How does item order and other information impact wine menu choice?

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Abstract

While restaurant wine menus are found to be sorted by different principles, such as by price, region or grape variety, no previous research has analysed what effect item order has on clients' wine selection. A discrete choice experiment is utilised to compare the effect of menu order by price and sensory characteristics on wine choice. We find wine menu order to have a significant impact on wine choice such that consumers more frequently choose lower priced wines if wine menus are sorted by ascending price. If a wine menu is sorted by sensory characteristics consumers choose different grape varieties and more frequently use information such as sensory descriptions, food matching suggestions and wine awards. We conclude with managerial implications and outline further research avenues.

Keywords: on-premise, menu organisation, wine list, discrete choice analysis, Australia

Topic area: Consumer buying and choice behaviour

Introduction

The domestic on-premise sector represents a fundamental distribution channel for the Australian wine industry, accounting for 19% of sales and 47% of its total value (Euromonitor, 2009). Despite its importance, little is known about what influences consumers when choosing wine from a menu on-premise (Goodman *et al.*, 2008).

From a consumer perspective, the selection of wine in an on-premise venue may be triggered by four main stimuli: a) the previous experience with a wine, either personal or that of a table mate, b) a suggestion by a sommelier or a wine steward, c) information on a wine list, or d) any combination of the three. However, the wine menu is the main instrument influencing wine choice in situations where consumers do not have previous experience, when a restaurant does not have a wine steward, or when consumers do not draw on a sommelier's suggestion. Since most restaurants do not have a sommelier, the impact of the wine menu is likely to be important.

It is therefore essential to investigate how different ways to organise items on a menu impact what consumers choose. However, while menu organisation has been investigated in the foodservice sector in general (Thomson and Hamilton, 2006; Annaraud, 2007), only few studies analysed factors of an optimal wine menu.

The work is organized as follows. After this introduction, a literature review and an explanation of the salient aspects of the methodology and the questionnaire structure will be presented, together with some information about the sampling and interviewing procedures. Then, the results are presented and discussed, and we conclude with implications and future research.

Literature review

Most of the existing research into on-premise wine consumption focused on generic drivers influencing consumers' selection, such as price (Narine and Badrie, 2007; Yang *et al.*, 2009), grape varieties (Lockshin and Hall, 2003; Balestrini and Gamble, 2006), region of origin (Schamel, 2006; Preszler and Schmit, 2008), presence of an award (Orth and Krska, 2002; Lockshin *et al.*, 2006), food matching (Pettigrew and Charters, 2006; Wansink *et al.*, 2006), and sensorial descriptions of a wine (Hall *et al.*, 2001; Halstead, 2002). However, only a few studies tried to explain which wine menu attributes contribute to sales and profit. For example, the impact of objective characteristics such as origin and grape variety, sensory descriptions and price on wine menu choice was estimated by means of a hedonic model (Durham *et al.*, 2004). Also, menu engineering methods have been applied to wine menus in order to classify wines according to their degree of popularity and their marginal contribution to total restaurant revenue (Barrows, 1996). The role of wine menus for restaurants and their recommended design was analysed by Davis and Charters (2006), Gil Saura *et al.* (2008) and Berenguer *et al.* (2009) using qualitative methods. We utilise previous research on the use of sensory descriptions and wine information, while adding menu organisation as a factor in understanding consumer's wine choice.

Methodology

Wine menus provide different amounts of information, but their listed items are organised in different ways and can be sorted by wine type, grape variety, price, or food matching. We analysed the order of 38 wine menus from different restaurants in Australia and counted the frequency of first and second order sorting principles. For instance, if wines are first sorted by colour (sparkling, white, red) and then within each type by price, then colour and price are the first and second ordering principles. This basic exploration revealed four major sorting principles of wine menus (Table 1). Colour was found to be the dominating sorting principle which can likely be attributed to its role as a higher order heuristic in the decision process (Atkin *et al.*, 2007; Seghieri *et al.*, 2007) and the fact that certain meals are traditionally matched with either red or white wines (Dornenburg *et al.*, 2006). Attributes such as price and grape variety are almost equally often found as the second order sorting principle, with only one example found for region and four without a second order

principle. General consumer research findings suggest that price has a special role as a sorting mechanism. For example, it was found that prices displayed in a descending order result in higher average price for fast moving consumer goods, but not for durable products (Bennet *et al.*, 2002) and that the order in which prices are presented affects the accuracy and speed in which information is processed (Parsa and Njite, 2004). It is therefore of special interest if items within a wine colour should be sorted by price or by a different principle such as sensory style, and what effect this might have on wine choice.

The studies discussed above suggest which information should be provided in wine lists, but there is no empirical evidence available on how the items on a wine list should be optimally sorted. More specifically, how the order of items on a wine list impacts consumers' wine selection behaviour and the profitability of restaurateurs are an unexplored area. Accordingly, the aim of this research is to understand how the organisation of wine menu items impacts consumers' wine choice, the speed of their choice, the perceived difficulty of choice and the average price of the wines chosen. In particular, we compare the impact of sorting a wine menu by price relative to sorting it by the sensory style of grape varieties.

Ordering principle	1 st order	2 nd order	
Colour	76%	3%	
Price	3%	40%	
Grape Variety	16%	45%	
Region	5%	3%	
No Order	none	11%	

 Table 1: Relative frequency of wine menu order principles (n=38)

We used a discrete choice experiment (DCE), in order to determine the effect of the order of items on a wine menu as well as the effect of other information. DCEs simulate real choices and have proven to be highly predictive of consumers' market behaviour (Louviere *et al.*, 2000).

For a realistic choice scenario we included a number of wine attributes often found on wine menus and analysed in previous research, as indicated in Table 2.

Sensory Food Price/glass **Grape Variety** Region Award Description Matching (AUS \$) 1 Grenache McLaren Vale 5 -_ 7 2 Merlot Margaret River 3 Pinot Noir Tasmania 9 Short _ 4 Sangiovese Heathcote Long Gold Medal 11 Present 5 Cabernet Sauvignon Cabernet Sauvignon/Shiraz 6 Grenache/Shiraz/Mouvedre 7 8 Shiraz

Table 2: Attributes and levels used in the DCE

The eight grape varieties and the four wine regions were chosen according to market relevance and awareness in Australia. They were selected to represent a reasonable range of both well known and unknown ones, which allow us to make generalisations about consumers' choices (Lockshin *et al.*, 2006). We selected the serving format 'wine by the glass' to simplify and standardise the choices. We also limited this study to red grape varieties, which are more frequently consumed in winter when this study took place. As found on some wine menus, we also included sensory descriptions (none, short or long), food matching suggestions, and awards as menu item attributes. Sensory descriptions and food matching suggestions were formulated specifically for each grape variety, so we can only measure the effect of their presence or absence (Mueller *et al.*, 2009), but not their specific wording. This additional information was limited to one level (presence) or two levels plus several blank levels (absence) to lessen their impact and make them

more realistic. Finally, the four price points were selected through a review of the most popular prices appearing on the 38 wine menus mentioned above.

The attribute levels were combined into menu items according a $8x4^5$ orthogonal main effects plan (OMEP) with 32 choice sets and choice set size of eight. The design had an information efficiency of 99.87% according to Street and Burgess (2007). Each choice set represented a wine list with eight items, where each grape variety appeared once while all other attribute levels appeared twice on each list.

To operationalise our research objective, these wine lists were sorted into two different orders (treatment versions). The price version was sorted from the lowest (\$5) to the highest (\$11) price, where the order of both wines with the same price was assigned randomly. For the sensory treatment, the eight grape varieties were allocated into two sensory style groups (lighter wines: Grenache, Merlot, Pinot Noir, Sangiovese; and heavier wines: Cabernet Sauvignon, Cabernet Sauvignon/Shiraz, Grenache/Shiraz/Mouvedre, Shiraz). The sensory treatment menus were sorted from lighter to heavier wines, where a random variable controlled the allocation of the four grape varieties within each sensory style group. To prevent respondent fatigue the total design of 32 choice sets for each treatment was randomly split into two versions with sixteen choice sets each. Every respondent completed sixteen choice sets of one menu order (price or sensory) and respondents' choices were then compared between both treatments.

Grape Variety Region from the lightest to the heaviest body		To	Per
		It goes well with	Glass
Pinot Noir	McLaren Vale		\$5
Sangiovese	Tasmania		
A delicate Sangiovese, which p pleasant raspberries lead into fr	resents hints of violets on the nose, while esh red fruits and a nice smoky edge		39
Grenache Hints of red fruits and licorice	Margaret River	Smoked turkey rillette with balsamic blueberry jam	\$7
Merlot	Heathcote		\$ 11
Shiraz	McLaren Vale		\$7
Cabernet Sauvignon/Shiraz Hints of capsicum and cherries	Margaret River		\$9
Cabernet Sauvignon This wine has an intense color lovely texture, which tastes of bl	Heathcote ur, hints of eucalyptus on the nose and a lackcurrant, capsicum and black olives		\$5
Grenache / Shiraz / Mouvedre	Tasmania	Duck breast with parsnip puree and foie gras sauce	\$ 11

Figure 1: Example of a DCE wine menu choice set (sensory treatment)

For each choice set, respondents choose a wine they preferred most and would order with a meal in an informal restaurant. Choice sets were presented in a graphical format (Figure 1) to approximate a real wine list. In an introductory page respondents of the sensory order treatment were informed that wines were ordered from lighter to heavier wines. Because the price order was more obvious we did not inform respondents of the price order treatment. We also measured the time respondents took to complete all sixteen choice sets.

After the completion of the DCE respondents were asked about their *perceived difficulty of choice* from the menus (five-point Likert scale: 'very difficult' =1 to 'very easy' =5) and about their *perception of the menu order* ('I found the order confusing', 'strongly disagree' =1 to 'strongly

agree' =5). Before uploading the questionnaire on-line, both treatment versions were pre-tested on students and staff members of an Australian university.

Sample

To qualify, respondents had to be a) of legal drinking age (at least 18 years); b) had to drink wine at least once per month; c) had to drink red wine; d) had to have dined out in other venues than fast-food restaurants in the last month; and e) had to have drunk wine when dining out in the last month. Respondents were recruited from an online panel provider, which actively manages a panel of more than 300,000 Australian consumers. In total 1,258 respondents completed the online survey in May 2009. The sample is representative for Australian wine consumers who regularly dine out. Respondents were randomly assigned to both treatment versions. A comparison between both treatment sub-samples revealed no significant differences regarding their socio-demographic characteristics or their wine consumption behaviour.

Analysis

Respondents' menu choices were analysed in two ways. In a descriptive analysis for both treatments we counted the frequency an attribute level was chosen when it was present. This analysis is free of underlying assumptions about consumers' choice behaviour (such as independence of irrelevant alternatives or non-compensatory effects). In a second step, we estimated a multinomial logit model with an ex-ante specification of both treatment groups for which we test the hypothesis that the attribute importances are identical between both treatments by the means of a LR-test and the Wald statistics (Louviere *et al.*, 2000).

Results

Overall, the results of the LR-test indicate that a model that allows the part worth utilities between attribute levels to differ between both treatment versions can explain respondents' choices significantly better than an aggregated model (LL-Ratio=166.6, df=16, p<0.001). Accordingly, the item order on a wine menu had a significant influence on consumer choice.

To assess the extent of differences found for the attributes, a summary of the descriptive analysis and the ex-ante treatment specification multinomial logit model is provided in Table 3 (appendix). We compare the relative choice frequency for each attribute level for the two order versions. The last two columns give the results of the Wald statistics indicating if a part worth utility differs significantly between the treatment versions. The two order treatments differ most in the relative choice of grape varieties and price (highest Wald statistic). We also observe a significant difference for the attribute levels of sensory description, food matching and award, while item order does not have a significant impact on the relative choice of regions of origin.

We find that sorting a wine menu by the sensory characteristics of the grape variety instead of price increases the relative choice of higher price levels (\$9 and \$11 per glass). A weighted average of the price choices indicates that the average willingness to pay increases by \$0.18 per glass when ordering by sensory style instead of price. While this effect is not very large, it shows the impact different menu orders can have on consumer behaviour. We suggest a possible explanation is that price serves as a higher order heuristic cue when wines are ordered by price. Given that consumers are usually sensitive to price when choosing wine (Lockshin *et al.*, 2006; Mueller *et al.*, 2008; Lockshin *et al.*, 2009), its importance is further highlighted when wines are arranged by price (Bennet *et al.*, 2002). Accordingly consumers tend to rely more on price than on other attributes, and do not use the other attributes available as much.

In support of this consideration, consumers were found to more frequently use other cues such as the long wine description (increase by 2.1%), food-matching suggestions (increase by 2.0%) and awards (increase by 2.0%) when wines were not sorted by price. This suggests that respondents use other attributes more frequently to make their choices when price order is not as easily available.

We found that lighter grape varieties (Grenache, Pinot Noir and Sangiovese), with the exception of Merlot, are generally chosen more often when wines are sorted from lighter to heavier style. On the other hand, all heavier grape varieties are chosen less often. At this stage it is unclear if this observed difference is the result of ordering by style or an order effect, where the first wines on a menu (here the lighter styles) are generally chosen more frequently. Also the appeal of the more frequently used sensory descriptions and food matching suggestions for the different grape varieties could have affected their relative choice.

While we found the sorting order to affect the average price chosen and the relative usage of other wine menu information, it also needs to be considered how easily consumers navigate through a menu, when not sorted by price. We found that consumers had less perceived difficulty of choice with the price version (2.9 versus 3.1 for sensory order; p=0.04), indicating easier navigation through the wine list. This was confirmed by measuring the actual time taken over all sixteen choice sets. Respondents chose an average of 37 seconds faster (p=0.08) in the price version relative to the sensory version. At this stage it is not possible to suggest whether spending more or less time and cognitive effort on a wine list is positive or negative. Some involved consumers might enjoy the extra time, while low involvement consumers might give up and select a different beverage instead of wine such as beer.

Conclusion

These results open the discussion as to whether a restaurateur should organise a wine menu by the sensory profile of the wines, in order to potentially have higher revenues per glass, or by their prices, hoping that a simpler arrangement of the wines stimulates customers to buy a glass of wine instead of something else. We cannot yet provide a complete answer to this question, but suggest basing the decision on the category of the on-premise venue. For fine dining and higher end café style restaurants ordering the wines by sensory profile, such as region of origin, wine style or grape variety is suggested, because diners at these locations tend to be more involved with wine and dining (Mueller and Rungie, 2009). Higher involved consumers enjoy the wine selection process and are more prone to spend a few more moments looking for the perfect wine to match with the food or to celebrate a special occasion. Wine involved consumers will buy wine anyway, so ordering the list by style or something other than price is likely to generate higher profits for the restaurant. Conversely, pubs/bars and lower end bistros are probably wiser to present clearer, priceordered menus to customers. This makes clients more confident that they are not making a wrong choice in selecting a wine, and as a result even less involved consumers are likely to have a more relaxed attitude towards choosing the product. This will help avoid clients opting for other beverages and still insure the profits a restaurateur can make out of a glass of wine compared to other beverages.

Future research and limitations

This research opens the door to further studies of menu design. We found that other information, such as grape variety, higher prices, longer sensory descriptions, food matching, and wine awards assumed higher importance when the menu was not ordered by price. There is a further need to untangle these effects and to understand how better to serve consumer needs by presenting menus appropriately for both understanding the appreciation of wine, and restaurant profitability. There are likely to be segments of consumers, who prefer different orders, but because every consumer only saw one menu type we are unable to measure individual preference differences. We did not test for different occasions or type of restaurant, which also could influence the use of price and other types of information. This first study points out that the way wines are sorted on the menu does affect choice, but it merely whets our appetite for further research.

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Appendix

Table 3: Summary of choice frequencies for attributes and levels in the two treatment versions

		Vers	sion	Difference		
		Drico	Sensory	(Sensory	Wald	р
		FILLE	Sensory	– Price)		
Grape va	riety				92.46	0.00
	Grenache	5.5%	6.7%	1.2%		
	Merlot	18.3%	16.2%	-2.2%		
	Pinot Noir	13.1%	14.5%	1.4%		
	Sangiovese	7.3%	9.9%	2.6%		
	Cabernet Sauvignon	15.2%	14.9%	-0.3%		
	Cabernet Sauvignon/Shiraz	15.9%	14.2%	-1.7%		
	Grenache/Shiraz/Mouvedre	7.3%	7.0%	-0.3%		
	Shiraz	17.3%	16.6%	-0.7%		
Price					39.35	0.00
	\$ 5	32.0%	29.8%	-2.2%		
	\$ 7	28.1%	26.3%	-1.8%		
	\$ 9	22.8%	24.0%	1.2%		
	\$ 11	17.1%	19.9%	2.9%		
	Average price	\$ 7.50	\$ 7.68			
Sensory	description				20.29	0.00
	None	22.2%	22.2%	0.0%		
	Short	25.6%	23.5%	-2.1%		
	Long	30.0%	32.1%	2.0%		
Food ma	tching				11.45	0.00
	None	23.7%	23.0%	-0.7%		
	Present	29.0%	31.0%	2.0%		
Award					7.85	0.01
	None	21.7%	21.1%	-0.7%		
	Gold Medal	34.8%	36.8%	2.1%		
Region					0.45	0.93
	McLaren Vale	26.5%	27.2%	0.7%		
	Margaret River	29.3%	28.4%	-0.9%		
	Tasmania	23.6%	23.2%	-0.4%		
	Heathcote	20.5%	21.1%	0.6%		