

# Exploring duplication of purchase patterns between wine buyers residing in different regions

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## ***Abstract***

*Purpose: Region-of-origin (ROO) is a key driver of wine buyers' behaviour. In this perspective, we investigate the extent to which quality wines produced in a geographic area share customers living in the same geographic area versus customers living in different geographic areas.*

*Methodology: Duplication of Purchase (DoP) analysis is conducted on actual wine purchases recorded in a database provided by one of the largest French retail chains. The dataset included over 400,000 customers, who purchased over six million bottles of wine, across eight hypermarket/supermarkets in France in 2010. The supermarkets are equally spread across four geographic areas: North, South, East, West.*

*Findings: The penetration rates of quality wines produced in a certain ROO are higher amongst customers living in the same area. In addition, these customers tend to switch less between the quality designations produced in the same area compared to the national level, but they switch more between quality wines produced in a different area.*

*Implications: To a large extent, the findings indicate that ethno and regiocentric tendencies are applicable to the French wine market. Retailers could capitalise on these findings by tailoring their offer to the geographic areas people live in, both in relation to the wines made available to customers and the promotional activities run in various geographic areas.*

Key words: Ethnocentrism, Regiocentrism, Region-of-origin; Duplication of Purchases; Competition.

## 1. INTRODUCTION AND LITERATURE REVIEW

Region-of-origin (ROO) has always been considered a sensible factor to judge the competition between wines. In a comprehensive review of the wine marketing literature published in the ten-year period 2003-2012, Lockshin and Corsi (2012) show that ROO is a key choice driver both in terms of the reputation of the location and quality designation. The importance of this factor is strengthened even more when ROO is combined with other elements such as grape variety, price, or brand. Papers published in the last five years on this topic have confirmed this aspect. When ROO is included in a study, it always comes up either as the most important (Garcia-Gallego & Chamorro-Mera, 2016; Kallas, Escobar, & Gil, 2012), or the second most important (Engelbrecht, Herbst, & Bruwer, 2014; Verdonk, Wilkinson, & Bruwer, 2015) choice factor.

When looking at the ROO phenomenon, however, studies always tended to either include a mix of known and unknown regions (Corsi, Mueller, & Lockshin, 2012; Lockshin, Jarvis, d'Hauteville, & Perrouty, 2006), or they have focused on specific ROO present in the area where researchers collected the data. The literature, however, has not given a lot of attention specifically to the way consumers relate to and purchase the ROOs located in the same areas where consumers reside. Yet, this information is critical because the way in which ROOs perform in relation to their competitors at a more localised level helps distributors and retailers design more tailored and efficient commercial strategies. Instead of trying to sell the same ROO in every location without distinctions, distributors/retailers can either know what ROO can be dismissed or need to be supported. In addition, a product performing poorly in a certain area may perform well in another area, with all the positive consequences that good performances lead to. This is, however, an insight that an analysis conducted at a national level cannot provide.

Not only this information is critical from a managerial perspective, but it is grafted in a long academic tradition looking at consumers' inclination to purchase domestic rather than imported products. This tendency, which goes under the name of *ethnocentrism* has been researched for more than 100 years (Sumner, 1906), but all the literature produced in the last 30 years goes back to the definition of Shimp and Sharma (1987, p. 280), who defined consumer ethnocentrism as “the appropriateness, or morality of purchasing foreign products...[that give the individual]...a sense of identity, feelings of belonging, and most important, the understanding of what purchase behaviour is acceptable or unacceptable to the in-group”. Within this framework, a couple of salient outcomes are that ethnocentrism varies between individuals (Liu, Murphy, Li, & Liu, 2006), due to a variety of different factors including the city and zone of residence, age, socio-demographic levels, self-declared lifestyle, ethnic origin, knowledge of the origin of the product, purchase frequency, etc. (Schnettler, Miranda, Lobos, Sepúlveda, & Denegri, 2011). Ethnocentrism can also vary in relation to the brand or product under investigation, with lower involvement products leading to lower levels of ethnocentrism than high involvement products (Liu et al., 2006). In addition, highly ethnocentric consumers show higher purchase frequency and loyalty towards their own country and rejection of others (Schnettler et al., 2011). The wine business and marketing literature also looked into this topic with Brown and O'Cass (2006), who showed that consumer ethnocentrism negatively affects Australian consumers' willingness to buy foreign wine products, but gender and age don't. Similarly, Garcia-Gallego and Chamorro-Mera (2016) revealed that ethnocentrism is the second most important variable explaining the perceived quality of Extremadura's wines, and it influences both perceived quality and purchase intentions.

Ethnocentric tendencies, however, do not only exist at a national level, but also at a more regional, local level (Fernández-Ferrín & Bande-Vilela, 2013). A few of these studies observed this phenomenon from the point of view of the differences shown by various ethnicities within one country (Burgess & Harris, 1999; Oullet, 2007), but these differences seem to emerge also in more ethnically homogenous countries in

relation to the products been purchased. For example, Siemieniako, Kubacki, Glińska, and Krot (2011) investigated the beer preferences of Polish university students, showing that factors such as local patriotism, regional identities, and the brand image of local brands lead to more favourite attitudes and intention to purchase brands from the regions the students were from. Fernández-Ferrín and Bande-Vilela (2013) looked at the antecedents, consequences, and moderating effects of regional ethnocentrism among a small sample of consumers from Galicia (Spain), showing that a perceived decrease in personal financial situation, lower cultural openness and higher regional identities increase regional ethnocentrism. In addition, the more regionally ethnocentric consumers are, the more they reject and disvalue non-regional products, and they positively view political campaigns promoting regional products. Lee, Cheah, Phau, Teah, and Abou Elenein (2016) more specifically showed that regional ethnocentrism – or *regiocentrism* tendencies as they call it – and community involvement positively influence on the willingness to buy products coming from the region where consumers reside. Differently from Fernández-Ferrín and Bande-Vilela (2013), however, only perceived product necessity moderates this influence, while perceived economic/personal threat doesn't.

As one can see, both ethnocentrism and regiocentrism have been tackled with attitudinal measures, which, however, are considered to be poor predictors of consumers' behaviour (East, Wright, & Vanhuele, 2008; Sharp, 2010). It would be, therefore, useful to observe whether the regiocentric tendencies described by extant literature are reflected in the actual purchases made by consumers residing in different areas, through an analysis of the ROOs competitive patterns.

As such, this research formulates two hypotheses:

H1: Quality wines produced in the same area where customers live have a higher penetration (i.e. a higher buyers/shoppers ratio) in that area compared to other areas;

H2: Quality wines produced in the same area where customers live share proportionally less customers (i.e. customers repeating a purchase of the same quality wine) in that area compared to other areas.

## 2. METHOD AND SAMPLE

A very efficient approach to measure brand competition is to observe the extent to which two brands share the same customers. In this research we specifically look at French quality wines, i.e. French wines holding either an *Appellation d'Origine Contrôlée* (AOC), a *Vin Délimité de Qualité Supérieure* (VDQS), or a *Vin de Pays* (VdP) appellations. These appellations will be treated for the purpose of this study as brands.

The analysis goes under the name of *duplication of purchases* (DoP), as it refers to the possibility that the buyers of a certain brand X are *duplicated* (i.e. appear) among the buyers of other brands (Dawes, 2016). Previous studies reveal the existence of some consistent DoP patterns. The first pattern is that the proportion of buyers of brand X, who also buy brand Y, can be predicted from the penetration of brand being bought and the overall amount of cross-purchasing in the category (Dawes, 2016). This leads to the famous *DoP Law*, which states that small brands share their customers with large brands, but the opposite is not true (Scriven & Danenberg, 2010). In addition, the more two brands compete, the more customers they share (Ehrenberg, 2000). The DoP Law can be expressed algebraically, using the following formula:

$$b_{X|Y} = D * b_X$$

where  $b_{X|Y}$ , the percentage of buyers of brand Y, who also buy brand X in the chosen time period, is proportional to the brand X's penetration  $b_X$  and the duplication coefficient  $D$ , which is calculated as the average level of duplication occurring in the product category by the average duplication. Knowing what patterns we should expect from the data allow us also to identify more easily the deviations from the expected levels of duplication. In case two or more brands share their customers more than what their

penetration would suggest, we can say that these brands form a *partition* (Carpenter & Lehmann, 1985). Partitions are often the results of functional similarities between brands (Bass, 1974) Partitions can be identified and analysed after extracting the DoP tables through the *Partition Sharing Index* ( $PSI_{XY}$ ). The  $PSI_{XY}$  is calculated as follows:

$$PSI_{XY} = \frac{b_{X|Y}}{(D * b_X)}$$

If the brands compete in line with the DoP law, the  $PSI_{XY}$  is equal to 1. However, if brands share their customers more (or less) than expected, the  $PSI_{XY}$  will increase (decrease). For example, a  $PSI_{XY}$  of 1.2 suggests that brands X and Y are sharing customers 20% more than what it is expected. A partition is identified when a number of brands have a  $PSI_{XY}$  of 1.2 or greater (Sjostrom, Corsi, Driesener, & Chrysochou, 2014). The  $PSI_{XY}$  can also be averaged between brands to establish the average level of sharing within that group (intra-partition sharing).

We run DoP analysis on a panel database of wine purchases provided by one of largest supermarket chains in France. The dataset comprises 403,382 customers, who purchased a total of 6,360,706 bottles of wine, across 8 hypermarkets/supermarkets in 2010.

The dataset has been coded to classify each transaction into the respective quality designation. Each wine was assigned to either one of the AOC, VDQS, or VdP appellations currently recognised in France, or classified as a table wine, or a foreign wine (i.e. produced in countries other than France). The classification is based on the product label description shown on the dataset provided by the retail chain.

We then calculated the market share of each of the resulting appellations, finding that 14.6% of the sample was represented by table wines, foreign wines, or generic VdP wines, while another 11.7% consisted of wines, whose labels could not be linked to any above mentioned appellations. This left us with a dataset of 4,686,475 bottles of wines (73.7% of the total dataset), purchased across 263 AOCs, VDQSs, and specific VdPs.

All AOCs, VDQS, and VdP with a MS of less than 1% have been grouped together, under a generic “Other” label, to avoid outliers skewing the results (Baldinger, Blair, & Echambadi, 2002). This left us with 18 AOCs, VDQS, and VdPs, which represents a 64.7% of the dataset, and other 245 AOCs, VDQS, and VdPs, which represents a 35.3% of the dataset.

The DoP analysis was first run at a national level. The dataset was then split in four subsets – North, South, East, West – based on the area code of the store where the purchases have been made. Each area had data coming from two stores. Given that the stores are located a few hundred kilometres away from each other between the four areas, wines have been exclusively purchased by households residing in the areas where the supermarkets are located. In case regiocentric tendencies emerge from the DoP analysis, we should see different penetration rates and partitions emerge between the four areas, and between the areas and the national level.

### 3. RESULTS

The penetration levels for the various AOCs, VDQS, and VdPs only partially confirm H1 (see Table 1). Champagne, an AOC produced in Northern France, has a higher penetration (39%) in Northern France, than in other areas. Cote du Rhone (27%), Cote du Rhone Village (10%), and Cotes du Ventoux (20%) are purchased by more buyers – in percentage terms – in Southern France. Crémant d’Alsace (10%) has the highest penetration in Eastern France, while Bordeaux (25%), and Vouvray (12%) have the highest penetration in Western France. We do, however, observe some exceptions. Bordeaux (24%), Cotes de Provence (18%), and Vin de Pays d’Oc (16%) show a higher penetration in Northern France. In addition,

the other nine appellations do not vary much their penetration levels between regions. Lastly, the penetration rates for the “Other” appellations are stable across the four areas. This result is a safe indication that the other appellations do not vary much their penetration between residing areas.

**Table 1: Penetration levels for the various AOCs, VDQSs, and VdPs at a national and area levels**

Production Area	AOC-VDQS-VdP	Aggregate France (Pen %)	North (Pen %)	South (Pen %)	East (Pen %)	West (Pen %)
NA	Other	66	67	66	65	67
N	Champagne	32	39	31	28	29
W	Bordeaux	22	24	16	21	25
S	Cotes du Rhone	21	17	27	30	7
S	Cotes de Provence	13	18	8	13	12
S	Vin de Pays d’Oc	12	16	9	13	10
S	Cotes du Ventoux	9	7	20	6	1
S	Coteaux Varois	6	7	6	5	4
W	Bordeaux Superieur	6	7	4	5	6
E	Crémant d’Alsace	5	6	2	10	2
S	Anjou	5	5	4	4	8
W	Bergerac	5	4	6	5	7
S	Cotes du Rhone Villages	5	4	10	5	1
W	Medoc	4	5	3	4	6
W	Premieres Cotes de Blaye	4	5	3	5	4
W	Bordeaux Rose	3	4	2	4	4
W	Vouvray	3	1	1	0	12
W	Lussac Saint Emilion	3	3	1	3	4
W	Blaye	2	3	1	2	3

We can now look at the intra-partition  $PSI_{XY}$  (see Table 2). Given that the dataset only includes one appellation produced in Northern France – Champagne – and one appellation produced in Eastern France – Crémant d’Alsace – we can only calculate the intra-partition PSI between appellation produced in Western France, and appellations produced in Southern France, and see if the they vary between the areas where

buyers reside. It would, in fact, be a tautology to calculate how many buyers Champagne, or Crémant d’Alsace share with themselves.

The results show that, at a national level, the customers, who purchase an appellation produced in Western France, are 90% more likely to buy another appellation produced in Western France, while the customers, who purchase an appellation produced in Southern France, are 30% more likely to buy another appellation produced in Southern France. A similar pattern also emerges among buyers residing in Northern France and Eastern France. This is expected, as the intra-partition PSI is relative to producing areas where buyers do not reside in.

However, a different pattern emerges among buyers residing in Western and Southern France. Western appellations share their buyers 170% more than what it is expected in Southern France, and only 60% more in Western France, while Southern appellations share their buyers 100% more than what it is expected in Western France, and only 10% more in Southern France. Although these results seem counterintuitive, they actually prove the existence of regiocentric tendencies. If buyers reside in the area where the appellations are produced, they would be more inclined to purchase the same appellation over time, because they would be more mentally aware of what they are buying, and because that same appellation would have more chances to be physically available in the shops where buyers usually purchase. As a result, the appellation produced in the area where buyers reside would share less with other appellations produced in the same area. At the same time, when these buyers purchase wines produced outside of the residing area, they tend to swap more easily between these appellations, because the appellation produced in a different area will be less available, both mentally and physically. We can, therefore, accept H2.

**Table 2: Intra-partition  $PSI_{XY}$  for the appellations produced in the same areas in relation to the areas where buyers reside**

	Aggregate France	North	South	East	West
West	1.9	1.8	2.7	1.7	1.6
South	1.3	1.4	1.1	1.4	2.0

#### 4. DISCUSSION AND CONCLUSION

To a large extent, our findings indicate that ethno and regiocentrism tendencies are applicable to the French wine market. To some extent, they express a preference for a local product against non-local products, and/or a rejection of non-local product (for whatever reason), in line with previous findings (Fernández-Ferrín & Bande-Vilela, 2013) and the social identity theory of Tajfel & Turner (1986).

Our findings suggest a conscious approach to buy wines: I buy wines from Bordeaux because I live in the Bordeaux area and I wish to sustain and support local producers and production. But these preliminary findings may also generate a few confounds:

- First, people in the South tend to buy more wines from the South because there are many more wines from the South available on shelves (i.e. greater physical availability). This is a strong (although realistic) assumption because we could only observe what was purchased and not necessarily what was available. In brief, there might be many more wines available of another region, with people not interested to buy them. Overtime, we would assume that the retailers would have removed those wines from shelves.
- Second, we could possibly argue that the mental availability and salience of these local wines are much higher for people living in the area. For example, if you live in Marseille, you already have Provence in mind, reinforcing the salient effect of ROO, here for, say, Cotes de Provence. Therefore, we’re

not anymore in a full conscious approach of choosing specific wines because they are from the local area, but also because the ROO is unconsciously in buyers' mind (greater mental availability).

- Third, what is unclear at this stage is the extent family based wines are in competition or complementary to each other. For Dawes (2016), family based products (for example in our study wine from the South West) generate higher duplication of purchase among themselves. What is unknown is the extent that, say, Bordeaux and Blaye share same functional needs, and therefore are in direct competition, or if they do satisfy various needs (i.e. various occasions of consumption, different taste of people in the household, etc.) and therefore are highly complementary. Investigating the date and frequency of purchase (same buying occasion or not) could give us more insights on this matter. Such insights are critical for large national and private labels to decide for their branding strategy and architecture.
- Fourth, although different wines (from different regions) are directly substitutable for many buyers, we could also suggest for more involved buyers, wines from different regions are not substitutable, i.e. not fulfilling similar functionality. By extension, with what other regions do a specific wine region compete with: the entire market (regions) or more directly with a few ones? By extension, do Bordeaux wines compete mostly with themselves or with other wine regions?

Our findings have strong implications for retailers: depending on where they are located, retailers have a greater interest to enlarge the physical availability of local wines. The question remains to know at the expense of which other wines they should enlarge the offerings of local wines. More analyses at the lower appellation level could potentially give a response, in addition to a greater understanding of the functionalities offered by each of these wine groups.

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