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Abstract

Wine consumers rely mainly on the label to infer the quality of a bottle. But there is little empirical research on how colours can be interacted with shapes in the design of wine labels. This study draws from an experiment using data from Spain and shows that there are strong preferences for selected colour-shape combinations in label design. Surprisingly, colour alone does not elicit as strong preferences as certain shapes do, at least when they are assessed irrespectively of the shapes featured in the label. Other combinations, on the other hand, are very resilient, especially those that contain colour hues, such as brown, yellow, black and green, in labels with salient rectangular and hexagonal patterns.

¨It is probably the expressive qualities (primarily of colour but also of shape) that spontaneously affect the passively receiving mind, whereas the tectonic structure of pattern (characteristic of shape, but found also in color) engages the actively organizing mind.¨
Rudolf Arnheim in *Art and Visual Perception, a psychology of the creative eye*.

Consumers are well known to rely on the imagery, layout and colour used in labels to infer wine quality and brand personality (Gluckman, 1990; Jennings and Wood, 1994; Verdu Jover *et al.*, 2004; Boudreaux and Palmer, 2007[1]). Labels are also the second most important predictor of wine purchase intent, after price. Traditional labels, such as those depicting quintessentially French chateaux, bucolic vineyard sceneries and landscapes in pastel colours, are often taken to signal high quality. This is at odds with the effort made by traditional, highly acclaimed winemakers in Europe and the New World to innovate in label design by shifting away from these conventional patterns and motifs into more "modern" compositions featuring elaborate, catchy, colour-rich patterns. In this new setting, the now well studied quality signals associated with the chateau-on-pastel-background paradigm breaks down.

A question that emerges is therefore how consumers infer quality, and hence their willingness to pay for a bottle of wine, when they are confronted with labels that do not conform to the conventional compositional patterns. This is particularly relevant in the case of infrequent drinkers, who are known to rely more heavily than regular drinkers on the information provided in labels (Chaney, 2000). To answer this question, this paper focuses on combinations of colour and shape in label design as the guiding elements to convey quality signals to customers on the basis of an experimental survey conducted among Spanish students. The emphasis of this study is on the colour-shape compositions depicted in wine labels that are deemed most appealing to consumers, regardless of the reasons for their choices. By shape we do not necessarily mean the actual geometry of the label, but the dominant form of the layout and motifs depicted in label design.

Why colours and shapes? Colours have meaning and, as such, they are a fundamental tool in corporate/marketing strategies and communications. These underlying meanings are often used for the purpose of product and brand differentiation (Schmitt and Pan, 1994) on the basis of consumer perceptions (Grossman and Wisenblit, 1999). Shapes are also an essential feature of marketing strategies, but, to our knowledge, no research has been published to date on whether or not shapes have meanings of their own or when interacted with colours in wine label design. The research that is closest to ours in the empirical literature is that of Boudreaux and Palmer (2007), who also focus on selected aspects of label design (*i.e.*, imagery, layout and colour), but emphasise their effect on consumer purchase intent and perceptions of brand personality. Recent research on brand equity has shown that strong emotional connections between consumers and products affect the perceived links between price and quality as a determinant of purchase intent (Pitta, 2007).

Interest in how label design can be used as a marketing device stems from ever growing competition in world markets, as well as changing age and gender patterns in wine consumption (Barber, Almanza and Donovan, 2006). In this setting, the assessment of quality signals that go beyond the traditional label compositions becomes increasingly important. Previous research shows that wine packaging provides a quality cue that consumers use to assess alternative products with respect to their own values following a set of subjective rules (Reynolds and Gutman, 1988; Hall and Winchester, 2000; Lockshin, 2003). The shape of the bottle, the colour of the glass, the types and drawing patterns on the label should attract attention and help potential purchasers to distinguish specific wines from several competitors (Rocchi and Stefani, 2005). In this respect, packaging has to communicate to consumers the relevant and appropriate information about the quality of the wine, in some way replacing the salespersons action (Tootelian and Ross, 2000).Time also plays a role. Because a rising share of quality wine is marketed by large retail outfits, consumers often make their choices among a large number of alternatives in a very short time (Britton, 1992). Packaging elements that

help consumers to evaluate swiftly both material and immaterial characteristics that make up the quality of wine (Nomisma, 2003) become increasingly important marketing instruments.

The contribution of this paper is manifold. *First*, no empirical study has yet been published to our knowledge on the use of colour and shape, as well as their associations, in wine label design using Spanish data. To a certain extent, the dearth of published empirical work on these issues is due to competitive concerns (Bellizzi *et al.*, 1983). Further research is nevertheless needed to examine the meaning of colour/shape compositions and complementarities on products and brand evaluations. *Second*, this paper opens up new opportunities for marketing research, especially concerning experimental design and the use of colours and shapes to extract information on consumer purchase intent. *Finally*, this area of research also has direct managerial implications. A better understanding of colour-shape compositions can be used as a tool for creating labels that are recognizable and evoke brand and corporate images.

The remainder of the paper is structured as follows. Section 2 presents a summary of the relevant literature. Section 3 discusses the survey methodology, the questionnaires to be used and the sampling method. Section 4 reports the empirical findings. Section 5 concludes.

Literature Review

Reactions to colours and shapes

Instead of aiming for an exhaustive review of research on the impact of wine labels on consumer preferences, this section reviews more narrowly the literature on how consumers react to colours and shapes used in wine labelling. There is widespread recognition that the front label is the first line of communication between a winemaker and consumers; therefore, considerable marketing and branding effort is placed on designing visually attractive, risk-reducing labels (Chaney, 2000; Johnson and Bruwer, 2003; Reidick, 2003; Thomas and Pickering, 2003).

The literature is silent on how individuals respond to shape variations and compositions. There is nevertheless a rich body of research on reactions to colours, which can be innate/instinctive (Humphrey, 1976) or learned/associative (Langenbeck, 1913, cited in Hupka *et al.*, 1997). If they are instinctive, colour signals trigger affective reactions in the brain. But, if they are learned, preferences over colours are "accumulated" over time as shared affective meanings or as a result of past experiences and/or conscious associations in language, literature and myths (Osgood *et al.*, 1957).

Colours can be associated with objects on different dimensions. Osgood *et al.* (1957) shows empirically that there is an association between colour and objects at least on the basis of an *evaluative* scale of preferences. On an *activity* scale, on the other hand, the ordering of colours generally follows the hue dimension: "hot" colours, such as red and yellow, lean towards activity, black and white are by and large neutral, and "cold" colours, such as green and blue, are closer to the passive end of the spectrum. Colours can also be ordered on *potency* scales: the more saturated the colour, the more potent the object being judged is perceived to be. It appears that the evaluative effect of colour interacts with the nature of an object, whereas the effects of colour on the perceived activity and potency of objects with which they are associated are systematic and consistent with the hue and saturation dimensions, respectively.

Because of its powerful underlying interpretations, colour is an important marketing tool,

including for the creation of brand images (Madden *et al.*, 2000). There appear to be universal patterns in reactions to colours, which makes it possible to construct international colour codes. For example, the cultural clusters identified by Aslam (2006) are based on language and communication similarities and indicate the meanings and associations of colours in selected clusters.

Colours and shapes in wine packaging

Turning more closely to the link between colour and wine packaging, Rocchi and Stefani (2005) found that individuals respond to wine packaging around two fundamental dimensions. In the first dimension, consumers seem to be affected by the bottle's shape, size and colour, while in the second dimension they consider the dress of the bottle on the basis of other packaging elements, such as labels and capsules. The authors show that colour is the most basic level of perception and is used by respondents both to stress differences of opinion and to express preferences. The shape and size of the bottle are also often cited by consumers as important features to be considered in comparisons between alternative products.

Reactions to labels are more complex. Labels provide important extrinsic cues (*i.e.*, attributes that are not part of the physical product) to be used by consumers to assess quality (Chaney, 2000; Reidick, 2003; Verdú Jover *et al.*, 2004; Rocchi and Stefani, 2005). Labels are assessed with respect to their location on the bottle, their shape and size, and the motifs depicted on them. They are also assessed together with the size of the bottle and on the basis of their capacity to provide information to consumers and to evoke more abstract functions assigned to the consumption of wine. While the front label is usually considered for evocation, the back label is expected to provide technical information about the wine (Charters, Lockshin and Unwin, 1999; Barber, Almanza and Donovan, 2006). Moreover, Boudreaux and Palmer (2007) show on the basis of survey data with wine drinkers that colour and imagery are strongly associated with purchase intent and brand personality. The more colourful the label, the stronger its effect was found to be on perceived quality and willingness to pay. Dark, rich colours are associated with high quality, whereas colourful labels tend to be perceived as indicative of less "serious", more "frivolous" tasting (Teague, 2004).

Methodology

Two separate questionnaires, available upon request, were used. The first questionnaire focuses on thirteen shapes (square, rectangle, parallelogram, trapeze, diamond, round-edged rectangle, octagon, pentagon, isosceles triangle, right-angled triangle, circle, ellipse and hexagon) and ten colour hues (black, blue, brown, gold, green, orange, purple, red, white and yellow). All thirteen shapes are presented in ten groups, one for each of the ten colours under consideration. In other words, in each one of the ten colour groups, the thirteen shapes have the same colour. The shapes are then ordered randomly in each group to avoid any pattern response. Respondents are asked to choose the shape of their preference in each of the ten colour groups.

In the second questionnaire, there are thirteen groups containing just one of the thirteen shapes used in the first questionnaire. Each shape is replicated ten times, once for each of the ten colours used in the first questionnaire. Therefore, in each one of the thirteen shape groups, the same shape is presented in ten different colours. As in the first questionnaire, the colours are presented randomly to avoid pattern responses. Respondents are asked to choose in each one of the thirteen groups of shapes, the colour which they like the most.

Respondents were asked to fill in the questionnaires after being shown an actual bottle of wine (a Bordeaux-style bottle in dark green glass without any front or back label or cap) and being told that it was a red-wine bottle. They were also told that they had to choose from each group of shapes and colours in the questionnaires a specific label of their preference to put on the bottle. Finally, respondents were asked to put a price on the wine bottle they were "purchasing" before answering the questionnaire.

The survey was carried out in November 2007. The sample included 62 undergraduate students enrolled in an Introduction to Economics course at the Biotechnology Department of UAB. In this sample, 28 respondents were given the first questionnaire (colour preferences on the basis of shape variations) and 34 respondents were given the second questionnaire (shape preferences on the basis of colour variations).

The results

No colour preference independent of shape variation

There does not appear to be a clear preference for particular colours among respondents. This finding is based on the testing of a null hypothesis that the preference frequency of a given colour *i* is different from 10% across shape variations, which corresponds to the situation in which all ten colours have the same frequency in the preference questionnaire, for all possible *j* shapes. Specifically, the *z* statistics associated with the testing of $H_0 : p(C = i \mid S = j) = 0.1$ against the two-sided alternative $H_A : p(C = i \mid S = j) \neq 0.1$ are reported in Table 1, together with the frequencies at which the different colours were selected by respondents.[2] On the basis of this test, there appears to be no grounds for rejection of the null hypothesis, which suggests that there is no clear preference for the colours presented in the questionnaire, regardless of the shape in which they are presented.

Table 1. Frequency of colour preferences

	p(C=i|S=j) (%)	*z*
Black	14.0	0.48
Blue	6.9	0.58
Brown	5.8	0.46
Gold	14.6	0.42
Green	5.2	0.40
Orange	15.9	0.30
Violet	14.0	0.48
Purple	12.6	0.64
White	8.0	0.72
Yellow	3.0	0.22

Source: Authors' calculations.

The numbers reported are the frequencies of colour preferences for all respondents, irrespective of the shape variations presented in the questionnaire. The *z* statistics refers to the hypothesis test that the individual colour frequencies are equal to 10%. The sample size is 28. Statistical significance at the 1, 5 and 10% levels is denoted by (***), (**) and (*), respectively.

Some shape preference independent of colour variation

Nevertheless, there appears to be a strong preference for selected shapes. The *z* statistics associated with the testing of $H_0 : p(S = j \mid C = i) = 0.077$ against the two-sided alternative $H_A : p(S = j \mid C = i) \neq 0.077$ is reported in Table 2, together with the frequencies at which the shapes were selected. The test statistics show that the null hypothesis can be rejected for two shapes: ellipse and octagon.[3] In other words, regardless of the colour in which the different shapes were presented in the questionnaires, the share of respondents who expressed a preference for elliptical or octagonal shapes is higher than 7.7%, which corresponds to the naive situation in which all shapes are selected at the same frequency.

Table 2. Frequency of shape preferences

	p(S=j|C=i) (%)	*z*	
Parallelogram	3.2	0.33	
Circle	5.6	0.64	
Diamond	6.2	0.74	
Ellipse	25.0	0.00	***
Pentagon	2.1	0.22	
Round-edged rectangle	13.5	0.20	
Isosceles triangle	2.1	0.22	
Square	4.7	0.51	
Hexagon	4.4	0.47	
Trapeze	2.9	0.30	
Right-angled triangle	2.1	0.22	
Rectangle	10.0	0.61	
Octagon	18.2	0.02	**

Source: Authors' calculations.

The numbers reported are the frequencies of shape preferences for all respondents, irrespective of the colour presented in the questionnaire. The *z* statistics refers to the hypothesis test that the individual shape frequencies are equal to 7.7%. The sample size is 34. Statistical significance at the 1, 5 and 10% levels is denoted by (***), (**) and (*), respectively.

Strong preferences for selected colour-shape combinations

Finally, we proceeded to test the hypothesis that the preferred colour-shape combinations are not affected by whether respondents are prompted to express their preferences for a colour (shape) on the basis of different shape (colour) variations. Specifically, for each combination of preferred colour and shape, we test the null hypothesis
$H_0 : p(C = i \mid S = j) - p(S = j \mid C = i) = 0$ against the two-sided alternative
$H_0 : p(C = i \mid S = j) - p(S = j \mid C = i) \neq 0$.[4]

The results of the tests are reported in Table 3. The findings show that a number of preferences for colour-shape combinations are invariant to the underlying colour/shape variations. For example, the null hypothesis can be rejected for the blue-parallelogram match at the 10% level of significance, suggesting that the share of respondents who found that blue was the best match for the parallelogram when they were prompted to select their favourite colour to match that shape was significantly different from the share of respondents who

found that blue was the best match for the parallelogram when they were prompted to chose a shape to match the blue colour.

On the basis of this test, the colour-shape combinations that are most "resilient" in the sense of not being affected by underlying colour/shape variations involve four colours (brown, yellow, black and green) and three shapes (rectangle, round rectangle and hexagon). This finding underscores a strong complementarity between colours and shapes in wine label design, as hypothesised.

The resilience of design combinations that contain brown, yellow, black and green hues may be due to the perceptions these colours evoke. We rely on the existing literature to speculate as to what these perceptions might be. For example, yellow and green are perceived as "exciting" and "imaginative", at least according to the findings reported by Boudreaux and Palmer (2007) on colours and wine purchase intent. Green is also associated with attributes such as "peaceful" and "calming" according to Madden *et al.* (2000), a finding that is fairly consistent across cultures, whereas black and brown are perceived as "formal" and "masculine". To the extent that these attributes are perceived as evocative of quality in wine tasting, it is not surprising that they feature in the colour-shape combinations that were found to be most resilient on the basis of our experiment.

No ex ante effect of price-driven perceived utility

Respondents were asked to quote a price for the bottle of wine whose label they had to evaluate before filling in the questionnaire. This was not to extract information of purchase intent, but to control for the effect that willingness to pay is known to have on the expected and perceived utility to be derived from tasting the wine. Should the price quotations vary in a statistically significant manner across groups, the colour-shape combinations could be alleged to be affected by respondents' ex ante willingness to pay. This is nevertheless not the case among the respondents to the colour and shape variation questionnaires. The hypothesis that their price quotations are equal across samples could not be rejected on the basis of the z test statistics reported in Table 4. There is nevertheless evidence of differences in price quotations along gender lines in the sample of respondents who were prompted to express their colour preferences on the basis of shape variations. In that sample, women's price quotations are higher than those of men in a statistically significant manner.

Table 3. Colour-shape combinations: Differences in matching preferences

	Blue		Gold		Violet		Purple		Brown		Orange		White		Yellow		Black		Green	
Parallelogram	-1.96	*	-0.70		-1.82	*	-0.77		-0.77		-1.96	*	-1.96	*	0.42		-1.63		0.42	
Circle	-0.77		-1.96	*	-0.20		-1.67	*	0.42		-1.48		0.91		0.84		-0.70		-0.70	
Diamond	1.30		0.24		-2.03	**	-1.63		1.48		-0.77		0.42		0.91		-1.98	**	-1.48	
Ellipse	0.92		-0.41		1.23		2.65	***	1.99	**	-0.18		2.21	**	3.50	***	1.31		2.75	***
Pentagon	1.30		-2.28	**	-1.24		-2.84	***	-0.14		-1.98	**	-1.24		-0.14		-1.58		-1.96	*
Round-edged rectangle	1.23		0.20		0.13		0.47		-0.68		1.18		0.47		1.18		-0.25		0.61	
Isosceles triangle	-1.96	*	-1.58		-2.29	**	-1.96	*	-1.58		-2.57	**	-0.14		0.42		-1.11		-0.14	
Square	-0.70		-2.57	**	-1.63		-0.68		0.42		-1.96	*	-0.70		-0.77		-0.25		1.30	
Hexagon	0.42		-1.36		-0.20		-1.11		-1.58		-3.10	***	0.42		-1.11		-1.48		0.84	
Trapeze	-1.11		-1.58		-1.98	**	-1.58		0.42		-2.13	**	-1.96	*	-1.11		-1.03		0.91	
Right-angled triangle	-1.96	*	-1.11		-1.96	*	-2.28	**	-1.58		-0.68		-0.77		-0.77		-1.96	*	-1.11	
Rectangle	0.61		-1.11		0.05		-0.68		1.48		-1.98	**	0.94		1.61		-1.48		1.18	
Octagon	1.99	**	0.36		0.77		0.65		1.23		2.03	**	-0.68		1.88	*	-0.02		1.48	

The numbers reported are *z* statistics for the hypothesis that the colour-shape matching proportions are the same between the colour and shape samples. Respondents in the colour sample were asked to express preferences on colour on the basis of shapes, and respondents in the shape sample were asked to express preferences on shape on the basis of colours. A two-tail test was performed. The number of respondents in the shape and colour samples is 28 and 34, respectively.

Table 4. Price quotation comparisons

	Shape variation questionnaire		Colour variation questionnaire	
	Full sample		Full sample	
Avg. price (in Euros)	7.16		8.74	
St. deviation (in Euros)	4.66		5.91	
Z statistic	-1.15			
	Males	Females	Males	Females
Avg. price (in Euros)	4.32	7.94	6.83	8.99
St. deviation (in Euros)	2.16	5.48	2.80	6.19
Z statistic	-2.48***		-1.20	

Source: Authors' calculations.

The *z* statistics refers to the hypothesis test that the prices quoted are identical between the different samples and sub-samples. The sample sizes are 28 and 34 in the shape variation questionnaire and colour variation questionnaires, respectively. Statistical significance at the 1, 5 and 10% levels is denoted by (***), (**) and (*), respectively.

Conclusions

This paper set out to explore consumer preferences over colours and shapes in wine label design on the basis of survey responses. It builds on an existing empirical literature that reveals strong effects of label design on consumer perceptions of quality and brand personality. Empirical evidence is based on an exploratory survey of consumers' perception of wine packaging carried out in Spain.

This paper's main finding is that there are strong preferences for selected combinations of colours and shapes in the composition design of wine labels. Surprisingly, colour alone does not elicit as strong preferences as selected shapes do, at least when they are assessed irrespective of the shape that dominates the label composition. Other compositions, on the other hand, are very resilient, especially those that contain colour hues, such as brown, yellow, black and green, in labels that feature rectangular and hexagonal patterns.

The findings reported in this paper are important, because a better understanding of colour-shape compositions can improve a winemaker's marketing strategy. For example, colour signals a product's attributes, thereby influencing perceptions about price and quality (Kerfoot *et al.*, 2003), and packaging colour is the least expensive way of changing a product (Parmar, 2004). The implication of the empirical findings reported here is that the "resilient" colour-shape combinations should be used decisively in label design.

The analysis is not without caveats, nevertheless. The demographics of the sample is an important limitations to further hypothesis testing using our dataset, for example. We also recognize that a larger sample and greater variation in the data along age, location and socio-economic lines would strengthen the empirical findings. But the current sample provides enough variation in the data to allow for the testing of differences between sample means, as

reported in the paper. Moreover, there are several directions for further research that might help to overcome this shortcoming, including the collection of data from larger samples, possibly in different countries and including regular wine consumers.

References

Aslam, M. M. (2006). Are you selling the right colour? A cross-cultural review of colour as a marketing cue, *Journal of Marketing Communications*, Vol. 12, No. 1, pp. 15–30.

Barber, N., B.A. Almanza and Donovan, J.R. (2006). Motivational factors of gender, income and age on selecting a bottle of wine, *International Journal of Wine Marketing*, Vol. 18, No. 3, pp. 218–232.

Bellizzi, J. A., Crawley, A. E. and Hasty, R. W. (1983). The effects of color in store design. *Journal of Retailing*, Vol. 59, No. 1, pp. 21–45.

Boudreux, C. and Palmer, S. (2007). A Charming Little Cabernet, Effects of Wine Label Design on Purchase Intent and Brand Personality. *International Journal of Wine Business Research*, Vol. 19, No 3, pp. 170–186.

Britton, P. (1992). Packaging: graphic examples of consumer seduction. *Beverage Industry*, Vol. 83, No. 8, p. 21.

Chaney, I. M. (2000). External search effort for wine, *International Journal of Wine Marketing*, Vol. 12, pp. 5–21.

Charters, S., Lockshin, L. and Unwin, T. (1999). Consumer responses to wine bottle back labels, *Journal of Wine Research*, Vol. 10, No. 3, pp. 183–96.

Gluckman, R. L. (1990). A consumer approach to branded wines, *International Journal of Wine Marketing*, Vol. 2, No. 1, pp. 27–46.

Grossman, R. P. and Wisenblit, J. Z. (1999). What we know about consumers' color choices. *Journal of Marketing Practice Applied Marketing Science*, Vol.5, No. 3, pp. 78–88.

Hall, J. and Winchester, M. K. (2000). What is really driving wine consumer? *Australian and New Zealand Wine Industry Journal*, Vol. 15, pp. 93–96.

Humphrey, N. K. (1976). The colour currency of Nature, in: T. Porter & B. Mikelides (Eds), *Colour for Architecture*, pp. 95–98 (London: Studio Vista).

Hupka, R. B., Zaleski, Z., Otto, J., Reidl, L. and Tarabrina, N. V. (1997). The colors of anger, envy, fear, and jealousy: a cross-cultural study, *Journal of Cross-cultural Psychology*, Vol. 28, No. 2, pp. 156–171.

Jennings, D. and Wood, C. (1994). Wine: Achieving competitive advantage through design, *International Journal of Wine Marketing*, Vol. 6, No. 1, pp. 49–61.

Johnson, T. and Bruwer, J. (2003). An empirical confirmation of wine-related lifestyle segments in the Australian wine market, *International Journal of Wine Marketing*, Vol. 15, No. 1, pp. 5–33.

Kerfoot, S., Davies, B. and Ward, P. (2003). Visual merchandising and the creation of

discernible retail brands, *International Journal of Distribution and Retail Management*, Vol. 31, No. 3, pp. 143–152.

Lockshin, L. (2003). Consumer purchasing behaviour for wine: what we know and where we are, *Marchés et Marketing du Vin*, No. 1, pp. 1–30.

Lockshin, L. and Rhodus, T. (1993). The effect of price and oak flavor on the quality perceptions of consumers and wholesalers, *International Journal of Wine Marketing*, Vol. 5, No. 2, pp. 13–25.

Madden, T. J., Hewitt, K. and Roth, M. S. (2000). Managing images in different cultures: a cross-national study of color meanings and preferences, *Journal of International Marketing*, Vol. 8, No. 4, pp. 90–107.

Nomisma (2003), *Wine marketing. Il Marketing del vino in Europa: consume, canali, distributori e importatori*, Agra Editrice, Roma.

Osgood, C. E., Suci, G. J. and Tannenbaum, P. H. (1957). *The Measurement of Meaning* (Urbana, IL: University of Illinois Press).

Orth, U. R. and Krska, P. (2002). Quality signals in wine marketing: the role of exhibition awards, *International Food and Agribusiness Management Review*, Vol. 4, pp. 385–397.

Parmar, A. (2004). Marketers ask: hues on first?, *Marketing News*, 15 February, pp. 8–10.

Pitta, D. (2007). Building brand equity and share of heart at Nassau Valley Vineyards, *Journal of Product and Brand Management*, Vol. 16, No. 2, pp. 148–151.

Plassmann, H. J., O'Doherty, J., Shiv, B. and Rangel, A. (2008). Marketing Actions can Modulate Neural Representations of Experienced Pleasantness, *Proceedings of the National Academy of Sciences*, Vol. 105, No. 3, pp. 1050–1054.

Rao, A. R. and Monroe, K. B. (1989). The Effect of Price, Brand Name, and Store Name on Buyers' Perceptions of Product Quality: An Integrative Review, *Journal of Marketing Research*, Vol. 26, pp. 351–357.

Reidick, O. (2003). People buy the wine label, not the wine, *Graphics I*, pp. 1–27.

Reynolds, T.G. and Gutman, J. (1988). Laddering theory, method, analysis and interpretation, *Journal of Advertising Research*, Vol. 19, No. 28, pp. 11–31.

Rocchi, B. and Stefani, G. (2005). Consumer's perception of wine packaging: a case study, *International Journal of Wine Marketing*, Vol. 18, No.1, pp. 33–44.

Schmitt, B. H. and Pan, Y. (1994). Managing corporate and brand identities in the Asia-Pacific Region, *California Management Review,* Vol. 36, No. 4*,* 32–48.

Teague, L. (2004). Why Labels Matter, *Food and Wine*, February, pp. 75–8.

Thomas, A. and Pickering, G. (2003), The importance of wine label information, *International Journal of Wine Marketing*, Vol. 15, No. 2, pp. 58–75.

Tootelian, D. H. and Ross, K. (2000). Products labels: what information do consumer want and will they believe it?, *Journal of Food Products Marketing*, Vol. 61, No. 1, pp. 25–38.

Verdú Jover, A.J., Lloréns Montes, F.J. and Fuentes Fuentes, M.M. (2004). Measuring perceptions of quality in food products: the case of red wine, *Food Quality and Preference*, Vol. 15, pp. 453-69.

Endnotes

[1] Price (Rao and Monroe, 1989; Lockshin and Rhodus, 1993) and the awards received by the producer (Orth and Krška, 2002) also seem to act as major quality signals. Knowledge of a wine's retail price also affects an individual's experienced utility from sampling the wine (Plassmann *et al.*, 2008).

[2] The null hypothesis is rejected if $\frac{p(C=i \mid S=j)-p_0}{\sqrt{p_0(1-p_0)/n}} > z_{a/2}$ or $\frac{p(C=i \mid S=j)-p_0}{\sqrt{p_0(1-p_0)/n}} < -z_{a/2}$, where $p_0 = 0.1$, n is the sample size, and Z is normally distributed, with $P(Z > z_a) = a$.

[3] The null hypothesis is rejected if $\frac{p(S=j \mid C=i)-p_0}{\sqrt{p_0(1-p_0)/n}} > z_{a/2}$ or $\frac{p(S=j \mid C=i)-p_0}{\sqrt{p_0(1-p_0)/n}} < -z_{a/2}$, where $p_0 = 0.077$, n is the sample size, $P(Z > z_a) = a$, and Z is normally distributed.

[4] The null hypothesis is rejected if $\frac{p_C - p_S}{\sqrt{p_0(1-p_0)\left(\frac{n_C + n_S}{n_C n_S}\right)}} > z_{a/2}$

or $\frac{p_C - p_S}{\sqrt{p_0(1-p_0)\left(\frac{n_C + n_S}{n_C n_S}\right)}} < -z_{a/2}$, where $p_C = p(C=i \mid S=j)$, $p_S = p(S=j \mid C=i)$, n_C and n_S are the sizes of the different samples, and Z is normally distributed with $P(Z > z_a) = a$.