

FILLING THE GAP – HOW DO SENSORY AND MARKETING ATTRIBUTES INTERACT IN CONSUMERS' WINE CHOICE?

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Introduction

Consumers normally taste wines blind in traditional sensory consumer research, focusing at explaining how core wine product characteristics influence consumer evaluation. In reality consumers are mostly aware of which wine they currently drink and they might have the bottle standing on the table or know of which bottle or cask their glass was poured off. It then is important to understand how intrinsic sensory wine attributes and extrinsic marketing attributes interact, when they are both available to consumers during consumption. How important are sensory properties in the presence of information that identifies the wine? Which sensory characteristics cut through the clutter of extrinsic product cues, when consumers taste wine in an informed condition?

Questions to these answers would provide the wine industry with useful information on the relative share of efforts and funds they should invest to optimise the overall product experience consumers derive from their wines. Furthermore, wine producers would be able to focus on enhancing those sensory characteristics, which positively influence the combined product experience, and eliminate or reduce negative sensory drivers.

Consumer experiment

The aim of the experiment was to analyse the role of sensory characteristics in product liking and re-purchase intent, when consumers are confronted with extrinsic marketing characteristics of wine. The experimental approach followed a realistic wine selection process. A consumer usually chooses a wine from the shelf out of several alternatives without tasting. Once consuming the wine, he/she tastes the wine in an informed condition with label and price. Finally, the consumer decides how much he/she liked it and if he/she would potentially purchase the wine again. We replicated this typical wine selection and evaluation process with a two-stage experiment. First consumers chose wine from a visual shelf simulation in an online-experiment from their homes (Figure 1). A couple of days later, respondents participated in a central location test, where they tasted some of the same wines in an informed condition, indicating how much they liked it and if they would purchase it or not.



Figure 1: Example screen of the online discrete choice experiment shelf simulation. A complete technical description and analysis of the experiment including an instrumental and sensory description of the wines and a characterisation of the consumer sample can be found in full detail in Mueller et al. (2010).

21 Australian Shiraz wines were selected for the study. The wines covered the vintages 2001 to 2006, as available on in retail stores at the end of 2007. Aim of the selection was to cover a wide range of chemical and sensory properties (fruit intensity, oak flavour, astringency, sweetness, alcohol levels, etc.) and a wide range of extrinsic (non-sensory) characteristics, such as price points, label type, high and low sales, widely and less widely distributed wines, different vintages, well known and not so well known brands and regions from all over Australia.

The AWRI trained sensory descriptive panel evaluated the sensory characteristics of all 21 wines in April 2008. 420 regular red wine drinkers from the Sydney area, who are representative of Australian regular red wine consumers, were recruited for the study. Consumers first choose wines in the shelf simulation choice experiment from their homes and then participated in a central location sensory test, where they tasted five out of the 21 wines in an informed condition. Respondents indicated how much they liked the wine and if they would repurchase it or not.

Table 1: List of the 21 Shiraz wines and their codes with basic chemical composition, retail price, sales volume and distribution index

Wine	Alcohol (%v/v)	pH	Titrateable Acidity (g/L)	Glucose+Fructose (g/L)	Acetic Acid (g/L)	Retail price (A\$)	Volume sold ('000 Liter)	Relative market share (%)	Distribution index [1-100]
2004 Barossa Valley	14.6	3.58	6.5	0.7	0.54	25.99	49.3	3.9	61
2005 Barossa Valley	15.2	3.53	6.9	0.7	0.68	21.99	4.4	0.3	10
2005 Barossa Valley	14.7	3.51	6.5	0.9	0.68	15.99	0.6	0.05	1
2006 Clare Valley	14.6	3.41	6.8	1.2	0.64	15.99	108.9	8.6	59
2004 Coonawarra	12.9	3.39	6.6	0.2	0.41	16.99	26.9	2.1	37
2005 Coonawarra	14.7	3.48	6.3	0.7	0.46	12.99	28.0	2.2	31
2006 Coonawarra	14.9	3.51	6.6	0.8	0.62	25.99	35.3	2.8	65
2006 Coonawarra	14.2	3.59	6.1	1.0	0.59	14.99	163.6	13.0	77
2004 Grampians	14.7	3.49	6.8	0.5	0.66	24.49	0.5	0.04	2
2005 Heathcote	15.7	3.38	7.0	0.9	0.63	17.99	8.6	0.7	4
2001 Hunter Valley	14.0	3.33	6.8	0.8	0.43	16.99	26.0	2.1	29
2003 Hunter Valley	14.3	3.43	6.8	0.9	0.77	13.99	74.9	5.9	41
2006 Margaret River	14.1	3.58	6.3	1.7	0.43	16.99	26.3	2.1	40
2006 McLaren Vale	15.0	3.38	7.0	1.0	0.55	24.99	1.0	0.1	1
2006 McLaren Vale	14.3	3.51	6.4	0.9	0.58	14.99	50.8	4.0	50
2004 South Australia	14.4	3.52	6.3	0.9	0.60	14.49	85.0	6.7	51
2006 South Australia	13.6	3.59	5.7	4.7	0.56	11.99	90.9	7.2	52
2006 South Australia	13.8	3.56	6.2	0.8	0.51	14.49	64.2	5.1	39
2006 South Eastern Australia	13.4	3.49	6.4	16.0	0.44	8.99	289.4	23.0	62
2007 South Eastern Australia	13.7	3.51	6.7	7.4	0.36	9.99	122.1	9.7	58
2005 Western Australia	14.7	3.57	6.6	0.7	0.90	17.49	3.8	0.3	5

Code: ID indicator of individual wine (A to U) and abbreviation of vintage.

Relative market share: volume sold of each wine relative to sum over all 21 wines (adding up to 100%).

Distribution index: percentage availability of each wine in NSW wine retail outlets (AC Nielsen, 2008).

Results of consumer experiment

Consumers' wine choices in the online shelf simulation were strongly related to the wines' actual market share according to AC Nielsen, which suggests that the shelf simulation experiment to a large degree captures consumers' realistic purchase behaviour. These choices represent expectations and associations that were created by the visual extrinsic product characteristics and might also include memories of previous sensory experience for wines known to consumers. For price, we found a peak for medium price levels around \$15 that are more often chosen than less or more expensive wines for the particular consumption situation at home with family and friends. A similar inverse U-shaped relationship between the number of bottles sold across price points is representative for the overall Australian

wine market (AC Nielsen, 2008). This indicates that our small sample of 21 wines forms a similar sales by price relationship as the actual wine market.

What influences how much consumers like a wine tasted in an informed condition? One could have expected that wines that create positive expectations in the shelf simulation and are chosen most often would also be preferred by consumers in the tasting test. But this expectation was not confirmed, as neither previous online choice nor a wine's market share was found to be related to hedonic liking. Instead, the price of wine was the strongest predictor for how much consumers liked the wines. This is congruent with previous findings on the outstanding role price has on consumer evaluation.

Table 2: Drivers for informed liking of wine (sorted in descending order)

		Hedonic Liking	
		Variable	Coefficient Sign.
Strong positive drivers for liking	Price	0.55	*
	Sweet	0.26	*
	Fresh fruit	0.22	*
Positive driver for liking	Oak/Wood	0.11	
Not or only weakly driving liking	Alcohol	0.09	
	Fruit AT	0.09	
	Band-aid	0.09	
	Bitterness	0.08	
	Opaqueness	0.08	
	Dark fruit	0.07	
	Sour	0.05	
	Purple	0.04	
	Online choice	0.04	
	Red berries	0.01	
	Black pepper	0.01	
	Cooked fruit	-0.02	
	Oak/Wood fl.	-0.04	
	Brown	-0.04	
	Astringent	-0.07	
Spice	-0.09		
Negative drivers for liking	Earthy-Vegetable fl.	-0.14	
	Chocolate	-0.15	
	Warmth	-0.17	
	Sherry	-0.17	*
	Medicinal	-0.17	
	Vanilla	-0.17	
	Egg	-0.18	
	Earthy-Vegetable	-0.18	
Vanilla/Chocolate fl.	-0.19		

* significant driver according to Martens' uncertainty test jack-knifing procedure

Next to price, a number of sensory attributes were found to be significant drivers of liking, with *sweetness* and *fresh fruit* aroma having a moderately strong positive influence, and *oak/wood* also being important. Wines characterised by the sensory panel with relatively high *sherry*, *medicinal* and *band-aid* aromas with a *brown colour* (wines from older vintages), were not well liked by the consumers. One wine had an *eggy* aroma related to sulfide compounds and was also not well liked, even though it was of moderate to high price. The sensory attribute *earthy-vegetal* was also negative driver of consumers' liking.

While price was the dominant driver of liking, purchase intent was most strongly influenced by product expectations in the initial choice decision, as measured by the shelf simulation choice experiment. Thus, the more often a wine was chosen in the shelf simulation, the more likely consumers were to indicate a positive repurchase intent after tasting it. Sensory characteristics were the second strongest influence when it comes to the (re)purchase decision. As for liking, aromas of developed wines (e.g. *medicinal* and *band-aid* aromas, *brown* appearance and *sherry* aromas) were negative drivers for purchase intent. Also faults (like sulfidic aromas) decreased the likelihood of repurchase. Similar to liking, *fresh fruit* and *fruity aftertaste* were significant positive drivers for purchase intent. The attributes *dark fruit*, *chocolate* and *purple* were also positively associated with purchase intent.

Table 3: Drivers for purchase intent

		Purchase Intent		
		Variable	Coefficient	Sign.
Strong positive driver for purchase intent		Online choice	0.47	
		Bitterness	0.26	
Positive drivers for purchase intent		Fresh fruit	0.16	*
		Price	0.16	
		Sweet	0.10	
Not or only weakly driving purchase intent		Oak/Wood	0.09	
		Earthy-Vegetable	0.06	
		Cooked fruit	0.05	
		Fruit AT	0.05	*
		Alcohol	0.03	
		Purple	0.02	
		Chocolate	0.02	
		Dark fruit	0.02	
		Warmth	0.01	
		Red berries	0.01	
		Sour	0.00	
		Vanilla/Chocolate fl.	0.00	
		Black pepper	-0.02	
		Opaqueness	-0.02	
		Vanilla	-0.02	
Negative drivers for purchase intent		Band-aid	-0.04	
		Brown	-0.07	
		Spice	-0.07	
		Oak/Wood fl.	-0.10	
		Sherry	-0.16	
Strong negative driver for purchase intent		Astringent	-0.18	
		Earthy-Vegetable fl.	-0.18	
		Egg	-0.19	
	Medicinal	-0.23	*	

* significant driver according to Martens' uncertainty test jack-knifing procedure.

Implications

The aim of the study was to determine the relative effect of sensory characteristics in the presence of marketing cues, identifying the sensory characteristics that influence liking and purchase intent after respondents tasted the wine in an informed condition, mimicking a real wine consumption occasion.

Although consumers were confronted with the brand, region and visual cues on the packaging of wines, sensory attributes were still important to their liking and purchase intent. We cannot precisely determine the importance weight, but assuming a similar importance of sensory and extrinsic marketing characteristics might be a good approximation over all wines. We found both the product evaluation and the repurchase decision for wine after sensory tasting to be strongly influenced by non-sensory factors, as price was important for liking and overall combined extrinsic cues for purchase intent.

As positive sensory characteristics we identified *fruity* aromas and *sweetness* as well as *oak/wood* for liking and *dark fruit* and *chocolate* for purchase intent. Wine faults and aromas of over-developed wines could be identified as significant negative drivers for both informed measures liking and purchase intent. This result is notable as all the wines studied were currently released vintages, and it provides guidance to wine companies to guard against having wines on the market with some reductive or oxidative flavours. A strong influence of sensory properties on liking would be expected in a blind test, but it is of great interest to observe the clear effect on liking of the flavour of the wines even when extrinsic cues are present.

Overall, re-purchase intent is of particular interest to wine marketers to create sales from repeated purchases besides inducing first trial consumption. Ideally, during and after consumption a wine should fulfil the expectations consumers had when selected the wine from the shelf. Consumer's response to the purchase intent question in the informed tasting test would have incorporated expectations at the purchase decision plus the sensory characteristics of the wines. The effect of both was clearly evident, and the sensory characteristics influencing purchase intent, as might be expected, largely agree with those found driving hedonic liking. Fruity flavours increased the willingness to buy while reductive, oxidative aromas and off-flavours (as medicinal aroma) reduced it.

For a winery, this implies that producing wine with favourable sensory characteristics in form of flavours, aroma and mouth-feel is one component to satisfy the consumer, but is not sufficient. While consumers' liking and purchase intent are also driven by sensory cues, as presented here, visually processed extrinsic attributes have a strong and often underestimated impact on consumers. Accordingly, analysing the influence of extrinsic attributes such as brand, region and packaging on consumers' preferences should have an equal importance to wine companies as creating the actual product from growing grapes to producing the wine. While this is partially known by most large and medium-sized wine companies, this finding deserves more attention in the large number of small wineries.

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References

Mueller, S., Osidacz, P., Francis, I. L., & Lockshin, L. (2010). Combining discrete choice and informed sensory testing in a two-stage process: Can it predict wine market share? *Food Quality and Preference*, 21(7), 741-754.

Abstract

When viticulturists and oenologists produced flavours and aromas that are positively perceived by consumers in blind tastings, the question remains how much they actually influence consumers' wine liking, choice and repurchase intent in the presence of marketing attributes such as brand, packaging, region and price. While traditional consumer sensory research mainly focuses on blind sensory evaluation, in reality most consumers drink and evaluate wine in an informed condition, being aware of the price and label information. What is the relative impact of sensory and marketing attributes when consumers drink wine in realistic settings and which are the sensory attributes that cut through the marketing clutter? To provide first answers to these questions we report results from a two-stage experiment for Australian Shiraz wines, simulating the process of a consumer choosing a wine from the shelf, tasting the wine, and making a repurchase decision.