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Neuromarketing Meets the Art of Labelling. 
How Papers and Finishing on Labels Affect Wine Buying Decisions

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Abstract

The aim of the study is to scientifically explore the role of paper and embellishments of wine labels in driving consumers’ visual behaviour on the shelf, their perception of the product and their purchase choices. Thirty labels were created combining six types of papers and six types of embellishments. Thirty target consumers explored the shelf first without any specific tasks, and then with the goal to choose a bottle of wine, while their visual behaviour were recorded through a wearable eye-tracker. Subsequently, the consumers were exposed to each single bottle. They had to watch each bottle for 15 seconds and then to handle it for the same amount of time. During this phase their visual behaviour and their brain activation were recorded respectively by a wearable eye-tracker glasses and an EEG headset.

After the test, an in-depth interview was conducted to assess the rational perception, the expectations, the intention to buy and the willingness to pay for the wine bottles. Results highlighted the role of both paper and embellishment in enhancing label visual saliency and equity on the shelf and in influencing consumers’ perception, expectation and purchase behaviour. Moreover, an interesting reciprocal influence of visual and tactile features on each other was found.

Keywords: wine label design, wine purchase, consumer behaviour, neuromarketing, eye-tracking, emotion measurement

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Introduction

Perceived value is the weight of a product between consumer’s “give” and “get” (Chang & Wildt, 1994). In purchase decisions, consumers evaluate perceived quality and perceived sacrifice. One way to increase consumers’ intention to buy/to repurchase and the willingness to pay is increasing their perceived quality. This goal can be achieved through a good label. Indeed, the label is used to infer the quality of the product (Chaney, 2000, Jennings & Wood, 1994). Therefore, understanding the role of wine packaging attributes (like labelling) in consumers’ purchasing choice can be helpful to understanding how to reach success, particularly in the wine business.

Packaging and labelling are the wine first line of communication (Charters et al, 2000). Purchase decision about wine is more complex than other products (Lockin, 2001) because consumers have a large number of alternatives and they spend a very short time to make their decision (Britton, 1992). Indeed, except for highly involved wine drinkers who enjoy the search process, many wine consumers are overwhelmed by the number of wines available to them in a retail store. At the same time, they want to make a quick decision (Mueller et al., 2009). For these reasons, it is crucial to generate an attractive product. Particularly, it is fundamental that the label attracts consumers’ attention to make them consider buying the wine.

Aesthetics of label is crucial to attract the consumer, to communicate the right values and to persuade consumers to purchase the bottle by influencing their expectations (Mueller, Szolnoki, 2010) and fostering a positive brand perception (Merrill, 2006). In these terms, the specific material and embellishment may contribute to label visual equity and to trigger the right expectations about the wine.

With the aim to explore the role of paper and embellishment of wine labels in driving consumers’ visual behavior, wine perception and their purchase choice, we conducted a study with a neuroscientific approach to reveal the unaware part of consumers’ reaction to the product. A pool of 30 labels were created specifically for the study and we used scientific tools (eye-tracking and EEG) to objectively measure visual attention and emotional engagement during the wine choice and the interaction with the wine bottle.

The paper is structured as follows: in Section 1, we present the theoretical background of the research; section 2 explains objectives and research gap; section 3 illustrates the methodology; section 4 presents results, conclusions and practical implication; section 5 illustrates the future direction of the research.

1. Theoretical background

1.1. The role of senses in wine perception

Researchers and practitioners have demonstrated that some characteristics of consumers experience with the packaging are associated to the product. The experience involves all the senses. Which one is more important depends on the specific moment: the sight is predominant during shelf exploring while the other senses like touch or smell
are crucial during the interaction with the product (Fenko, Schifferstein, & Hekkert, 2010).

Regarding the sight, several studies demonstrated that changes in packaging color influence the perception of the smell (Cheskin, 1957; Gladwell, 2005; Guéguen, 2003; Spence, 2007). Moreover, the shape of the pack influences consumers’ intention to buy (Raghubir and Greenleaf, 2006; Yang & Raghubir, 2005) and their willingness to pay (Cheskin, 1957).

Touch is the first sense developed during childhood (Atkinson & Braddick, 1982; Miodownik, 2005) and it can provide meanings not transmittable with the language (Montagu, 1971). The skin is specialized in processing emotional responses (Field, 1998; Spence, 2002), thus change the tactile pleasantness can modify the hedonic and emotional experience more than the variation of other features (Spence and Gallace, 2011). Sheldon and Arens (1976) said that “if the hand’s judgment is unfavorable, the most attractive object will not gain the popularity it deserves”.

The tactile experience creates expectations that influence product appreciation (Jansson-Boyd & Marlow, 2007; Schifferstein & Spence, 2008). A neuromarketing study using fMRI demonstrated that while a neutral tactile experience activates the somatosensorial cortex (related to sensorial experience) a pleasant tactile experience activates the orbitofrontal cortex that process hedonic and emotional stimuli (Rolls et al, 2003). Moreover, physically holding of product can create a sense of psychological ownership, driving must-have purchase decisions. Choosing a texture for the packaging that is pleasant to touch will encourage customers to hang on to it just a bit longer. This, in turn, will extend that feeling of psychological ownership and motivate the customer to purchase the item. As haptic features can be implicitly extended to the brand (Ballesteros & Reales, 2004; Löken et al., 2009; Olausson et al., 2008), product evaluation can be modified modulating tactile experience with the shape or the texture of the packaging (Spence & Gallace, 2008). For instance, with the reintroduction of the Coke’s signature contour bottle, Coke’s sales increased by 12% (Gallace & Spence, 2014).

The involvement of more senses leads to a higher remembering of the product (Lehmann & Murray, 2005). Visual images are more effective and memorable if combined with another sense (Lindstrom, 2008). The multisensory consistence is crucial for the liking of the product and the loyalty to the brand (de Chernatony & McDonald, 1992; Lindstrom, 2005; Neff, 2000; Spence, 2002; Springer, 2008). In the field of labelling, Orth and Malkewitz (2008) found a holistic effect of the packaging features on the perception of wine quality.

### 2. Objectives and research gap

The aim of the present research is to investigate the effect of different kinds of papers and embellishments used for the wine labels on consumers’ perceptions, visual behaviour and purchase decisions. Particularly, different combinations of papers and embellishments have been analyzed in terms of label visual equity, consumers’ emotional engagement, liking, intention to buy and willingness to pay.

Previous research found contradictory results about the role of attractiveness of the front label in consumers’ choices. For instance, Goodman (2009) found that the label is
not a crucial element in wine choice. Conversely, results from Barber et al. (2006; 2007) highlighted the importance of label design and bottle closure in consumers' wine choices. Boudreaux and Palmer (2007) demonstrated the effect of wine label color, layout and image on purchase intent and Orth and Malkewitz (2008) found that the perception of wine quality is influenced by the holistic packaging design. These controversial results are due to several reasons. First, it is difficult to disentangle the importance of the aesthetic features from the on-label information as wine type, brand and price (Lockshin & Corsi, 2012). For these reasons, we decided to exclude all the wine information and to focus the research only on the role of papers and embellishment on consumers’ liking and emotional engagement. Others external packaging attributes studied in previous research related to the bottle (shape, colors, capacity), the closure (cork, screw, synthetic), the capsule and the label (shape, color, graphics) have not been considered.

There is no research up to date focused specifically on paper and embellishment. The current applied research wants to fill this gap, allowing the wine producers and designers to understand the role that these elements play in the decision-making process of a bottle of wine, considering also the effect that touching different textures has on liking. Indeed, tactile qualities of the packaging material are other features that have received little attention. Haptic experience is an underestimated factor in marketing and design (Tangeland et. al., 2008) despite its crucial role in consumers’ experience and purchase decisions.

Another possible reason for the contradictory results in the research about the role of label attractiveness in consumers’ choices is related to the methodology. Indeed, several studies used stated preference surveys to evaluate labels, while others research adopted choice tasks. Muller et al. (2011) showed that consumers’ response to labels is mainly subconscious and therefore it is not likely to be reported under direct questioning. Conversely, choice tasks force respondents to trade-off several attributes against another and provides a methodological tool for a holistic product evaluation. For these reasons, we set up a study in which a triangulation of measures was considered: explicit (rational and aware) evaluation, implicit perception and emotional response (neuro-psychophysiological data) and behavior (visual attention and choice). As it is important to adopt techniques able to explore the emotional impact of packaging and consumers’ preferences in an objective and reliable way, we chose a method based on what is nowadays called “neuromarketing”, that is the application of neuroscience to marketing. Neuromarketing uses neuroscientific tools to analyze physiological signals to evaluate emotional responses to communicative stimuli. It is considered a cutting-edge approach to analyze decision-making processes in which irrational, intuitive, heuristic and affective processes play a key role (Bechara, Damasio, & Damasio, 2000).

3. Method

3.1 Sample

Thirty subjects participated in the test. They were non-expert wine consumers (they drink wine at least one time a week) with a medium level of involvement and knowledge.
of the wine product. The participants reflected the average Italian wine consumer with an age ranging from 25 to 65 years.

The methodology of neuromarketing based on objective data reduces the size of the sample. Some scientific research conducted tests with 8 people (De Boer et al., 2013) or 15 people (Groeppel, Baun, 2001). The sample size is enough to guarantee reliability of the results.

3.2 Stimuli

Since the focus of the research concerns the effect of the type of paper and label embellishments, all other external factors that could affect the perception of wine (price, design, capsule, bottle shape...) were excluded to isolate the elements of research’s interest by eliminating the effect of further intervening variables.

A professional designer with the technical support of UPM Raflatac designed thirty labels of the same shape, size (130x130 mm), graphics and information content. The labels were printed by Rotas Italia with some embellishments from Luxoro. The labels were placed on thirty identical bordolese bottles (very common in the Italian red wine market) with the following features:

- red wine contained
- dark glass bottle (bordolese)
- black capsule
- textual information: the same non-real name of wine, the same non-real name of the winery and the same DOC certification. Grape type, year and other information have not been reported on the bottle
- label design as kept as neutral as possible (graphics and font), avoiding to generate expectation in relation to label graphic style
- rectangular label shape

Only the front label has been printed as it is the first line of communication of wine bottles (Charters et al, 1999). Participants have been informed that all the wine bottles had the same price and the same wine content. As report in the Table 1, each bottle was different from the others to have unique combinations of paper and embellishment.
3.3 Procedure

Each participant completed the test individually, in a quiet room under the same temperature and lighting conditions. Upon arrival, after a brief explanation of the test the participants started the first task, a free 20-second exploration of the wine shelf wearing a pair of eye-tracker glasses to record their eye movements. The aim of the first task was the analysis of labels visual saliency and equity in the shelf, exploring the first moment of truth. The second task was the choice of a bottle of wine from the same shelf (40-second exploration), aimed to discover which label features drive consumers’ decision in wine purchase, exploring in this case the second moment of truth. The limited amount of
time was aimed to simulate a real shop situation in which consumers spend a little time in front of the shelf.

The bottles were arranged in square (3 rows of 10 bottles) to ensure that all the products remain within the visual scene. In order to keep under control all the variables that were not related to paper and embellishments, the shelf was maintained as neutral as possible. Particularly, it was made by natural wood with a neutral white and non-optical background.

After the shelf exploration, the participants were accompanied to another room, where they wore the equipment for the recording of neurophysiological signals (EEG headset). The cortical activity of the brain was recorded while they watched pleasant and negative visual and haptic stimuli to create a benchmark for each subject. Afterward the participants were exposed to the same bottles of wine seen previously on the shelf. They observed each bottle (one by one) for ten seconds and they had to evaluate the label, indicating their intention to buy the wine. After the watching, they could handle each bottle, touching the label and they had to rate again their intention to buy, explaining any changes in their opinion.

Finally, an in-depth interview (based on Guens et al., 2002; Karpinski, & Steinman, 2006; Hassenzahl, Burmester, & Koller, 2003 and Spears, & Singh, 2004) was administered to investigate participants’ perceptions and expectations about each label.

4. Results and conclusions

The results about visual behaviour in front of the shelf highlighted the role of the type of paper and the colour of the label in driving consumers’ attention in the first seconds of visual exploration (visual saliency). Indeed, the paper uncoated, textured and black grabbed 83% of visual attention in the first 5 seconds.

We also found an effect of embellishments. Hot foil gold embellishment was able to catch the attention in the first 5 seconds.

![Figure 2. Visual attention on shelf in the first 5 seconds of visual exploration. Encircled in blue the labels most viewed. The red spots indicate the areas most viewed.](image)

Even in terms of visual equity, uncoated, textured and black paper performed better in comparison to other papers. Velmart black paper was able to collect 73% of attention
on a total time of 20 seconds. Hot foil and tactile varnish were the embellishments more observed on the shelf.

![Figure 3. Visual attention on shelf in the total 20 seconds of visual exploration. Encircled in blue the labels most viewed. The red spots indicate the areas most viewed.](image)

During bottle choice, hot foil embellishments enhanced visual equity. The type of paper was able to drive consumers’ choices as the bottles characterized by a label made with the paper uncoated, textured and black were chosen 71% of the times.

Embellishments also proved to have a role in enhancing consumers’ choice toward specific bottles. Particularly, gold embellishments increased the perception of a luxury wine and the likelihood of choice, especially if there were a contrast with the paper.

![Table 2 – The chosen bottles. Velmart Black paper was the more chosen (71% of choice). Tactile Varnish, Liquid Gold and Hot Foil Gloss Gold embellishment was the embellishments most able to drive the choice.](image)

During the handling of the bottles, the emotional engagement was measured. We compared the results for all the bottles (Figure 4).
About the paper, Rough Cotton and Velmart Black papers elicited the higher emotional engagement, respectively 0.76 and 0.73 on a scale from 0 to 1 based for each subject on his specific benchmark of positive and negative (see paragraph 3.3). Gloss, Liquid Gold and Relief embellishments contributed to generate a higher emotional engagement.

We found that Hot Foil embellishments values the Cotton and the Velmart papers, as the combination of this kind of papers and embellishments enhanced emotional engagement and increased consumers’ willingness to pay.

On average, we found a significative influence of tactile experience on consumers’ evaluation of the labels and of the wine, as the possibility to handle the bottle and touch the label in many cases changed consumers’ perception and intention to buy.
Smooth paper was perceived less refined and groomed. Instead, textured uncoated matte papers were perceived well groomed and were associated with a high-quality wine.

Moreover, it is necessary to use embellishment in contrast with paper to make consumer perceive a good quality of wine. Indeed, the combinations of paper embellishments without a chromatic contrast got a lower evaluation compared to the others in terms of willingness to buy, because the participants had trouble to read the label information resulting in less trust in the product and they perceived a sense of a not refined label (that negatively influences the perception of wine quality).

Conversely, when they had the possibility to touch the label, the tactile contrast between the rough paper and the glossy or relief finishing make them perceive a more sophisticated label and consequently a higher quality wine, suited for special occasions, enhancing consumers’ willingness to pay.

In conclusion, it is important to use color and texture to enhance labels visual saliency and equity on the shelf.

Matt papers make the label easily readable and positively influence tactile experience allowing people perceive the texture even before the handling. Moreover, matt finishes make people perceive the product as more natural.

Label aesthetic features must create expectations about the haptic experience promoting product handling. Then, a pleasant haptic experience influences emotional response to the label and at the end increase the intention to buy.

The results have practical implications for wine producers and marketers, as they demonstrate that specific papers and embellishments could be used to increase the label performance, enhancing visual equity on the shelf, consumers’ perception of the wine, intention to buy and willingness to pay.

5. Future direction of the research

Some types of paper, regardless of the type of embellishment, have shown a greater ability to grab consumers’ attention among other labels from the first seconds of exposure to the shelf. This data could be considered an interesting starting point to be deepen investigated.

A possible direction of research could concern the creation of a validated index to parameterize the shelf appeal of different label papers in terms of the percentage of people who viewed the label on the shelf, the average time needed to see the target label among the others on the shelf and the average time spent observing it.

A similar parameter would be indicative of:

1. the ability of the specific paper to catch consumers’ attention in front of the shelf during the wine choice (visual equity), the essential first step to promote the purchase of the wine bottle
2. the ability to arouse consumer interest, and consequently entice the consumer to read information on the label, increasing the probability of choosing the wine bottle.

This “eye catching index” would be a parameter that takes into account the attractiveness and effectiveness of the paper, and it could be included among the technical features of the papers.
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