VINEYARDS AND GRAPE VARIETIES: WHAT IS GOING ON IN WINE PROFESSIONAL AND CONSUMER MINDS?

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Abstract
Vineyard and grape variety are two popular ways of classifying wines. Vineyard designation is a traditional practice for European wine labels but is being increasingly replaced by grape variety designation, mainly used for New World and Swiss wine labels. In a context of wine categorization, we investigated on the relationship between those two dimensions. For this purpose, we selected a set of 56 wine labels to represent three red grape varieties (Gamay, Pinot Noir and Gamaret) and three vineyards (Beaujolais, Burgundy and Switzerland). Three panels were recruited: a panel of 30 wine professionals (experts) from the Beaujolais vineyard, a panel of 30 wine consumers from the Beaujolais vineyard and a panel of 30 wine consumers from Lille, a French region without wine production. We used a free hierarchical sorting task on labels coupled with a verbalization task and an interview. Data were first analyzed separately for each panel using a Hierarchical Multiple Factor Analysis and a Hierarchical Ascending Classification. Results showed that the three panels yielded very similar wine groups. With the exception of Gamaret wines, most French wines were separated by both vineyard and grape variety while Swiss wines were separated by grape varieties. Despite this similar categorization pattern, the interviews revealed different sorting criteria and strategies used to sort the labels for each panel. With the exception of a small part of experts, both experts and consumers from Beaujolais used their knowledge of grape varieties and vineyards to sort the wine labels while the consumers from Lille simply read the labels to find clues and deduce wine groups, because of a lack of knowledge. Overall, the results indicate an interaction between vineyard and grape variety dimensions for the wine categorization by experts and consumers. The methodology proposed seems to be a promising tool that could be helpful to improve the promotion of wines.

Keywords: vineyards, grape varieties, mental representation, wine labels, experts, consumers.

1 INTRODUCTION

Vineyard and grape variety are two popular ways of classifying wines, widely transmitted via wine books, guides and websites, wine stores and restaurants. Vineyard designation is a traditional practice for European wine labels whereas grape variety designation is mainly used for New World and Swiss wine labels. The traditional vineyard designation is more and more often replaced by grape variety because of the New World wine market success. Understanding the large amount of information written on labels (producer's name, vintage, region, appellation, brand name, grape variety, legal mentions, etc...) is a daunting challenge for consumers. Aware of this challenge, many wine books, guide and websites tried to explain how to read wine label information. However, this is a difficult task as the information appearing on labels varies according to the country because of different law constrains. Many studies in marketing provide interesting results on the type of information used by consumers in a context of wine purchase decision and preferences (to name just a few: Atkin and Johnson, 2010; Charters et al., 1999; Gmuer et al., 2015; Tang et al., 2015; Thomas and Pickering, 2003). In this study, we tried to understand the information wine professionals and consumers use to categorize wine labels. Do wine professionals and consumers rely on grape varieties and vineyards information? And if yes, what is the relationship between those dimensions?

2 MATERIAL AND METHODS

2.1. Wine labels

A set of 56 red wine labels was selected to represent six categories: three red grape varieties (*Gamay*, *Pinot Noir* and *Gamaret*) and three vineyards (Beaujolais, Burgundy and Switzerland). Each category was represented by 10 wine labels, with an exception for the Gamaret from Beaujolais vineyard category (six labels) because of a small production of these wines (Figure 1). Wine labels were collected in picture form from an Internet research by keywords for each wine category in order to represent as much as possible the diversity of wine labels.

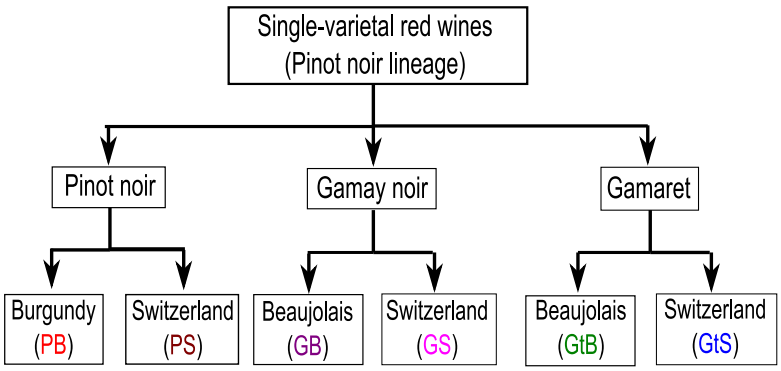


Figure 1: The wine taxonomy

2.2. Panels

Three panels of assessors with different expertise and familiarity with wines were recruited: a panel of 30 wine professionals from the Beaujolais vineyard (experts, 18 men, 12 women, mean-age = 45.13), a panel of 30 wine consumers from the Beaujolais vineyard (familiar consumers, 18 men, 12 women, mean-age = 46.40) and, a panel of 30 wine consumers from Lille, a French region without wine production (unfamiliar consumers, 13 men, 17 women, mean-age = 48.70). The wine consumers were recruited by means of an online questionnaire, in both Villefranche-sur-Saône and Lille, including socio-demographic questions as well as wine-tasting experience and drinking habits. The criteria used to select wine consumers were: not under the legal drinking age of 18, drinking wine at least once a year, no professional wine experience, not a member of a tasting club, and no formal training in wine-tasting or wine production.

2.3. Procedure

The experiment was conducted individually, with each assessor supervised by the same experimenter, in a quiet, private room. The 56 wine label cards were shuffled three times to ensure randomness before being presented simultaneously to the assessor on a white table. There was no time limit for either step. The procedure lasted from 20 minutes to one hour for each assessor.

The assessors were first asked to group the wine labels that belong to the same wine category: "*You have in front of you a set of wine label pictures. Please group the wine labels that, in your opinion, belong to the same wine category. You can make as many groups as you like, with a minimum of two groups*". They were free to make as many groups as they like. Depending on the number of groups obtained, the assessors were then asked to group together or to separate the groups initially formed as far as possible. After that, they were asked again to group together or to separate the groups formed in the two previous sorting. The goal of those sortings was to obtain a hierarchy at the end. After that, they were asked to describe with their own words and expressions the groups formed. Finally they were interviewed to indicate which criteria and strategies they used to sort the wine labels. Each interview was recorded with a dictaphone.

2.4. Data analysis

Data were first analyzed separately for each panel using a Hierarchical Multiple Factor Analysis (HMFA) coupled to a Hierarchical Ascending Classification (HAC), which was performed on the first HMFA dimensions explaining 85% of variance with Ward's criterion. The resulting clusters from the HAC are represented on the HFMA projections by dotted rectangles. The frequency of occurrence of words was computed for each cluster produced by HAC. An hypergeometric law was used to identify the words that best characterize each cluster (Lebart et al., 2006). A Correspondence Analysis (CA) coupled to an HAC was then performed on the interview data in order to highlight the main criteria and strategies used to sort the wine labels by each panel, using a hypergeometric law. All statistical analyses were performed using the free software R, version 3.2.2 for Windows (R Core Team, 2015) with the additional R packages SensoMineR (Lê and Husson, 2008) and FactoMineR (Lê et al., 2008).

3 RESULTS AND DISCUSSION

3.1. Free hierarchical sorting

3.1.1. Expert panel

A graphical projection of the assessors on the first two dimensions of the HMFA showed a division within the expert panel in two sub-groups: one with 22 experts and a second with the remaining eight experts (figures not shown). In order to better understand this division, separate HMFA coupled to HAC were conducted for each sub-group of experts (Figures 2a and 2b). Figures 2a and 2b show the projections of wine labels on the first two dimensions of the HMFA along with the 95% confidence interval around each label for each subgroup. The first and second dimensions explain 23% of the variance for the first sub-group of experts (Figure 2a) and 20.95% for the second sub-group of experts (Figure 2b).

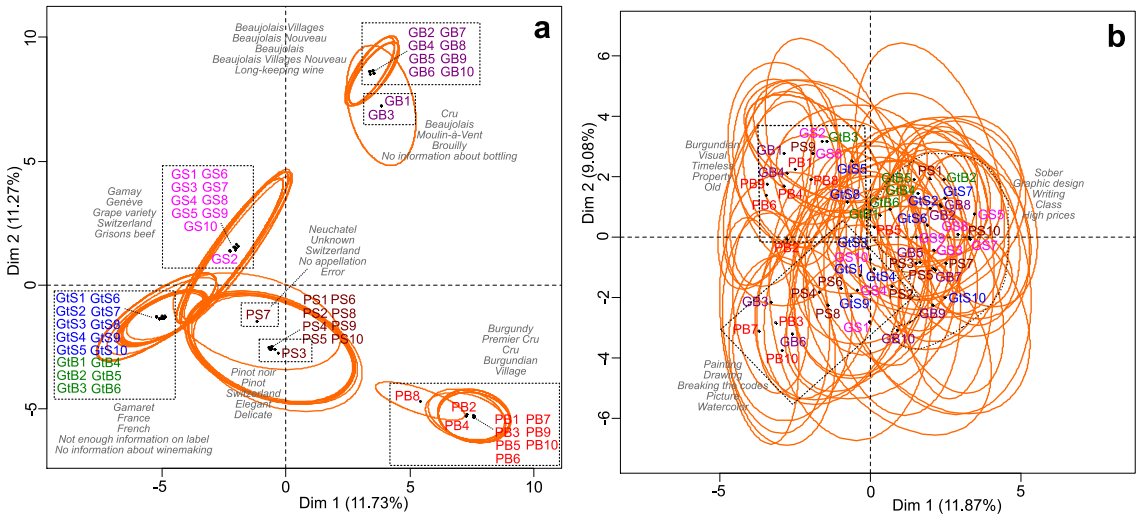


Figure 2: Projections of wine labels on the first two dimensions of the HMFA for (a) the first subgroup and, for (b) the second subgroup of experts.
PB: Pinot noir from Burgundy; PS: Pinot noir from Switzerland; GB: Gamay from Beaujolais; GS: Gamay from Switzerland; GtB: Gamaret from Beaujolais; and GtS: Gamaret from Switzerland.

For the first sub-group of experts, the seven clusters obtained correspond to the expected taxonomy with few exceptions (Figure 2a) while those from the second sub-group of experts do not (Figure 2b). The Figure 2b shows an organization of the wine labels based on multi-criteria for the second sub-group of experts. Those results suggest two different categorization strategies within the panel: a categorization based on vineyards and grape varieties and another one on other criteria reflecting different strategies (marketing, aestheticism and design).

3.1.2. Familiar panel

Figure 3 shows the projections of wine labels on the first two dimensions of the HMFA, with a confidence interval of 95%.The first and second dimensions explain 22.10% of the variance. The first dimension opposes the Pinot Noir from Burgundy and Switzerland (PS and PB, on the right) to the Gamay from Beaujolais and the Gamaret from Beaujolais and Switzerland (GB, GtB and GtS on the left). The second dimension opposes the Gamay from Beaujolais and the Pinot Noir from Burgundy (at the top) to the Gamay, Gamaret, Pinot Noir from Switzerland and the Gamaret from Beaujolais (at the bottom). As was the case with the first sub-group of experts, the seven clusters correspond to the expected taxonomy with few exceptions. The clusters are named either by vineyards, appellations or grape varieties.

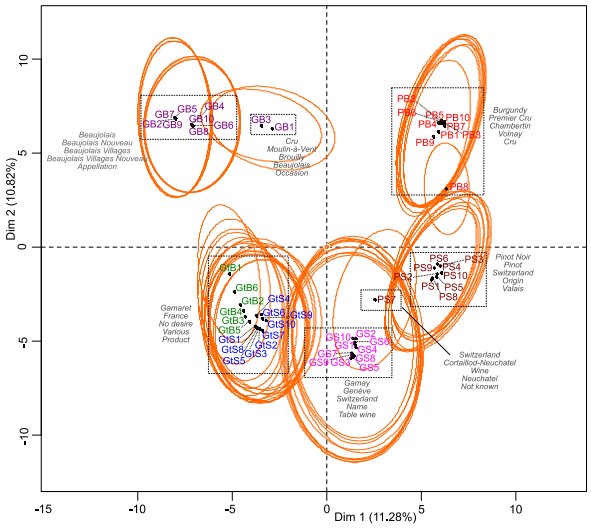


Figure 3: Projections of wine labels on the first two dimensions of the HMFA for the familiar consumers. PB: Pinot noir from Burgundy; PS: Pinot noir from Switzerland; GB: Gamay from Beaujolais; GS: Gamay from Switzerland; GtB: Gamaret from Beaujolais; and GtS: Gamaret from Switzerland.

3.1.3. Unfamiliar panel

Figure 4 shows the projections of wine labels on the first two dimensions of the HMFA, with a confidence interval of 95%. The first and second dimensions explain 20.5% of the variance (Figure 4). The first dimension opposes the Gamay from Beaujolais (GB, on the right) to the Pinot Noir, the Gamay and the Gamaret from Switzerland and the Gamaret from Beaujolais (PS, GS, GtS and GtB, on the left). The second dimension opposes the Gamay from Beaujolais, the Pinot Noir from Burgundy and Switzerland (at the top) to the Gamay from Switzerland and the Gamaret from Switzerland and Beaujolais (at the bottom). As was the case with the first sub-group of experts, the five clusters obtained correspond to the expected taxonomy with few exceptions. The clusters are named either by vineyards, appellations or grape varieties.

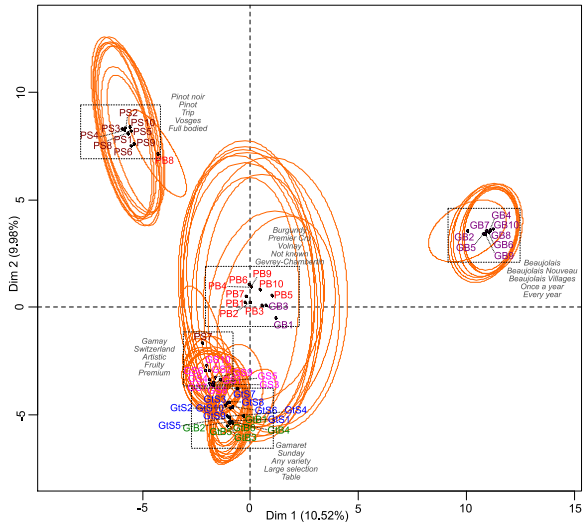


Figure 4: Projections of wine labels on the first two dimensions of the HMFA for the unfamiliar consumers.

PB: Pinot noir from Burgundy; PS: Pinot noir from Switzerland; GB: Gamay from Beaujolais; GS: Gamay from Switzerland; GtB: Gamaret from Beaujolais; and GtS: Gamaret from Switzerland.

With the exception of the second subgroup of experts, results showed that the three panels yielded very similar wine groups. The clusters were named either by vineyard or grape variety (Figures 2a, 3 and 4), but with some differences. Most French wines were separated by both vineyard and grape variety: the Pinot Noir from Burgundy and the Gamay from Beaujolais. Moreover, for all panels, Gamaret wines were clustered together regardless of their origin (Swiss or Beaujolais). With the exception of Gamaret, Swiss wines are separated from French wines and subdivided in two groups based on grape varieties (Pinot Noir and Gamay).

3.2. Interview analysis

Despite this similar categorization pattern, the interviews revealed different sorting criteria and strategies between panels (Figure 5). The first and second dimensions of CA shown in Figure 5 explain 90.02% of the variance. The first dimension opposes the unfamiliar consumers, the familiar consumers and the first sub-group of experts (on the left) to the second sub-group of experts (on the right), while the second dimension opposes the unfamiliar consumers (at the top) to the first sub-group of experts (at the bottom). The HAC performed on the CA dimensions yielded three clusters of criteria and strategies. The hypergeometric law showed that the first cluster, including name of the wine, cellaring potential, quality, search for salience, similarities and all possible clues and also lack of knowledge, was mostly used by the unfamiliar consumer panel. The second cluster, including *crus*, origin, bottling, appellation, grape variety, *nouveau*/primeur wine, quality of information and knowledge was mostly used by the first sub-group of the expert panel while the third cluster, including hedonism, visual appearance, desire, producer name, marketing and recall, was mostly used by the second sub-group of the expert panel.

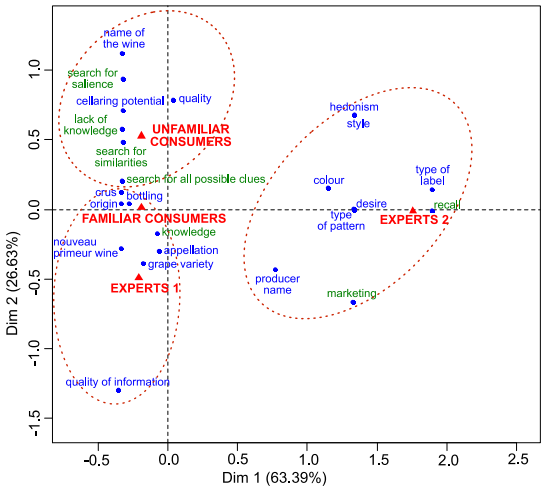


Figure 5: Projections of the main criteria and strategies used by the panels (Expert 1, Expert 2, Familiar consumers and Unfamiliar consumers) on the first dimensions of the CA.

Both the majority of the experts and consumers from Beaujolais used mainly their knowledge of the grape varieties and vineyards (origin) to sort the labels while the consumers from Lille simply read the labels to find clues and deduce wine groups because of a lack of knowledge for those wines.

4 CONCLUSION

Overall, the results indicate an interaction between the grape variety and the vineyard dimensions for the wine categorization by experts and consumers. Vineyard and grape variety designations have therefore the same weight in categorizing the wine labels. For the experts, two sub-groups were, however, identified: a first sub-group of experts that categorized the labels by vineyards, appellations and grape varieties thanks to their knowledge (like the familiar consumer panel) and a second one that categorized the labels with other goals in mind (marketing, distribution network, hedonism, recall). Because of a lack of knowledge, the unfamiliar consumers simply read the labels to find clues and deduce the wine groups, categorizing the labels by vineyards and grape varieties with some errors. So different expertise and familiarity levels lead to similar categorizations of wines from different vineyards and grape varieties but different criteria and strategies were used to reach these categorizations suggesting different mental wine representations. Label information provide access to the same wine categories and seem to be sufficient to allow consumers for deducing the same wine categories than the experts and the familiar consumers, with however some errors. The methodology proposed seems to be a promising tool that could be helpful to improve the promotion of wines.

Acknowledgments

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