision within a retailer store using a multinomial mixed logit approach. For the consumers' choice, national brands compete with private labels (both me-too product and high quality store brand). We first find that the standard private label (me-too), independently of the price effect, performs better than all national brands in terms of consumers' utility. Second, the high-quality private label does not reach its target yet in term of consumers' acceptance due to a poor product characteristics perception. Last, it appears that households' objective socioeconomic variables (income, education and household size) do not play any role in private label perception, whereas objective consumption behaviour (store loyalty) clearly favours store brand perception.

Keywords: Brands, consumers' choice, mixed logit model, willingness to pay.

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[*] INRA – ESR and University of Toulouse, Chemin de Borde Rouge, BP 27, F-31326 Castanet-Tolosan Cédex (France). Contact: Fabian.Berges@toulouse.inra.fr

Introduction

The private label (PL) development is one of the most striking strategies from the retailing industry in the last 30 years.[1] In France, the market share of PLs in food-processed stuffs accounts up to 25 % of the total retailers' sales (40 % in United-Kingdom and 20 % in United States).[2] An important economic literature, either theory oriented or empirical, has been devoted to such a phenomenon (for a recent survey, see Bergès-Sennou *et al*., 2004). However, this literature is principally dedicated to understanding the supply side of PLs products. The main questions addressed are indeed about how market power is shared in the vertical structure between national brands (NB) producers and retailers, the quality choice for the PL with respect to the NB quality, or the pro- or anti-competitive effects of PLs introduction. All these articles consider the demand for store brands as given and do not look to the factors explaining PL purchases by consumers. On the other hand, this issue has been widely tackled by the marketing literature. Studies have been following two different ways.

The first way tries to establish a link between some objective consumers' characteristics and the type of brand consumed. As PLs are in average 20 % cheaper than NBs, so it has been assumed that they were bought in priority by less wealthy households. The first studies (Frank and Boyd 1965, Burger and Schott 1972) did not confirm this assumption. On the opposite, they conclude that demographics variables are poor predictors of the consumers' brand choice. More recent articles do not lead to the same conclusions. According to Richardson *et al* (1996), income and household size do influence PL proneness (negatively for the first, positively for the second). Dar and Hoch (1997) also show that the PL market share increases in areas where the population is more aged or less wealthy. Cole and Sethuraman (1999) demonstrate that the highest PL proneness relies in the medium income classes. Binkley et al. (2001) find that well-educated people are more prone to buy store brands.

The objective approach also looks to another type of brand choice determinants, not based on consumers' identity but on their consumption behaviour. Bonfrer and Chintagunta (2004) analyse the relation between loyalty (to store and to brand) and the choice between PL and NB. They find that store loyalty increases the probability to buy a PL, whereas brand loyalty does not.

The second research way tackles the consumers' subjectivity influence on their brand choices. The important variable is purchasing risk and its heterogeneous perception across individuals and products. According to Batra and Sinha (2000), risk-adverse (the risk of not consuming the most adequate good) and demanding brand specificity consumers do buy more easily NBs than PLs. Likewise, PLs purchases are more frequent for search goods (where quality is known before consumption) than for experience goods (quality known after consumption). Erdem, Zhao and Valenzuela (2004) do confirm such conclusions by proving that uncertainty on quality explains the unequal PL proneness. In the same vein, Richardson *et al.* (1994) showed that packaging and brand reputation, known to be as reassuring factors for consumers, were an important advantage for NBs.

If literature did not find a unique conclusion about the relation between income and brand proneness, it however agrees that the price gap between brands is an important parameter in the decision process for consumers. Works on sales impacts illustrate this view (Bronnenberg and Wattieu 1996, Huang *et al.* 2005): consumers switch between brands according to the price gap, with an advantage of sales impact for NBs. However, the magnitude of this price effect remains complicated to estimate. Livesey and Lennon (1978) shows that it depends on the good studied. For

[1] The first store brands in France were "Les produits Libres" (free products) introduced by Carrefour in 1976.
[2] See Bergès-Sennou and Caprice (2003).

some cases (orange juice), numerous consumers would remain loyal to the store brand, even if the price reduction on the PL good was significantly reduced. According to Baltas (1997), PL consumers are attracted by the price advantage but they stay aware on quality and look for a good quality/price ratio.

We revisit the issue of what drive consumers to buy PLs with two objectives. First, some results – in particular those regarding the impact of socioeconomic variables – are still in discussion. Second, the *declarative* nature of the data used in most of the quoted studies sets a difficult problem, and this is a more fundamental caveat.

Our analysis relies on a discrete choice model where the utility of consumers is recovered from individual data making a census of *effective* purchases. Such a model, among others, allows to separate the utility coming from product attributes (brand, PL or not) from the one related to price. We show that the common PL, also named "me-too" store brand because of its characteristics designed to be a close substitute for NBs on the market core, benefits from a higher reputation than those of the main NBs, independently of the price. On the other hand, the high-quality PL does not seem to be a mature good yet. Section 1 exposes the model and data used. Results are given in section 2. Section 3 concludes.

1. Model and Data

We use a scanner panel dataset provided in 2001 by the firm Sécodip (Société d'Étude de la Consommation, de la Distribution et de la Publicité) who follows a panel of consumers (9 202 households in 2001) by referencing their purchases on numerous goods, as well as a lot of socio-economic information. We choose to focus on pasta for two reasons. First, it is a product frequently purchased and this implies that a lot of observations will thus be available. The second reason concerns private labels. Generally, there is one private label by product group, but for some particular goods, retailers also sell a high-quality private label in addition to the common one. It is the case for the pasta category.

However, pasta does not mark out a single product and on the shelf, numerous recipes and shapes are available to consumers. This means that the consumer first decides which kind of pasta he intends to buy (Classic, Novelty or Specific), and then which kind of brand (national brand, private label). As we do study the brand choice determinants, but not the first stage decision process regarding the class of pasta, we have to limit our analysis to goods within a given class. In order to have a 'homogeneous' product, we restrict our study on one hand to standard pasta (we carefully took-out from data novelty and specific pasta observations) and on the other hand to only one retailer network in order to have homogeneous private label. [3] The selected chain name (Store #1) is one of the five big retailers in France, and its stores, nationally spread, are exclusively composed of hypermarkets.

Table 1 gives some characteristics of the demand side (households). Compared to general household panel (master panel), the consumers' population buying pasta at Store #1 is wealthier and slightly better educated.[4] Families with strictly more than 2 people are over-represented. The

[3] Standard pasta is reflecting what professionals call 'the market core' composed by products with a high substitutability between them. It is a subset of the Classic pasta market where particular shapes have been removed (soup pasta, spaghetti, etc.).

[4] The income class has been segmented by considering the income of the household per consumption unit. That is the total income divided by an index reflecting consumption purpose. Only one adult generates a 1 unit of consumption while every additional adult in the household adds 0.7 units (0.5 for children under 16). This system just reflects the fact

communication of this selected retailer has long time emphasized shopping comfort arguments rather than low-prices, and this could explain why consumers have a higher income than average. The computation of the store loyalty index is the household expenditure market share devoted to this selected retailer. We thus computed the ratio of total expenditure in Store #1 (all UPC goods, whatever their brands)[5] over the total expenditures (all UPC goods bought in all retailers whatever the brands bought). Since one household do not only buy pasta while he is shopping in Store #1, it was important to compute how much budget was devoted by households to Store #1 on the basis of the 300 UPC products listed in the Sécodip database.

Table 1: Descriptive statistics on Households' characteristics.

Variable	General Household Panel	Store #1 (Standard Pasta)
Number of households	9 202	1 414
Number of purchases	//	5 427
Income class (€ monthly basis):		
Low-income (less than 603 € by c. u.*)	1/3	21 %
Medium-income (603 € < …< 1233 €)	1/3	35 %
High-Income (more than 1233 € by c. u.)	1/3	44 %
Education level:		
High School Education (less than Bac)	59.4 %	53.7 %
Undergraduate (less than Bac+2)	28.1 %	30.6 %
Uppergraduate (more than Bac+2)	12.5 %	15.7 %
Household Size:		
2 people or less	44.2 %	35 %
3 or 4 people	40.7 %	49 %
More than 4 people	15.1 %	16 %
Loyalty to store #1:		
Low Loyalty (index < 33 %)	//	37 %
High Loyalty (index > 33 %)	//	63 %

**c. u. means consumption unit*

Table 2 gives some descriptive statistics on the supply side (products). Prices have a low standard deviation. This can be explained by the fact that the selected retailer has a national price policy and each store is not independently managed for price fixing. There are three very well-known brands on the standard pasta market (NB1 to NB3 – each supplying 15 % of the market) and NB4 encompasses all the remaining secondary brand names (mostly generic products). The retailer offers two kinds of private labels, representing half of the market shares. One private label (PL1) is a *me-too* product devoted to compete against the national brands segment with similar characteristics compared to leading brands. Note that contrary to what is commonly observed, PL1 is on the same range price than NBs for pasta. It is the most common kind of private label in retailers' stores. Whereas the second private label (PL2) is a *fancy* store brand emphasizing quality,

that fixed costs linked to households (rents, electricity, phone or gas subscription fees) are paid independently of the number of people composing the household. Any additional income coming from a supplementary adult is thus more important since fixed costs has been accounted on the first one.

[5] UPC (Universal Product Code) goods are in fact product possessing a bar code that is unique worldwide.

and targeting a demanding goodwill on ingredients and recipes, while being positioned on the product segment of standard pasta. This store brand is the most expensive product on the shelf for pasta. Its low penetration rate compared to the *me-too* private label can also be explained by the fact that such a fancy store brand has only been introduced in 1996 by the retailer. Moreover, the retailer's name is not displayed on the product. Consumers may thus not clearly identify this brand as a store brand.

Table 2: Descriptive statistics for Standard Pasta brands.

Brands (NB = National Brand PL = Private Label)	Market Share in Volume (%)	Price per kg in €	
		Average	Standard Deviation
NB1	15.7	1.59	0.15
NB2	13.3	1.84	0.43
NB3	14.8	1.55	0.18
NB4 (others NBs)	7.9	0.64	0.28
PL1	45.2	1.56	0.64
PL2	3.1	2.67	0.18

In this article, we focus on the determinants of the consumer's brand choice. We use a mixed logit approach rather than a standard multinomial logit method. The mixed multinomial logit model (MMNL) allows the estimated parameters to vary across consumers and thus better reflects the fact that consumers are heterogeneous in their preferences. In particular, they may not value the Private Label attribute from brand PL1 and PL2 the same way. Besides, the mixed logit model is a particularly convenient way to get rid of the Independence of Irrelevant Alternatives (IIA) assumption.

The MMNL is besides based on an utilitarian approach derived from the classic economic consumer's theory. We indeed assume that the utility of consumer *n* buying brand *b* at date *t* is given by:

$$U_{n,b,t} = \alpha_{b,n} + \beta_{PL,n} \cdot I_{PL} + \gamma_{p,n} \cdot p_{b,n,t} + \varepsilon_{n,b,t} \qquad (0.1)$$

where *b= {NB1, NB2, NB3, NB4, PL1, PL2},* I_{PL} is a dummy variable that equal to 1 if the good is a private label, and $p_{b,n,t}$ is the price of brand *b* faced by consumer *n* at date *t*. The coefficient $\alpha_{b,n}$ is the specific utility derived from the consumption of brand *b*, whereas $\beta_{PL,n}$ denotes the marginal utility of the consumer *n* for the "private label" attribute of the good.[7] Last, $\gamma_{p,n}$ gives the marginal disutility of the price. The error term, $\varepsilon_{n,b,t}$ is independent from the explicative variables and identically distributed according to a law of extreme values. See Amemiya (1985) or Bonnet and Simioni (2002) for more technical explanations on the mixed logit model distribution issues.

[7] The brand specific intercepts capture what is unobserved in the data but counts in the consumer's decision like advertising proneness, packaging aspect, brand reputation, etc.

For a correct identification of the model, we need to define one reference brand in the private label set and another within the national brand alternatives. The basic private label (PL1) is set as the reference for store brands, and the composite "Other national brands" (NB4) is used as reference for branded products. Namely, $\alpha_{PL1} = \alpha_{NB4} = 0$. As a direct consequence of such a choice, $\beta_{PL,n}$ will represent the marginal utility of the basic private label, and $\beta_{PL,n} + \alpha_{PL2,n}$ will denote the marginal utility for the high-quality store brand.

A very handy disposition from logit models is that willingness to pay for brands and attributes are easy to derive.[8] The willingness to pay for the "private label" attribute (WTP_{PL}) is, by definition, the marginal utility of such attribute expressed in monetary terms. Therefore:

$$WTP_{PL} = -\frac{\dfrac{\partial U_{n,b,t}}{\partial I_{PL}}}{\dfrac{\partial U_{n,b,t}}{\partial p_{b,n,t}}} = -\frac{\beta_{PL,n}}{\gamma_{p,n}} \qquad (0.2)$$

If coefficients are random and follow a Gaussian law, the ratio also follows a Gaussian law characterized by the ratio of the means and a variance. The variance of the ratio can be computed using the Delta method leading to:

$$Var(WTP_{PL}) = \begin{bmatrix} \dfrac{\partial WTP_{PL}}{\partial \beta_{PL,n}} & \dfrac{\partial WTP_{PL}}{\partial \gamma_{p,n}} \end{bmatrix} \times \mathrm{cov}(\beta_{PL,n}, \gamma_{p,n}) \times \begin{bmatrix} \dfrac{\partial WTP_{PL}}{\partial \beta_{PL,n}} \\ \dfrac{\partial WTP_{PL}}{\partial \gamma_{p,n}} \end{bmatrix} \qquad (0.3)$$

where $\mathrm{cov}(\beta_{PL,n}; \gamma_{PL,n})$ is the variance-covariance matrix of the estimated random coefficients.

We consider 3 kinds of models where parameters related to brand name are assumed to be fixed.

- The first one is the basic multinomial model (M1) where all estimated coefficients are fixed and do not vary across consumers.
- The second kind is the mixed logit model (M2) which includes the price disutility. Besides, heterogeneity across consumers is allowed for the private label attribute. The PL coefficient will be random, following a Gaussian law reflecting that all consumers do not get the same marginal utility from that attribute. However, the price disutility coefficient will remain fixed as suggested by Train (1999) since this coefficient must necessarily need to be negative, impeding thus a normal distribution law where positive value could occur.
- The last kind of models is also a mixed logit one but with individual variables interactions (models M3 to M6). The private label attribute has indeed no reason to be, ex-ante, the same for all categories of consumers. Low-income people are not supposed to value brand name the same way well-off consumers do. Therefore, we consider the interactions between PL valuation and income classes (M3), but also with education (M4), household size (M5) and Loyalty to Store #1 (M6). For each model, the PL valuation is random whereas the brand specific intercepts as well as the price coefficient remain fixed. Equation (0.4) just boils down to :

$$Var(WTP_{PL}) = \frac{1}{(\gamma_{p,n})^2} \times Var(\gamma_{p,n}) \qquad (0.5)$$

[8] Revelt and Train (1998) or Goett *et al.* (2000) discuss more deeply the willingness to pay computation techniques for general mixed logit model.

We have to deal with the important issue that arise when using effective data from purchased acts, namely to recover the set of alternatives. We can reasonably think that all the selected brands were available in each store, and so that all consumers faced the same set of alternatives. [9] We use indeed data from one chain store that has nationally established hypermarkets. Because only the price of the brand bought is observed, we do not know the price of the alternative brands. As usual in such multinomial models, the prices of alternative brands are recovered by computing their average price by region across all stores from the hypermarket chain on a monthly basis.

2. Results

Estimation results are given in Table 3 and 4. We give the parameters estimated mean and standard-deviation. All coefficients are significant with a 1% error test. The number in parentheses represents the standard deviation of the parameter estimation. The results of Table 3 exhibits the superiority of M2 with respect to M1. Table 4 displays MMNL with socioeconomic variables and loyalty behaviour.

Table 3 : Mixed logit estimations for Pasta at Store #1

Variables	**Multinomial Model (M1)**	**Mixed Logit (M2)**
NB1	0.67 (0.06)	0.86 (0.09)
NB2	0.50 (0.06)	0.74 (0.11)
NB3	0.61 (0.06)	0.80 (0.09)
NB4 (ref)	0	0
PL1 (ref)	0	0
PL2	-0.95 (0.09)	-2.46 (0.12)
Private Label Mean Std-Deviation	1.73 (0.05)	 1.42 (0.15) 3.94 (0.21)
Price	0.02 (0.05) *ns*	-0.19 (0.06)
Log Likelihood	-8194	-6901
Log Likelihood Ratio		0.158
Log Likelihood Stat.		2586

ns: not significant at 99%

It is relevant to take into account the heterogeneity in consumers' preferences (model (M2)). The non restricted model M2 compared with the restricted one M1 is not rejected with more than 99% of confidence. [10]

One result coming out from Table 3 is that the *me-too* PL (PL1) gives, in average, a positive gross utility to consumers. However, the reference for the national brand products is a composite good (NB4) composed mainly by generic products. Since it is admitted that generic products are of lower quality than the standard private label, such a result is not surprising in itself. The fact that the

[9] See Swait and Ben-Akiva (1986) for a more detailed analysis on the choice set and irrelevant brands issues.

[10] The likelihood ratio is defined by $LRS = -2(LLR - LLNR)$ where LLR is the log-likelihood of the "restricted model", whereas LLNR is the log-likelihood of the "non-restricted model". Model (M2) is compared to (M1), and models (M3) to (M6) are compared to (M2).

PL mean is higher than each NB specific constant is more unexpected. This leads to the conclusion that, independently from the price aspect, consumers get in average a higher utility with the *me-too* private label rather than with one of the well-known NBs. The product characteristics of the store brand seem to matter since, if offered or proposed at the same price than the NBs, more than 56 % of consumers in the panel would strictly prefer it.[11] By product characteristics we mean: recipe, packaging, product location on the shelf, retailer's reputation, etc.

Another statement is that the *so-called fancy* store brand (PL2) does not perform as well as planned. Advertised as being of high-quality by the retailer, the product PL2, independently from the price aspect, suffers a handicap in the consumers' perception of characteristics illustrated here by the negative sign of its parameter. The proportion of consumers having a positive willingness to pay for this *fancy* private label does not indeed exceed 40 %.[12] This could be a consequence of the weak link in consumers' mind between the product and this particular store brand since the retailer's name is not displayed on the good. Unlike for NBs, there is not heavy advertising on this product. Its recent introduction could also explain such a bad performance. It seems clear that the retailer has an important image gap to fill with the consumers between the true characteristics of this product and their consumers' perception.

Since heterogeneity does exist in consumers' valuation of the PL, we try to analyze it more sharply by creating cross-variables with socioeconomic indicators. Model (M3) highlights the role of income, model (M4) tries to emphasize the impact of education, model (M5) is related to household size, whereas model (M6) incorporates consumption behaviour with the loyalty index.

Results for M3-M6 are given in table 4. Only model (M6) is significantly different from model (M2). This result comes from the likelihood ratio statistic that follows here a Chi-Square distribution with 4 degrees of freedom.

The second part of the estimation results depicted on Table 4 leads to the conclusion that the considered socioeconomic variables do not play any role in consumers' perception of the PL attribute. Indeed Models (M3), (M4) and (M5) are tested to be no more informative than (M2). The consumer's loyalty to the store in (M6) provides some light on the PL attribute perception. There is a significant difference between low loyal consumers and the other ones. The store loyalty profile, that is to buy a lot of products in a restricted number of retailer networks, plays a role by leading consumers to be more aware to the PL attribute, directly linked to the retailer's name.

3. Conclusions

The introduction of private labels has been realized with products of low quality sold at low prices. In a second stage, retailers aimed to produce goods which could be perceived as close substitutes of manufacturer's brands. Our study shows that this strategy can be very successful. Indeed, for pasta, the *me-too* private label provides a greater utility than any other brand and can be sold without any price discount to compete with manufacturers' brands. This success relies clearly on the retailer's reputation. The alternative consisting in supplying private labels which are not directly linked to the store name has not reached its target as yet. Otherwise, our study strengthens the irrelevancy of socioeconomics determinants in private label proneness, whereas it confirms the importance of the consumption behaviour variable (store loyalty).

[11] The average gross utility procured by NBs is 0.74. For such a value, Prob (U>0.74)=56,8 % since U_{PL}~N(1.42 ; 3.94)
[12] The distribution of the willingness to pay for PL2, computed with the Delta method exposed above, follows a N(5.47 ; 20.74).

Table 4 : Mixed logit estimations for Pasta at Store #1

Pasta – Store #1	Mixed Logit with individual characteristics interactions			
Variables	**PL x Income (M3)**	**PL x Education (M4)**	**PL x House. Size (M5)**	**PL x Loyalty (M6)**
NB1	0.862 (0.10)	0.861 (0.10)	0.870 (0.10)	0.867 (0.10)
NB2	0.742 (0.11)	0.741 (0.11)	0.752 (0.11)	0.748 (0.11)
NB3	0.80 (0.09)	0.794 (0.09)	0.803 (0.09)	0.800 (0.09)
NB4 (ref)	0	0	0	0
PL1 (ref)	0	0	0	0
PL2	-2.457 (0.12)	-2.459 (0.12)	-2.451 (0.12)	-2.454 (0.12)
Price	-0.201 (0.06)	-0.198 (0.06)	-0.207 (0.06)	-0.197 (0.06)
PL x Low-income				
Mean	0.800 (0.33)			
Std-Deviation	3.710 (0.48)			
PL x Well-lower				
Mean	1.630 (0.21)			
Std-Deviation	3.990 (0.30)			
PL x Well-upper				
Mean	1.489 (0.24)			
Std-Deviation	3.890 (0.38)			
PL x High School				
Mean		1.299 (0.20)		
Std-Deviation		4.032 (0.30)		
PL x Undergraduate				
Mean		1.540 (0.25)		
Std-Deviation		3.893 (0.38)		
PL x Uppergraduate				
Mean		1.631 (0.32)		
Std-Deviation		3.593 (0.51)		
PL x Couple				
Mean			1.777 (0.38)	
Std-Deviation			3.651 (0.70))	
PL x Family				
Mean			1.335(0.18)	
Std-Deviation			4.128 (0.27)	
PL x Big Family				
Mean			1.563 (0.29)	
Std-Deviation			3.446(0.40)	
PL x Low Loyalty				
Mean				0.970 (0.26)
Std-Deviation				3.900 (0.51)
PL x High Loyalty				
Mean				1.667 (0.18)
Std-Deviation				3.925 (0.24)
Log Likelihood	-6897.9	-6900	-6899	-6897.5
Log Likelihood Stat.	6.2	2	4	7

All coefficients are significant with a 1% error test.

References

Amemiya T. , 1985, *Advanced Econometrics*, Cambridge, MA: Harvard University Press;

Batra Rajeev and Sinha Indrajit, 2000, Consumer-Level Factors Moderating the Success of Private Label Brands across Product Categories, *Journal of Retailing*, 76 (2), p. 175 – 191 ;

Baltas Georges, 1997, Determinants of store brand choice: a behavioral analysis, *Journal of Product and Brand Management*, 6(5), p. 315 – 324 ;

Bergès-Sennou Fabian, Bontems Philippe et Réquillart Vincent, 2004, Economics of Private Labels: A Survey of Literature, *Journal of Food and Industrial Organization*, 2(3), 25 pages, www.bepress.com/jafio ;

Bergès-Sennou Fabian et Caprice Stéphane, 2003, Les rapports producteurs-distributeurs : Fondements et implications de la puissance d'achat, *Économie Rurale,* n° 277-278, Septembre – Décembre 2003, p.192 – 205 ;

Bonnet C and Simioni M, 2001, "Asqsessing consumer response to Protected Designation of Origin labelling: a mixed multinomial logit approach", European Review of Agricultural Economics, Vol. 28(4), p. 433-449.

Bonfrer André and Chintagunta Pradeep, 2004, Store Brands: Who Buys Them and What Happens to Retail Prices When They Are Introduced?, *Review of Industrial Organization*, Vol. 24, p. 195 – 218 ;

Bontemps Christophe, Orozco Valérie, Réquillart Vincent et Trévisiol Audrey, 2004, Price Effects of Private Label Development, à paraître dans le *Journal of Food and Industrial Organization*, 19 pages, `www.bepress.com/jafio` ;

Bronnenberg Bart and Wathieu L. , 1996, Asymmetric Promotion Effects and Brand Positioning, Marketing Science, Vol 15, n°4.

Burger Philip and Schott Barbara, 1972, Can Private Brand Buyers Be Identified?, *Journal of Marketing Research*, 9 (May), p. 219 – 222 ;

Chamberlain G. , 1982, Multivariate Regression Models for Panel Data, *Journal of Econometric*s, vol. 18, p. 5 – 46 ;

Chardon Olivier et Dumartin Sylvie, 1998, Fidélité aux enseignes, fidélité aux marques :le choix des consommateurs, *INSEE Première*, n° 609, disponible sur www.insee.fr ;

Cunningham R. M., 1961, Customer loyalty to store and brand, *Harvard Business Review*, Vol. 39, p. 127 – 137 ;

Dhar Sanjay K. and Hoch Stephen J., 1997, Why Store Brand Penetration Varies by Retailer?, *Marketing Science*, 16(3) p. 208 – 227 ;

Erdem Tülin, Zhao Ying and Valenzuela Anna, 2004, Performance of Store Brands: a Cross-Country Analysis of Consumer Store Brand Preferences, Perceptions and Risk, *Journal of Marketing Research*, Vol. XLI, p. 86 - 100 ;

Frank R. E. and Boyd H. W. , 1965 , Are Private-Brand Prone Grocery Customers Really Different?, *Journal of Marketing Research*, 2(4), p. 27 – 35 ;

Goett A. , Hudson K. and Train K. , 2000, "Customers' choices among retail energy suppliers: the willingness-to-pay for service attributes", *Energy Journal*, Vol. 21, p. 21-28;

Kapferer J.N., 1998, Les marques, Editions Organisation ;

Livesey F. and Lennon P., 1978, Factors Affecting Consumers' Choice, *European Journal of*

Marketing, 12(2), p.158 – 170 ;

Rao Tanniru, 1969, Are Some Consumers More Prone to Purchase Private Brands?; *Journal of Marketing Research*, Vol. VI, November 69, p. 447 – 450 ;

Revelt D. and Train K. , 1998, "Mixed Logit with repeated choices: households' choices of appliance efficiency level.", *Review of Economics and Statistics*, Vol. 80, p. 1-11;

Richardson Paul and Jain Arun, 1996, Household Store Brand Proneness: A Framework, *Journal of Retailing*, Summer, 72(2), p. 159 – 186 ;

Richardson Paul, Dick Alan and Jain Arun, 1994, Extrinsic and Intrinsic Cue Effects on Perceptions of Store Brand Quality, *Journal of Marketing*, 58 (October), p. 28-36 ;

Roberston Thomas and Kassarjian Harold, 1991, *Handbook of Consumer Behavior*, édité par Prenctice Hall College, ISBN : 0133727491, 614 pages ;

Sethuraman Radj, 2003, Measuring National Brands Equity over Store Brands and Exploring its Antecedents, *Marketing Science*, Sept-Oct 2003, 28 pages ;

Sethuraman Radj and Cole Catherine, 1999, Factors Influencing the Price Premiums that Consumers Pay for National Brands over Store Brand, *Journal of Product and Brand Management*, Vol 8(4), p. 340 - 351.

Swait J. and Ben-Akiva M., 1986, Analysis of the effects of captivity on travel time and cost elasticities", *Behavorial Research for Transport Policy*, Utrecht, VSN Science Press;