The impact of wine attributes on the behavioural loyalty of Italian consumers[*]

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Abstract

The paper focuses on the study of loyalty to 5 wine attributes – price, format, denomination of origin, production areas and brand positioning – for wines sold in the Italian modern distribution. The observation and evaluation of loyalty levels for these 5 attributes is undertaken using the *polarisation index*. This index is obtained from the Beta Binomial Distribution (BBD) model – already applied in literature for the analysis of (a) loyalty toward brands and product attributes, (b) for the positioning of a brand as a niche or a change-of-pace brand, and (c) for the definition of the repeat purchase rate of a product. To the best of our knowledge, however, this methodology has never been applied in Italy and, what's more, it has never been applied to the analysis of the Italian wine market. This study shows that the BBD model does not only represent a nice theoretical framework for the analysis of customer loyalty, but it is also a powerful managerial tool for strategic decisions associated with market segmentation.

The main findings highlight that format results the attribute able to generate the highest level of loyalty for Italian consumers. Denomination of origin and production areas affects loyalty at the same extent and they do it more than price. Loyalty to brand MS showed two different situations with the general value being the second most significant attribute, but when the analysis concentrated on the 0.75litre format, consumers demonstrated to care less about the positioning of the brand.

Key-words: Polarisation Index, Beta Binomial Distribution, Dirichlet Multinomial Distribution, Loyalty to Wine Attributes, Niche vs. Change of Pace, Repeat Purchase Rate.

1. Introduction

In recent years Italian wine distribution channels have been facing deep structural changes. Supermarkets and hypermarkets reached 40% of sales by volume in 2006, while all off-trade channels combined reached almost 60% and are forecast to increase until the end of the "economic crisis" (Euromonitor International, 2007). This change contributed to an increase in supermarket/hypermarket shelf spaces and in the number of labels at most points of sale (ISMEA, 2007b), with the result that the Italian wine market is more fragmented than it was few years ago.

In this context the ability to understand the way in which consumers make their choices, and particularly the ability to identify the factors influencing consumers loyalty toward particular products, has become a fundamental aspect of business decisions. Loyal consumers are a benefit to a firm. They demonstrate that the firm satisfies customers and stimulates them to buy the product a second time (Yi and La, 2004). Moreover, the ability to match customers' desires only for the one time is not enough, as enduring satisfaction represents a key antecedent of customer retention (Jiang and Rosenbloom, 2005). The authors argue that a firm should aim at creating good customer retention, as in mature and competitive markets this leads to increased profitability. A question, however, remains unanswered. What do we mean by loyalty? Rundle-Thiele and Bennet (2001) affirm that there does not exist a quintessential definition of loyalty, but what does exist is a series of different metrics that, at best, fit with the context under analysis. Until recently much of the literature preferred to concentrate on the loyalty to a brand (Bhattacharya, 1997; Odin *et al.*, 2001; Ehrenberg *et al.*, 2003; Stern e Hammond, 2004; Uncles and Lee, 2006), using what are known as the *Brand Performance Measures* to evaluate the loyalty it receives from consumers. Less attention has been dedicated to the capability of product attributes (other than brand) to generate loyalty, although it is has been demonstrated that attributes like price, region of origin and variety of the grapes can influence loyalty more than brands (Jarvis *et al.*, 2007a). Moreover, while several studies observed and measured loyalty levels aggregated at the product level (Jacoby and Chestnut, 1978; Bennet, 2001; Rundle-Thiele and Maio Mackay, 2001; Rundle-Thiele, 2006; Rauyruen and Miller, 2007) only few studies analysed it for varying fascias of specific attributes (Jarvis and Goodman, 2005; Rungie *et al.*, 2006; Jarvis *et al.*, 2007b). For example, Jarvis and Goodman (2005) in a study on the identification of "niching" behaviours toward four price tiers for Australian red wines in the 0.75litre format observed that loyalty levels for wines sold below AUS$ 7.49 and above AUS$ 17.50 are higher compared to those for wines sold at AUS$ 7.50-12.49 e AUS$ 12.50-17.49. A conclusion analogous to that of Jarvis *et al.* (2007b), to which, however, another consideration has to be added: among the attributes under analysis – price, variety of the grapes, region of origin and brand positioning – price fascias showed the highest loyalty levels, while the lowest ones were given by brand market shares. Moreover, it has also been observed that loyalty to a price level follows the law of duplication of purchases (Ehrenberg, 2000) and that adjacent price fascias tend to share a higher number of same customers (Romaniuk and Dawes, 2005).

This framework brings evidence to the importance of the present work, which focuses on the study of loyalty levels for 5 attributes – price, format, denomination of origin, production areas and brand positioning – for wines sold in the Italian modern distribution. The observation of loyalty levels for these 5 attributes will be done through the so called *polarisation index*. This index is obtained from the Beta Binomial Distribution (BBD) model – already applied in literature for the analysis of loyalty toward brands and product attributes (Jarvis *et al.*, 2003; 2006; 2007a; b), for the positioning of a brand as a niche or a change-of-pace brand (Jarvis and Goodman, 2005) and for the definition of the repeat purchase rate of a product (Rungie and Laurent, 2003a; b). To the best of our knowledge, however, this

methodology has never been applied in Italy and what's more it has never been applied to the analysis of the Italian wine market. Hence, the importance of this work is twofold. On one side, researchers present a new methodology, which proved to be successful for the analysis of customer loyalty to product attributes and repeat purchase rates. On the other, this methodology does not only represent an elegant theoretical framework, but it is demonstrated to be a useful managerial tool for strategy and segmentation.

The study will first describe the databases and the attributes under analysis. Then it will present an overview on the literature for the polarisation index, the concept of niche and change-of-pace brand and the repeat purchase rate of a product. This is followed by the presentation of the main results and discussion, while conclusions and some cues for further activities end the paper.

2. Data

The study refers to the purchases made by a representative sample of the Italian population in the off-trade sector, as reported in the database of AC Nielsen. The sample accounts for 5299 households resident in all Italian regions, whose purchases are recorded for 3 years (2003, 2004 and 2005). The sample bought 371796 units of wine, classified in 12 different formats, from cl 20 to 10litres. A subsample was extracted from the original, in order to include only the households with somewhat regular wine purchase behaviour. The subsample includes only the household who (1) bought wine on more than one occasion in the 3 years and (2) bought more than 10 units of wine. The researchers focus on loyalty levels toward 5 attributes – price, market share positioning, denomination of origin, format and geographic area.

Regarding price, the research focuses only on 0.75litre bottles otherwise the general lower price of table wines sold in larger formats would have influenced too much the judgment on loyalty to price tiers. The Rabobank classification (Heijbroeck, 2003), which splits wines in basic (<€3), popular premium (€3-€5), premium (€5-€7), superpremium (€7-€14), ultrapremium (€14-€150) and icon (>€150), was used. The first three fascias represent a 35.5%, a 44.2% and a 15.1% of the market. The other two fascias were combined as they account for a total 5.2% of the market (IRI Infoscan, 2005). The classification has 4 levels:

1. <€3;
2. €3-€5;
3. €5-€7;
4. >€7.

For the classification according to the brands' market shares (MS), two approaches were used based the total volume of sales for every wine firm. One took into consideration all the formats, so as to have a general overview on the preferences toward brands. The other looked specifically at brands sold in 0.75litre format, in order to have a deeper insight into a format where there is a higher proportion of GI-DOC-DOCG wines. In this latter case, it seemed to be more useful to express the ranking in terms of volumes sales, instead of using the position in the ranking, so as to give a clearer overview on the volumes sold in the off-trade sector by firms in the 0.75litre format. Hence, the first analysis grouped brands in the following fascias:

1. 1°-3° place in the ranking;
2. 4°-7°;
3. 8°-15°;
4. >15°.

while the second analysis classified them in:

1. >3000litres;
2. >1000litres - < 3000litres;
3. >500litres - < 1000litres;

4. < 500litres.

For denomination an adapted version of the Italian quality classification system (Law n. 164/1992) was used in order to include foreign wines. Moreover DOC and DOCG wines have been grouped together, as the production regulations for these wines are more restrictive compared to Geographic Indication (GI) wines (Segre, 2003). Hence, wines have been classified in:

1. Foreign wines;
2. GI wines;
3. DOC/DOCG;
4. Table wines.

For formats, wines in 0.75litre bottle were grouped together. Another group was created to represent dessert/fortified/special occasions wines that are generally sold in bottles of 20cl up to 0.5litre. The other two groups were organised in order to account for the sales of 1litre carton wines, a format largely used in Italy, and larger formats, including 3litre bag-in-box wines. Hence, the four groups are:

1. <75cl;
2. =75cl;
3. >75cl & <150cl;
4. >150cl.

Finally the analysis on denomination of origin (production area) divided Italy in four macro regions: North-West, North-East, Centre, and South & Islands. The first group included Piedmont, Valle d'Aosta, Liguria and Lombardy. The second represents Trentino Alto Adige, Veneto, Friuli Venezia Giulia, Emilia Romagna. Central Italy includes Tuscany, Umbria, Le Marches, Lazio, Abruzzi, while the later group presented Campania, Puglia, Molise, Basilicata, Calabria, Sicily and Sardinia. It is important to say that for denomination the research limited to only GI, DOC and DOCG wines. Italian table wines were not considered as they are not obliged to use grapes from specific areas nor to indicate the region/area of origin of the wine (Law 164/1992). Similarly foreign wines were not considered. To summarize:

1. North-West;
2. North-East;
3. Centre;
4. South & Islands.

The BBD model was applied to these attributes utilising the procedures described by Rungie (2003). For each level of each attribute the index of polarization φ is calculated from the BBD. Then for any one attribute (with h levels) the combined polarization φ_c is calculated according to the following formulas:

- $S \qquad = \qquad \displaystyle\sum_{j=1}^{h} \alpha_j$

- $\varphi_c \qquad = \qquad \dfrac{1}{1+S}$

Finally the repeat rate is given by

- *Repeat rate* $\quad = \qquad MS + \varphi - (MS \cdot \varphi)$

3. Literature review

There are two dominant methodologies for analysing behavioural loyalty. The first is that of conducting a questionnaire, where the interviewee is asked to declare what choice he/she would make, if he/she were in an analogous situation. The literature refers to this method as that of *stated preferences* (Ben Akiva and Lerman, 1985, Jarvis *et al.*, 2007b). Conversely, if

actual choices of consumers are registered, as it happens with when scanner data or commercial databases record purchases, researchers refer to the method as *revealed preferences* (Rungie and Laurent, 2003a; Rungie *et al.*, 2006). This second type of data allows the analysis of repeat purchase rates, as well as that of loyalty toward products. In this situation some methods, e.g. the *polarisation index* (φ), can be applied for the analysis of loyalty levels (Jarvis *et al.*, 2003; 2006; 2007a; b). The polarisation index, proposed by Sabavala and Morrison (1977) for the first time in marketing, is an index the same as Kalwani's polarisation index (Kalwani, 1980), and similar to the Hendry's *k* (Kalwani and Morrison, 1977) or the Bass *et al.*'s θ (1976), compared to which, however, shows higher potentialities (Rungie, 2000; Rungie and Laurent, 2003a; Rungie *et al.*, 2005; Jarvis *et al.*, 2006). It is derived from the application of the BBD model to the purchases made by consumers in different fascias of the same product category and in a defined interval time. In particular, it is possible to identify as many φ values – also called in literature *marginal φ* or *BBD values* – as the number of brands or levels of the attribute in a category. These values express the loyalty level of consumers in the marginal choice between each of these brands (or level of the attribute) and all the other brands (or other levels of the same attribute) in the category. The analysis can then focus on the deviations of the loyalty for each brand (or level of the attribute) from the average or benchmark loyalty level for the brands (or the various levels of the same attribute) in the category.

The benchmark value – also called *category polarisation index* (φ_c) or *DMD value* – represents the multivariate counterpart of the BBD. It can be calculated as follows where S is defined above:

$$(1) \qquad \varphi_c = \frac{1}{1+S}$$

Alternatively it can also be estimated by fitting a Dirichlet multinomial distribution (DMD) to the data. The DMD is the multi level equivalent of the BBD.

φ_c is considered a robust indicator of the consistency in consumer choice. Under some conditions it may remain constant over brands or attributes levels of a category (Rungie and Goodhardt, 2004). It ranges from 0 (complete homogeneity in choice) to 1 (maximum heterogeneity in choice). It is possible within each category to identity the brands with higher or lower loyalty levels compared to a benchmark level by comparing the polarisation for each brand (BBD) with the polarisation for the category (DMD).

In order to solve (1), it is necessary to derive the value of *S*. This is obtained as the sum of the probabilities of choosing a brand or attribute level *j*, conditional on the purchase on the category of belonging of that brand or attribute level (Jarvis *et al.*, 2006). In analogy with Mosimann (1962), cell probabilities of a multinomial distribution distributed according to a multinomial distribution with parameters k, r_1, r_2, r_3,…, r_h are distributed according to a multivariate beta distribution – or DMD – with parameters α_1, α_2, …, α_h. Every *j-th* probability associated with the choice of a brand or attribute level *j*, conditional on the purchase on the category of belonging of that brand or attribute level can be calculated as follows:

$$(2) \qquad E\left(p_j\right) = \frac{\alpha_j}{\alpha_1 + \alpha_2 + ... + \alpha_h} \qquad \text{with } j = 1,2,...,h$$

In order to estimate the values of parameters α_1, α_2, …, α_h one can use the method of marginal moments (Rungie, 2000), discrete choice models (Guimaraes and Lindrooth, 2005) or, as in this study, methods that apply theories on the estimation of maximum likelihood.

Once the estimation of parameters α_1, α_2, …, α_h are obtained for the DMD, the notion *S* is used to indicate the sum of the *j-th* values of α.

(3) $$S = \alpha_1 + \alpha_2 + ... + \alpha_h$$

At the same time S defines the heterogeneity level in the choice of brands for the population of shoppers. The S value ranges from 0 to $+\infty$. When S=0, then the heterogeneity is at its peak, while if it tends to $+\infty$ one has complete homogeneity. Once S and φ_c are known, one can derive each marginal φ value using the same approach. The only difference is that, instead of having j probabilities to sum together, one has only two: the first relates to the probability of choosing the *j-th* brand or attribute level in a category, the second represents the probability of choosing all other brands or attribute levels belonging to the same category. In this way the DMD is reduced to its bivariate counterpart, that is the BBD.

The analysis of BBD and DMD distributions allow researchers to look at two different phenomena: **brand positioning** and the **Dirichlet model**.

In particular the comparison of BBD and DMD polarizations opens the discussion on brand positioning in the market as *niche* or *change-of-pace* brands. The literature has devoted special attention toward brands holding low MS. They not only hold a small proportion of the market, but they also tend to be bought less often than their competitors (Goodhardt *et al.*, 1984). The phenomenon defined as *double jeopardy* (Goodhardt *et al.*, 1984; Uncles *et al.*, 1995; Ehrenberg *et al.*, 2003) has been well described by Riebe (2003):

"The double jeopardy pattern in loyalty rates has generally been observed for repertoire buying (i.e. in markets such as grocery products and store choice) where buyers have steady propensities to buy various brands but a range of brands from which they buy which may vary considerably between individuals. The phenomenon is explained as a statistical outcome from asymmetries in familiarity and distribution. That is, smaller brands have less people who know of them than bigger brands, and they are used by these fewer customers less often. This is because the customers of small brands also know of and use the bigger brands in the market. Their purchases from the category are split between the big brands and the small brands, whereas many of the big brands' customers are not aware of the smaller brands and so do not have to spread their category purchases out amongst brands."

This statement affirms that smaller brands tend to have less purchasers, a lower purchase frequency (given that a higher proportion of consumers is directed toward bigger brands) and a higher percentage of 100% loyal consumers. These customers often are also shared with the bigger brands. Conversely, brand leaders show a higher penetration, that is a higher number of consumers who buy them more frequently (Jarvis and Goodman, 2005). In order for a brand to be classified as a niche product, in fact, a brand should have a low penetration level compared to its purchase frequency. That is, it has to show a loyalty level higher than the average level shown by all the products belonging to the same category. This also means that the ratio between the consumers who buy a brand and the total number of those that buy in the same product category has to be low compared to the ratio between the total number of purchases of that particular brand and the total number of consumers who buy it.

Literature offered a useful instrument to analyse these phenomena: the $w_i(1-b_i)$ constant, with w_i representing the purchase frequency of a brand and b_i its penetration. Kahn *et al.* (1988) demonstrated that $w_i(1-b_i)$ within each product category some brands deviates from the constant, showing a value $\pm10\%$ different from the category constant. Brands behaving in these ways were called by the authors niche and change-of-pace brands. However, the authors also noted that the simple observation of these deviations does not allow to state whether a brand is really niche or change-of-pace. On the contrary, this analysis represents only the first step of a deeper understanding of these behaviours through the analysis of brand performance measures, the purchase frequency and the repeat purchase rate of a brand (Kahn *et al.*, 1988). Moreover, literature studied this relationship only for brand analysis, not for attribute analysis (Kahn *et al.*, 1988; Fader and Schmittlein, 1993; Bhattacharya, 1997; Ehrenberg *et al.*, 2003). These considerations brought researchers to analyse these phenomena putting in relation the BBD values with their respective MSs. A graph is built with MS on the x axis and φ values on

the *y* axis. Then the graph is hypothetically divided in 4 segments, where the horizontal axis is represented by the *φ* of the category, while the vertical axis falls around the middle of the graph. Hence:

- If a brand is located in the top side of the graph (1) and (3) one could think about a brand showing *excess loyalty*;
- If a brand is located in the down side (2) and (4) of the graph the brand show a loyalty inferior to that of the category, but the important MS still help the brand avoiding difficult situations;
- If a brand is located in the right side of the graph (3) and (4) one could think about a brand showing high market share;
- If a brand is located in the left side of the graph (1) and (2) one could think about a brand showing low market share;
- If a brand is located in the top left part of the graph (1) it is possible to think about a niche behaviour;
- If a brand is located in the down left part of the graph (2) it is possible to think about a variety seeking behaviour and change-of-pace.

Finally we consider a wider range of models for repeated choice. The DMD distribution represents one of the two probability density functions that, together with the negative binomial distribution (NBD), explain the Dirichlet model. Prior to the studies on the BBD values for conditional choice, Ehrenberg (1959) and Chatfield and Goodhardt (1975) modelled the total number of repeated purchases of brands by each consumer using the negative binomial distribution (NBD). Bass *et al.* (1976) studied the conditional choice between brands using an approach linked with the utility that purchases generate on consumers. These were eventually combined into one model by Goodhardt, Ehrenberg and Chatfield (1984). Ehrenberg *et al.* (2003) further explain the assumptions of the model, but for the purposes of this work it is only important to note that these assumptions allow researchers to affirm that the purchase rate of the product category is distributed as an NBD on the population of consumers. The NBD is derived specifying that the purchases made by each consumer follow a Poisson process based on the propensity toward the category. These propensities have a gamma distribution on the population of shoppers. The purchases of brands are distributed according to a DMD, which is conditional on the category purchase rate. However, the NBD and DMD are assumed to be independent and the parameters have no associations between them. Let K be the random variable that represents the purchase rate of the category for the population of consumers. The Dirichlet model assumes that the purchase rate of the category accommodates a NBD that is K follows a NBD. For each consumer *i* it is possible to define his/her purchase rate k_i. The NBD is characterised by two parameters, both positive:

- a shape parameter *γ*;
- and a scale parameter (which also influences the shape) *β*.

Let the category have *h* brands. On the population of purchasers let the purchase rate of each brand be represented by the random variables R_1, R_2, R_3, …, R_h. Hence, the sum of these purchase rates represents the category purchase rate $R_1+R_2+R_3+…+R_h = K$. If one considers that the purchases of a brand are dependent from the category purchase rate, they will accommodate a DMD, that is R_1, R_2, R_3, …, R_h dependent from K, accommodate a DMD. Moreover, in respect to the population of shoppers, $R_1+R_2+R_3+…+R_h$ represent random variables for which one observes r_1, r_2, r_3,…, r_h brand purchase rates. Thus, one needs first to calculate all the parameters of the Dirichlet model – *γ*, *β* – and all the *j-th* *α* to find S and the category polarisation index.

The approach used in this paper can be compared with the Dirichlet model. Like the DMD side of the Dirichlet we consider consumers' repeated choice between brands

conditional on the category purchase rate. However, there are two major differences in our approach. Firstly the Dirichlet model assumes that the loyalty levels for all brands are equal. One DMD distribution is fitted to all brands generating one polarization. Conversely, we fit a separate BBD distribution for each brand. We have a polarization for each brand. The Dirichlet has only one polarization for the whole category. Secondly, the Dirichlet focuses only on the repeated purchases of brands. We consider other attributes such as variety and denomination. The literature supports the inference that loyalty levels might be constant across the brands in a category. However, there is much less evidence that the same relationship might hold for other attributes. On the contrary, for attributes of wine, such as the variety, the polarization for the various levels – i.e. for different varieties – can vary considerably. Our approach recognises, measures and analyses this variation. By comparison, any application of the Dirichlet model to attributes, other than brand, implicitly, inappropriately and uncritically assumes that loyalty levels are constant.

4. Results

4.1. Category

As indicated above φ varies between zero and one where a higher value of φ indicates higher loyalty while low values are a signal of a low repeat rate. A preliminary overview of the results on loyalty levels (tab. 1) shows that the format in which wine is sold determines the highest level of customer loyalty (0.49). The positioning of the brand presents two completely different behaviours when observed for the entire sample or for the 0.75litre format only. In the first case, this attribute shows the second highest loyalty level (0.43), while it becomes the least important element for loyalty generation when consumers choose to buy regular wine bottles. In the middle it possible to note that the denomination of origin and the area of origin show exactly the same value (0.35), which is higher compared to that of price (0.29).

Tab. 1: Loyalty varies considerably among the five attributes

Attribute	DMD
	φc
Formats	0.49
Brand MS	0.43
Denomination	0.35
Geographic Areas	0.35
Price	0.29
0.75 Brand MS	0.21

4.2. Marginal Analysis & Repeat Purchase Rate

The analysis of *marginal φ* values (tab. 2) in relation to price tiers shows a higher level of loyalty for wine in the basic fascia (0.420). A result similar to that obtained in analogous studies (Jarvis *et al.*, 2006; 2007a; b), where it was observed a higher level of loyalty for low and high price wines, while the polarisation index for intermediate fascias was located under the average score. Conversely, in this study popular premium and premium fascia show similar BBD values (0.242 and 0.228 respectively) and both under the DMD value. It seems that the two price tiers are one alternative to the other, with the first showing a higher MS. There is low loyalty also to >€7 wines (0.205), which also hold a small MS (4.7%).

The analysis of loyalty toward denominations of origin shows that table wines are able to generate high customer loyalty (0.354) compared to all other tiers. DOC/DOCG wines follow them both in terms of φ and MS (0.316 and 28.2% respectively). Under the average value of DMD, we note the presence of GI wines (0.208) and foreign wines (0.090), with the latter still representing a novelty for the Italian wine market. Euromonitor International (2007),

highlighted that foreign wines are increasingly appreciated, although domestic wines continue to represent the majority of the wines sold in the country. It is interesting to note that the report states that, according to industry sources, 62% of Italian consumers do not buy foreign wines at all.

Loyalty toward geographic areas highlighted the dominance of North-East in terms of volume sold (34.6%). This result is in line with that of ISMEA (2007a), which revealed that North-eastern regions represent a 36% of the entire DOC/DOCG production. However, these regions do not only sell vast quantities of wines, but are also able to generate a good level of behavioural loyalty (0.358). Central regions deserve similar comments, although a smaller MS (31.8%) is combined with a higher value of φ (0.376). It should be noted, however, that while the production of GI/DOC/DOCG wines in North-eastern regions represents a 47% of the total, Central regions only account for a 25% (ISMEA, 2007b). It is interesting to observe the position of South & Islands regions, which despite a lower MS (19.2%) compared to those analysed so far, seem to generate the highest level of loyalty (0.390). On the opposite situation we find North-western regions. A low MS is accompanied by a low BBD value (14.4% and 0.334 respectively). However, it should not be forgotten that a 95% of the production of these regions is based on DOC/DOCG wines, compared to a 43%, a 68% and a 51% of North-eastern, Central and South & Islands regions (ISMEA, 2007b). As DOC/DOCG wines tend to be sold at higher price points compared to GI and given the results showed above on loyalty to price tiers, it is more reasonable to explain why North-western regions present these results.

Tab. 2: Loyalty varies considerably also among attribute levels

Attribute	DMD	BBD	MS	Repeat	Attribute	DMD	BBD	MS	Repeat
	φc	φ		Rate		φc	φ		Rate
Formats					**Geographic Areas**				
>150	0.49	0.580	20.4%	66.6%	South & Islands	0.35	0.390	19.2%	50.7%
75	0.49	0.500	30.5%	65.2%	Center	0.35	0.376	31.8%	57.4%
>75 &<=150	0.49	0.474	47.3%	72.3%	North-East	0.35	0.358	34.6%	58.1%
<75cl	0.49	0.359	1.8%	37.1%	North-West	0.35	0.334	14.4%	42.9%
Brand MS					**Price**				
1°-3°	0.43	0.459	33.8%	64.2%	<=3€	0.29	0.420	36.0%	62.9%
4°-7°	0.43	0.448	15.0%	53.1%	>5€ & <=7€	0.29	0.242	19.6%	39.1%
>15°	0.43	0.442	34.5%	63.5%	>3 & <=5€	0.29	0.228	39.6%	53.4%
8°-15°	0.43	0.409	16.6%	50.7%	>7€	0.29	0.205	4.7%	24.2%
Denomination					**0.75 Brand MS**				
Table Wine	0.35	0.354	55.6%	71.3%	>=3000	0.21	0.267	20.9%	42.1%
DOC-DOCG	0.35	0.316	28.2%	50.9%	>1000 & <3000	0.21	0.224	19.0%	37.1%
GI	0.35	0.208	15.6%	33.2%	<500	0.21	0.214	37.3%	50.8%
Foreign Wine	0.35	0.090	0.6%	9.5%	>500 & <1000	0.21	0.170	22.7%	35.9%

Loyalty toward brand MS highlights two completely different situations for the overall sample and the 0.75litre sample. In the first case we note that "Top3" and >15° brands show excess loyalty (0459 and 0.442 respectively), in line with the analysis of Jarvis *et al.* (2007b), who observed that smaller brands show change-of-pace characteristics, but only when observed as single brands, not as a group. Similar loyalty levels can be found for the 4°-7° group (0.448), although accompanied by small MS (15%). This witnesses again the power of bigger brands to stimulate customer loyalty, while smaller ones risks to be caught in the middle. These results are even more significant when the sample is reduced to the 0.75litre format. The group of small brands still show excess loyalty (0.214), and again top brands – in this case those who sold more than 1000 litres of wine in 3 years – are able to push consumers to buy them repeatedly. It is interesting to note that we find most of the same brands in the top positions of both the entire and the reduced samples. This demonstrates the capability of these firms to differentiate the production toward different formats. The smaller MS quotas they hold in the reduced sample are only given by the fact that those firms still concentrate more on formats different from 0.75litre. Moreover, consumers who buy wine in a regular bottle

tend to be more prone to choose wines within the plethora of firms that are part of the <500 litres group, which, in fact, account for a 37.3% of the market. Again the middle fascia – >500 litres-<1000 litres – shows a difficult pattern of loyalty, with a BBD value of 0.170.

The last attribute under analysis is the loyalty toward formats. The results are in line with what researchers have just assessed. Big brands tend to concentrate more on format bigger than 0.75litre. The MS of the two tiers represent more than 65% of the wine sold in the off-trade sector and their loyalty levels are very high in both cases. However, in relation to the loyalty level of the category, it should be noted that while >0.75litre-<1.5litre show a lower marginal φ value (0.474), the >1.5litre tier present the highest BBD value among all the attributes and fascias studied in this work (0.580). Regular 0.75litre group accounts for a 30% of the market and its BBD value is almost identical (0.500) to that of the category. Smaller formats show a loyalty pattern similar to foreign wines. As this tier includes mainly dessert wines and special editions of sparkling wines and champagnes it is not a chance to observe that it accounts for only a 1.8% of the market and its marginal φ value is 0.359.

The repeat purchase rate ρ, also known as *repeat rate*, is defined as the probability of choosing an alternative i, conditional to a previous choice of the same alternative i. We generally see that there is a limit within which a lower loyalty level can be compensated by higher a MS and vice versa, as evidenced in (4). However, when looking at the repeat rates of the attributes denomination of origin, format and brand MS, we observe once again that the polarisation index and MS are two completely independent measures, each bringing its contribution to the definition of ρ. However, when either φ or MS are weak, double jeopardy phenomena can occur and the brand or the attribute level risk to face change-of-pace situations, as it clearly happens with foreign wines.

5. Discussion

The BBD model, apart from identifying the loyalty consumers devote to different product attributes, provides a deeper insight on (a) the "niching" or "change-of-pace" positioning of each attribute level and (b) the implications that these positions have for firms and marketing managers.

The first element researches desire to point out is the extraordinary high loyalty showed by formats. The choice of a format, in fact, is not only the attribute that obtained the highest DMD value among the attributes analysed, but also among similar studies who applied this method to the study of loyalty toward wine attributes (Jarvis *et al.*, 2003; 2006; 2007a; b). This evidences that in the Italian wine market we have 3 clear segments of the population, who clearly look at the format of the wine. In particular it is interesting to observe the position of >75cl-<150cl and >150cl tiers. The first group is mainly represented by 1litre carton wines, a format widely used in Italy especially for table wines sold under <€3. The fact that the latter two attribute levels show excess loyalty, while this format tier is under the DMD score could be explained by the fact that table wines and basic wines can be sold with different formats. Therefore, although the φ_c value of the category is very high, consumers may find those characteristics even in different formats, reducing the marginal φ value of the >75cl-<150cl fascia. For example the >150cl group is located in area 1, witnessing the fact that there is a 20% of consumers that when buying wine they almost repeatedly look at >150cl formats. The position of the others two tiers should be also analysed together. We could expect, in fact, that firms who decide to target the 0.75litre tier are more oriented to quality wines, with a wine range that beyond red, white and rosé wines could possibly include dessert/fortified wines, as well as special editions of particular vintages. These firms will benefit from the good BBD level showed by the 0.75litre tier and are not worried by the fact that purchases in the <0.75litre fascia are more occasional. However, firms deciding to target only this latter group will not easily face the off-trade sector. Anyway, it should be noted that data used in this

study are an aggregation of 3 years of consumer wine purchases, while it is known that consumers tend to buy dessert/fortified wines for special occasions like Christmas, New Year's Eve, Easter, etc. It could be interesting then to have monthly data on purchases, to verify whether this behaviour remains unchanged or not.

Fig. 1 : Loyalty to formats
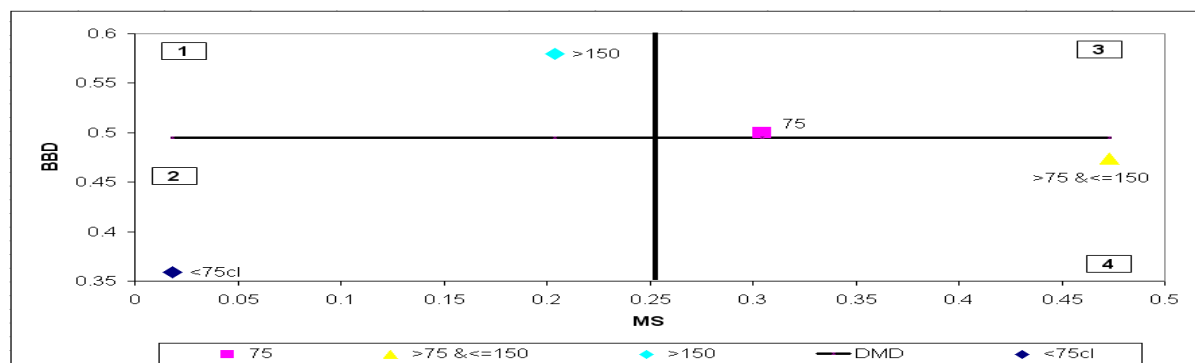
The analysis of loyalty toward MS evidences similar attitudes of consumers when the same attribute is studied for the entire population and for the 0.75litre sample. The two graphs (fig. 2 and fig. 3) show similar behaviours, but this is seen from two different points of view. Both analysis, in fact, highlight the excess loyalty consumers devote to big brands (1°-3° tier and >3000litre tier). This is probably due to their capability of creating stronger relationships with customers, through a more developed financial and distributive power. These brands are able to activate massive promotional and communicational campaigns and they are present all over the country. Moreover, thanks to bigger production facilities and a different marketing strategy, they are able to sell their products at lower price points focusing more on formats different from the traditional 0.75litre bottle. This explains why in both situations these brands show excess loyalty, but when only traditional bottles are considered they move to the niche area. This strengthens again the concept of niching behaviour. It is not possible to say that a product is niche if consumers show higher willingness to pay (Andrighetto *et al.*, 2002) or if bounded in a local market with scarce propensity toward internationalisation (Campus and Rossi, 2001). A niche could be also represented by lower quality wines sold all over a country, as long as they are able to generate higher level of loyalty for a small group of the population (Jarvis and Goodman, 2005).

Similarly, firms in the 4°-7° fascia and in the >1000litres-<3000litres tier represent medium to big firms, who tend to be present in several geographic areas, without covering all the territory. The 8°-15° and the >500-<1000 groups are located in area 2 of the graph showing a critical situation in terms of behavioural loyalty, risking to be "stuck-in-the-middle" (Porter, 1980). A lack of customer loyalty at regional level together with a lack of productive and financial means to be present at national level obliges them to remain in the middle, being chosen only for the wish to "change the pace". Finally the results for the last two fascias (>15° and <500litres) evidences that consumers who buy in these tiers make their choices among the wide range of wines offered by the majority of wine firms. In a sense, we could say that consumers are loyal to "not-being-loyal", that is they concentrate more on products with smaller MS. These consumers tend to rely on wines in this tier, but within it they are less loyal to one specific brand. However, another way of looking at these results is that the productive structure doesn't allow the majority of firms to cover the entire territory. Hence, there is a plethora of medium to small firms who are proposed at regional level. Their wines tend to be chosen by those who live in the same region or geographic area, with the result that instead of describing a generic consumer that buy small MS wines, one should

probably refer to a plurality of consumers, who buy brands with high regional MS, whose value is lost when brought at national level.
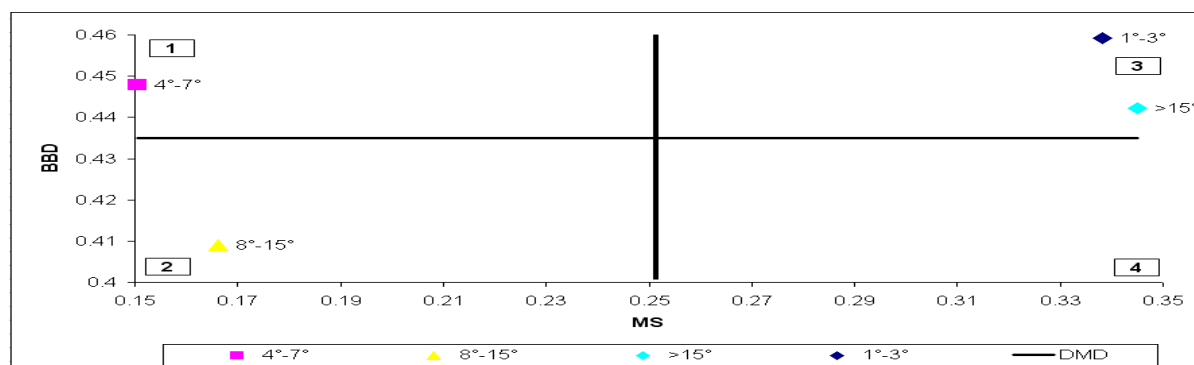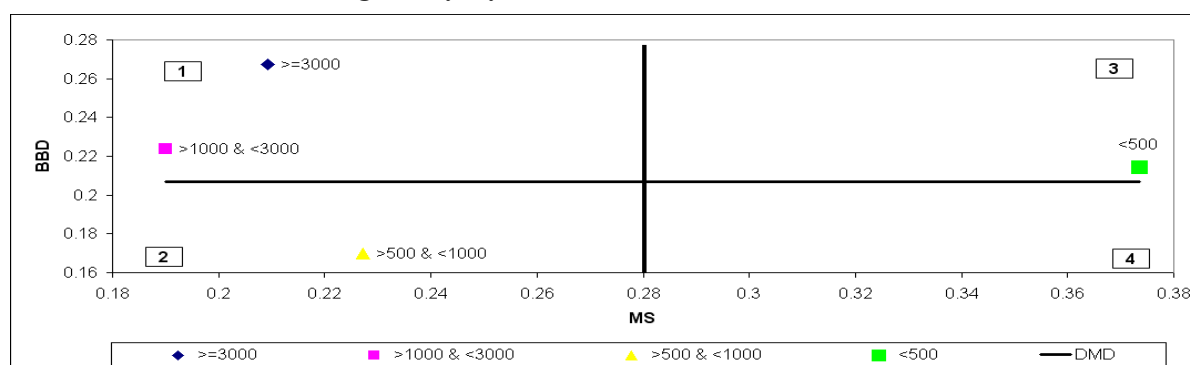
Fig. 2: Loyalty to brand MS

Fig. 3: Loyalty to brand MS for 0.75 litre format

DOC-DOCG wines are chosen by a loyal group of customers (fig. 4), who probably recognise to this denomination both an actual and a symbolic high value. Moreover, the fact that either DOC-DOCG and table wines show high BBD values and that they represent together more than 80% of the entire market suggests that there clearly are two distinct segments of the population, who tend to choose one category of wine or the other. However, both groups may decide to occasionally make their purchases in the other two fascias – GI and foreign wines – with the first chosen more times than the second. If one takes into consideration only the DOC-DOCG and the GI fascias (fig. 5), one observes that some regions are able to create higher levels of customer loyalty. In particular it should be noted the position of Central regions of Italy, where Tuscany largely contributes to the overall loyalty of the tier thanks to the high volumes of Chianti – over hl 800000 of wine in 2006 (ISMEA, 2007b) – largely sold in the premium fascia. The situation of North-western regions should be analysed through the relationship between price and denomination of origin. In this tier one could find higher priced denominations, e.g. Barolo, Barbaresco, Sfursat, Franciacorta. These prices could discourage the purchase of these wines in the off-trade sector. It is not a chance, in fact, that the loyalty to wines >€7 in 0.75litre format is very low and that production regulations of many, if not all, these wines oblige them to be bottled in the same format. Conversely it should be noted the situation of wines coming from Southern regions and islands. The high level of loyalty for these wines witnesses their capability to capture the attention of a good number of customers, although statistics on Italian DOC-DOCG evidence a decrease in the production of Southern wines in the four years interval 2002-2006 (ISMEA, 2007a).
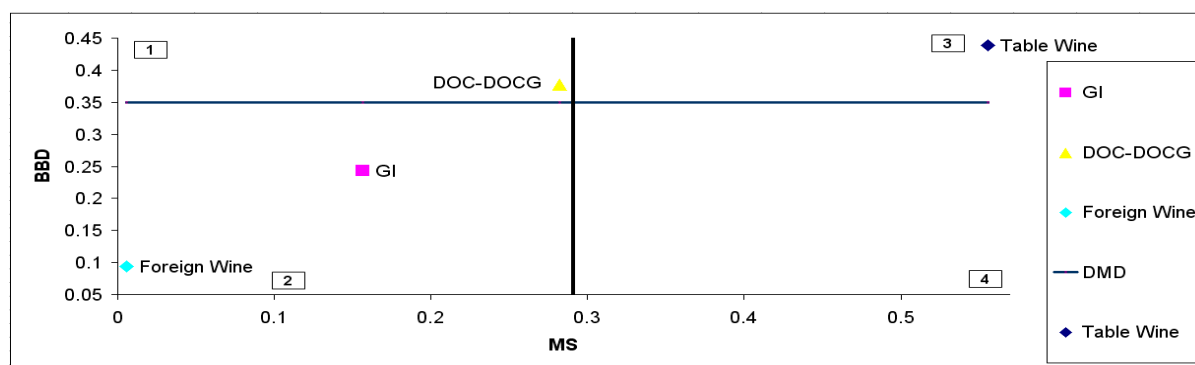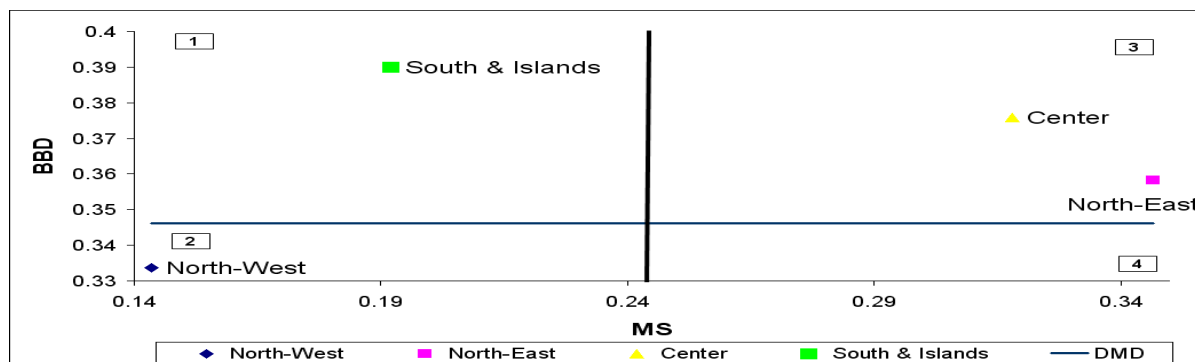
Fig. 4: Loyalty to denominations

Fig. 5: Loyalty to geographic areas

The analysis of price tiers (fig. 6) let us see that basic (<€3) wines show excess behavioural loyalty. It is interesting to note that several big Italian wine producers (Caviro, Caldirola, Tollo, etc.) together with many co-operatives tend to sell in this fascia. Only these kinds of firms, in fact, are able to give grocery multiple (GM) chains a highly standardised product, in large volume, at a very low price and that can be used either as a beverage or for the preparation of meals. As a consequence, it is possible to hypothesise that the high level of loyalty could be the result of the capability of these products to satisfy at the same time different consumer demands. Hence, firms able to meet the above cited requirements of GM chains find in this tier a flourish market made of an important number of loyal customers.

The polarisation index for popular premium and premium fascias shows very similar values, although lower to that of the category. If we group them, however, one can observe that the marginal φ for this new tier will be higher than those of the two taken separately. This could suggest that consumers tend to shift from one fascia to the other, especially when price is closed to the delimiting value (€5). Therefore, it is not a chance that many firms decide to target both tiers, so as to avoid losing the part of the purchases made in one of the two. It is also reasonable to say that the choice of a double positioning comes from the fact that some events – e.g. price promotions, higher distributing power of producers, better placement in the shelf, etc. – push consumers toward one tier or the other. The model could be affected by these modifications, but it is more important to highlight that consumers benefit from these commercial activities, although they do not put attention on which of the two fascias they make their purchases in. As these activities constantly appears in the wine market, it is interesting to observe the value of the polarisation index for the two price fascias, but one should remember that a wine bought at €4.99 can be easily the result of a €5.99 wine cut off by 20%.

A BBD value under the average DMD value could represent a problem for firms, who are not able to counterbalance a lower loyalty with higher volumes, that is moving from 2 to area 3 (e.g. see fig. 1). In other words, if a firm wants to avoid risks connected with the double jeopardy phenomenon, it could try to find an agreement with GM chains for the production of

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a private label that targets the popular premium and/or the premium sector. In the worst case the firm will not incur in promotion and distribution costs, as the GM chain will bear them.

The tier >€7 remains an occasional purchasing fascia for the sample. The presence of famous and important brands is nowadays common in many supermarkets, as well as the visibility given to them. The analysis evidences that purchases in this fascia represent an exception for a vast majority of consumers, who generally buy in other tiers, but then decide to purchase something special for a particular occasion. As highlighted by Bhattacharya (1997), consumers who generally buy in the basic fascia could sometimes decide to purchase in more expensive tiers, while it is difficult to observe an opposite behaviour. Hence, wines in this tier could be easily defined as change-of-pace products and those firms who decide to be present in this fascia risk to encounter several risks. >€7 wines, in fact, do not only hold a small MS, but the loyalty level is the lowest among the four. Nevertheless, it is reasonable to think that firms targeting this tier in the supermarket/hypermarket sector are also present in specialised shops, if not even in the on-trade sector, avoiding in this way the occurrence of the double jeopardy phenomenon.

Fig. 6: Price Tiers
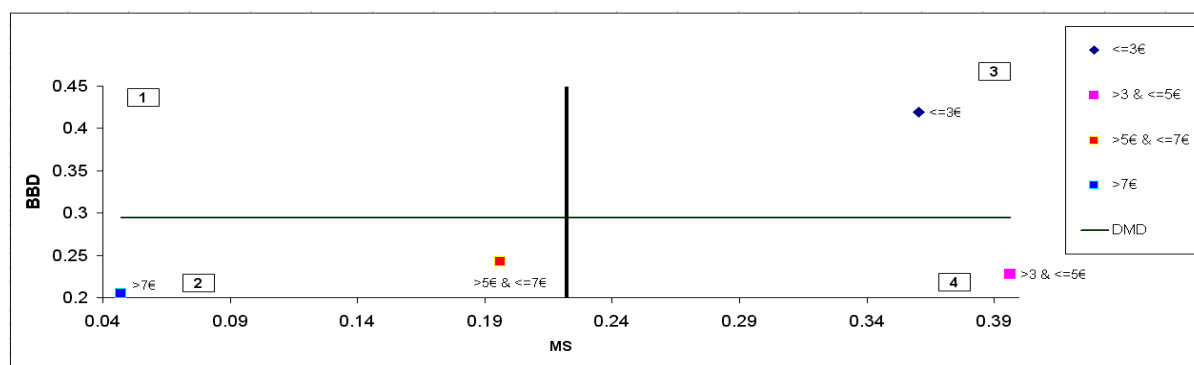
Given the elements analysed so far a firm willing to enter the off-trade market should take into account few fundamental rules. In terms of **product** it should focus on those attributes, or better, those levels of the attribute that show higher loyalty levels. The first decision should be on the format to utilise for the bottling of the wine, as it has been shown that this is the element that achieves the highest DMD value among the attributes analysed. There are, in fact, distinct groups of the population who regularly tend to choose one of the three main important format – 0.75litre, >75cl-<150cl and >150cl. In particular, authors suggest that firms producing table wines should concentrate on 1litre carton or 3litre bag-in-box, while for those producing GI-DOC-DOCG wines the traditional 0.75litre bottle seems to be the most appropriate choice. This latter consideration is particularly true for producers located in Central and Southern regions of Italy, who can find in the off-trade sector a good distribution channel for their wines, mainly DOC and DOCG. The loyalty to the geographic area resulted so important that producers could emphasize this on the label, together with the denomination of origin associated with the wine. In terms of **price**, firms should try to differentiate their range offering products at two price levels – popular premium and premium category. In this way producers will not lose the purchases consumers make in one of these two alternative tiers. It should be noted that low BBD values express a high elasticity in the demand of a product, hence consumers are more prone to shift their purchasing behaviour from one tier to the other. Conversely, firms able to sell their wines <€3, seem not to have any particular problem, as format and price are the attributes able to increase the loyalty of the segments of consumers buying this typology of wines. Considerations in terms of **promotion** and **placement** must be made together, as they are tightly correlated. The analysis of loyalty toward brand positioning evidenced that big brands (>3000litre) don't have particular

problems, while small firms (<500litres) should better concentrate their efforts almost in the same area of production, instead of trying to be present in the entire territory, where big brand risk to strangle them. Attention has to be put also toward promotion strategies like discounts, buy-one-get-one-free, etc. If products pushed by these activities fall into low loyalty price tiers, the demand associated with them remain highly elastic and so these promotions result to be ineffective. Producers should try to concentrate more on other promotional strategies. For example, if small firms of the same territory joined their efforts and financial resources to promote themselves as a group, they could succeed also at national level. This will be favoured by the higher loyalty devoted to denomination of origin and geographic area compared to brand loyalty for 0.75litre wines. Hence they can aim at targeting those loyalty levels showed by the two categories >1000litres (fig. 3). A last consideration is for foreign wines, <75cl wines, wines sold >€7 and wines from North-western regions of Italy. These attribute tiers all showed a change-of-pace behaviour. The methodology used in this study doesn't allow to study the joint effects they have on consumer behaviour, but in case a product presents at least two of these attribute level together, it could be probably better to find in the on-trade sector a more profitable retail channel. In other words if a wine produced in Piedmont or in Australia is sold below €7 and/or in one of the other three formats, it could balance lower loyalty levels of some attributes, with higher levels of others, but if we have a dessert wine at €50 sold in a 0.375litre bottle, it is not easy to make it neither a successful product nor a niche in the off-trade sector.

6. Conclusions

This study proved that the BBD model does not only represent a nice theoretical framework for the analysis of customer loyalty, but it is also a powerful managerial tool for strategic decisions associated with market segmentation. Moreover, it represents the first step for the application of advanced quantitative market analysis techniques especially useful for the definition of significant segments of the population and of the most important attributes generating loyalty to consumers.

The first advantage given by polarization is the capability to analyse the degree of loyalty consumers devote to product attributes, both at a category and a single tier level. In particular among the five attributes studied – price, format, denomination of origin, production area and brand MS – format resulted the attribute able to generate the highest level of loyalty for Italian consumers. Denomination of origin and production areas affects loyalty at the same extent and they do it more than price. This differs from what other studies found on Australian wine consumers applying the same methodology (Jarvis *et al.*, 2003; 2006; 2007a; b). Loyalty to brand MS showed two different situations with the general value being the second most significant attribute, but when the analysis concentrated on the 0.75litre format, consumers demonstrated to care less about the positioning of the brand. In particular consumers who buy regular bottles and concentrate more on products with smaller MS tend to rely on this tier, but within it they are less loyal to one specific brand. It has been shown that >150cl formats deserved the highest level of loyalty among all the attribute levels analysed. Niching positions are also shown by DOC-DOCG wines and wines from South & Islands. Smaller formats (<0.75litre), foreign wines, wines sold above €7, brands without a clear positioning as regional or national players and wines coming from North-western regions face lots of difficulties in the modern distribution channel. The other levels generally show an average or an excess loyalty, hence producers should focus either on them or on those presenting niching behaviours while they start arranging their strategic planning and activities.

A second advantage is that once these attribute levels have been defined, the model allows operating evaluations on the niching or change-of-pace positioning of a brand, thanks

to the relation that exists between φ and MS, despite the independence between these two metrics.

Thirdly, the model leads to the evaluation of the repeat purchase rate of a product, showing the contribution that φ and MS bring to the final determination of this measure.

Finally, the model operates with almost the absolute certainty that all attribute levels for all the 5 attributes under analysis were present when consumers made their purchase given the wide offer that the majority of modern distribution points of sales have for the wine sector. Hence, (a) the levels we found under the DMD line are not the result of their unavailability in stores and (b) the managerial implications we retrieved from the discussion of the results can certainly be considered valid.

Future researches will study the joint effects of the most influential wine attributes (denomination of origin, production areas, price, etc.) on loyalty. Moreover, techniques and metrics for a more detailed analysis on the positioning of a brand or product attribute as a niche or a change of pace will be developed.

7. Appendix A

Attribute	DMD	BBD	MS	γ	β	Alpha	S	Repeat
	φc	φ		Shape Parameter	Scale Parameter			Rate
Formats								
>150	0.49	0.580	20.4%	0.96	98.91	0.11	1.02	66.6%
75	0.49	0.500	30.5%	0.96	98.91	0.41	1.02	65.2%
>75 &<=150	0.49	0.474	47.3%	0.96	98.91	0.45	1.02	72.3%
<75cl	0.49	0.359	1.8%	0.96	98.91	0.05	1.02	37.1%
Brand MS								
1°-3°	0.43	0.459	33.8%	0.90	99.37	0.46	1.30	64.2%
4°-7°	0.43	0.448	15.0%	0.90	99.37	0.18	1.30	53.1%
>15°	0.43	0.442	34.5%	0.90	99.37	0.44	1.30	63.5%
8°-15°	0.43	0.409	16.6%	0.90	99.37	0.22	1.30	50.7%
Denomination								
Table Wine	0.35	0.354	55.6%	0.96	98.53	0.89	1.86	71.3%
DOC-DOCG	0.35	0.316	28.2%	0.96	98.53	0.54	1.86	50.9%
GI	0.35	0.208	15.6%	0.96	98.53	0.38	1.86	33.2%
Foreign Wine	0.35	0.090	0.6%	0.96	98.53	0.04	1.86	9.5%
Geographic Areas								
South & Islands	0.35	0.390	19.2%	1.20	51.61	0.43	1.89	50.7%
Center	0.35	0.376	31.8%	1.20	51.61	0.52	1.89	57.4%
North-East	0.35	0.358	34.6%	1.20	51.61	0.69	1.89	58.1%
North-West	0.35	0.334	14.4%	1.20	51.61	0.25	1.89	42.9%
Price								
<=3€	0.29	0.420	36.0%	1.41	35.11	0.81	2.40	62.9%
>5€ & <=7€	0.29	0.242	19.6%	1.41	35.11	0.49	2.40	39.1%
>3 & <=5€	0.29	0.228	39.6%	1.41	35.11	0.95	2.40	53.4%
>7€	0.29	0.205	4.7%	1.41	35.11	0.15	2.40	24.2%
0.75 Brand MS								
>=3000	0.21	0.267	20.9%	1.42	35.23	0.80	3.84	42.1%
>1000 & <3000	0.21	0.224	19.0%	1.42	35.23	0.70	3.84	37.1%
<500	0.21	0.214	37.3%	1.42	35.23	1.46	3.84	50.8%
>500 & <1000	0.21	0.170	22.7%	1.42	35.23	0.89	3.84	35.9%

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