Young urban adults preference for wine information sources: An exploratory study for Republic of Macedonia

Hristo Hristov, Aleš Kuhar

Biotechnical Faculty Ljubljana, Chair for agricultural economics, policy and law,
Groblje 3, 1230, Domzale, Slovenia
icko80@yahoo.com, ales.kuhar@bf.uni-lj.si

Abstract

This article focuses on measuring the importance of wine information sources that influence the wine choice of Macedonian young adults purchasing wine in wine shops. Our goal tried to identify significant differences in the use of information sources across wine knowledge, involvement and gender-demographic subgroups within the sample, in order to give marketing managers a means to develop more efficient marketing strategies. Most marketing researchers use rating scales to understand consumer preferences. These have a range of problems, which can be improved using the new technique, best-worst scaling (BWS). The BWS method was applied to measure the level of importance to a list of most commonly used wine information sources. For this study, they were selected on a base of qualitative interviews with Macedonian wine marketers and confirmed after literature review of the articles published in wine marketing journals. A total of 123 Macedonian young consumers between the age of 25 and 34 participated in a face-to-face interview preformed in three wine stores in Skopje and one in Bitola. The study results show that young urban adults in selection of their wines give more importance to information obtain by tasting the wine previously, recommendation from family members friends and colleagues. The information sources less preferred were radio, television, billboards and printed media. Moreover, the study showed that specific differences exist in the preferences of information sources of males and females and between different knowledge and involvement groups.

Keywords: Young adults, external sources of wine information, knowledge, involvement, best-worst scaling

1. Introduction

From a consumer purchasing behavior perspective, information plays an important role in consumer decision making and the choice between alternatives. Consumers seek information from informal sources, such as the recommendation of family friends, or opinion leaders who may make their own wine on a regular basis. However, people also acquire information through more casual information-acquisition activities such as looking at retail display windows or scanning newspaper advertisements, watching television and/or through incidental exposure to information such as clicking the wrong link online, passing a roadside advertising billboard while driving, or attending to different sport and cultural events. How much consumers know about the product or service when they decide to make a purchase and how they obtain this information are very important issues. They are fundamental to understanding consumers' behavior, planning marketing communications, and developing strategies and tactics.

Wine is widely recognized as an information-intensive product, one that requires a considerable amount of information to describe it completely (Bruwer and Johnson, 2010; Chaney, 2000). Despite the use of traditional marketing cues such as product, pricing and promotion, wine has a unique constraint that sets it apart from traditional products, primarily because the quality of the product cannot be assessed until after it has been consumed. The decision about which wine to purchase is a complex experience compared to other consumer products, resulting from the consumers' use of a variety of information sources and their prior knowledge and usage experience with wine (Lockshin and Hall, 2003; Lockshin and Corsi, 2012).

There are many ways to measure the preferences consumers give towards different alternatives. Most common are surveys with rankings or ratings and consumer panel data, which give details on individual purchases. All these methods have problems. Recently a quiet revolution in consumer preference measurement has made the best-worst scaling (BWS) method. It is a method which is derived from discrete choice experiments (Finn and Louviere, 1992; Marley and Louviere, 2005). Finn and Louviere first published the BW method in 1992, and in 2005, Marley and Louviere proved the ability of the method to provide unbiased estimates across different data collections. BW scaling uses consumer choices of the most and the least important items in a set, in a designed study to create a ration based-scale. The advantage of the method is that produces much less method variance than hedonic scaling and thus results in better separation between various alternatives (Mueller et al., 2009).

In this study, the BW scaling method was used to present the authors initial findings for the preferences Macedonian young consumers give to wine information sources. We used the BWS method as an instrument for data collection and analysis. The obtained BW scores were analyzed on an individual and aggregate level. The study also measured respondents' involvement and objective knowledge in wine. By using the variables gender, knowledge and involvement, respondents were segmented in groups. Further their preferences towards different information sources were analyzed. The differences in the use of information sources were determined using the Bayesian inferential statistic.

2. Methodology

The paper features the results of exploratory research, which provide information about the use of most common wine information sources among Macedonian young adult consumers, when purchase a wine in wine stores. The study was performed in two cities, Bitola and the capital city

Skopje, located in the southern and northern part of Republic of Macedonia, respectively. Although these two municipalities belong to the same country, they present differences, mostly in the way how consumers purchase their wines, which may lead to different behaviors in how wines and information sources for wines are chosen.

Data collection took place at one wine store in Bitola and three wine stores in Skopje. Customers who purchase wines in these stores are from low to high involvement wine consumers. The sample includes consumers between the age of 25 and 34. Questionnaires were collected in the same period in both cities. The survey started at first of November and ended on 20th of December 2012. The data were collected using a face-to-face survey instrument. Non-probability convenience sampling method was used, where respondents who like to participate in the study were selected by the interviewers (personnel working in the wine stores). The interviewers involved in the study were previously trained for this purpose. Before beginning with each interview, they were told to ask participants for their age, since this was the only condition for participating to the study. Respondents were briefly explained with the content of the survey, and asked for their answers. The response rate for the survey was 72%, with 123 of the total number of contacted respondents (n=171) fully completing the survey. The average length of the interview was 25 minutes, from which the part reserved for best-worst data took 12 minutes. The characteristics of the respondents are shown in Table 1.

Table 1. Structure of respondents by sex, age, education, place of living, income, and knowledge in wine

Factors	Structure of the questioned respondents	
	N	%
City		
Bitola	55	44,7
Skopje	68	55,3
Gender		
Male	69	56
Female	54	44
Marital status		
Married	56	45,6
Not Married	67	54,4
Age groups		
25-29	70	57
30-34	53	43
Education		
High Scholl	65	52,8
University or higher	58	47,2
Income		
Missing data	9	7,3
Low	8	6,5
Below middle	27	22
Middle	63	51,2
Above Middle	16	13
Knowledge groups		
Low	103	83.7
High	20	16.7
Involvement groups		
Low	98	80
High	25	20

The table illustrates the number of responses and percentages per geographic, demographic, knowledge and involvement. The respondents were reasonably balanced in gender with 56% of respondents being male and there were a similar proportion of respondents per place of living, education and marital status.

Participants' level of wine involvement was measured on a categorical seven-point scale anchored by "strongly disagree" to "strongly agree". Two of these items were adapted from the previous research which had specifically measured involvement with wine (Lockshin et al., 1997). Objective knowledge in wine was measured with seven indicators modified from the previous wine studies of Dodd et al. (2005) and Frøst and Noble (2002). Regarding to knowledge and involvement, respondents' were classified in two categories "high" and "low". Categories were formed according to respondents' answers on 4 questions for involvement (Table 2), and 7 test questions for objective wine knowledge (Table 3).

Table 2. Wine involvement scale used to determine the perception of study respondents of their involvement in wine

Question	Statements	strongly disagree			neither agree nor disagree			strongly agree
1	Wine is very important to me	1	2	3	4	5	6	7
2	I would be happy to help in making wine	1	2	3	4	5	6	7
3	I would like to take a part in a grape harvest	1	2	3	4	5	6	7
4	I like to read books about wine	1	2	3	4	5	6	7

Table 3. Indicators used to measure the construct of objective wine knowledge

Indicators	Answers		
1. Burgundy is the French term for which wine?	A. Riesling	B. Merlot	
	C. Pinot Noir	D. Muscat	E. Don't know
2. Which is not a famous French wine region?	A. Bordeaux	B. Champagne	
	C. Tuscany	D. Alsace	E. Don't know
3. Table wine have an alcohol content of:	A. 1-3%	B. 4-7%	
	C. 8-14%	D. 15-24%	E. Don't know
4. Which of the following grape varieties is not used for white wines?	A. Rkatsiteli	B. Riesling	
	C. Merlot	D. Chardonnay	E. Don't know
5. Which of the following wines has more tannins and astringent taste?	A. Red wine	B. Sparkling wine	
	C. White wine	D. Rose wine	E. Don't know
6. Which of the following wine aromas is rarely found in barrel aged wines?	A. Vanilla	B. Coffee	
	C. Mint	D. Coconut	E. Don't know
7. Dark ruby color in the center and intensive purple red color in the rim of the wine glass is characteristic for wine made from grape Vranec:	A. Six years matured	D. Latest vintage	
	B. Three years barrel aged	E. Don't know	
	C. Eight years matured		

For involvement, we obtained internal consistency of 0,702 Cronbach's alpha, while for objective knowledge was 0,723, measured according to Kuder-Richardson (KR-20) statistic. The sum of scores of 7 objective knowledge test questions defined the knowledge classes, where a score above 4 (the third quartile value of the sum of scores) was classified as "high knowledgeable", and 4 or below was classified as "low knowledgeable". The categories of involvement were formed summing participants' responses to 4 questions, where the "high involvement" class includes participants scoring above 18 on total (the third quartile value of the sum of scores), while "low involvement" score of 18 and below.

Wine information sources importance ratings were measured using a best-worst scaling method. The experimental design consists of 13 information sources (Table 4). The choice set of influencers was developed through a series of consulting with the literature, qualitative discussion with industry practitioners and pilot testing (Cohen et al., 2009; Goodman, 2009; de Magisris et al., 2011; Cassini et al., 2009; Chrysochou et al., 2012; Bernabeu et al., 2012; Chaney, 2000; Barber, 2009). The choice sets (Figure 1) for best-worst can be created through different kind of designs. Some examples include full factorial design, fractional factorial design, latin square design and balanced incomplete block design (BIBD) (Cohen, 2009). One thing is common for all type of designs, they must present each pair items the same number of times in order to be analyzable.

Table 4. Wine information source list

	Wine information sources
1	Waiter recommendation
2	Sales person recommendation
3	Friends and colleagues recommendation
4	Restaurant wine list
5	Family member recommendation
6	Food and wine television programmes
7	Information on the radio
8	Magazine and newspaper articles
9	Information written on the back label
10	Information on the billboard
11	Point-of-sale communication
12	Tried wine previously
13	Information written on the front label

The wine information sources were combined in a choice sets using a balanced incomplete block design. The design consists of 13 information sources that were combined to 13 different choice sets, where each choice set contained four different alternatives (Table 5). The design ensured each information source to appear the same number of times (four times) across all sub-sets. Each choice task began with the following question:

From the wine information sources proposed on the following table, please indicate the most important and the least important one that you would take into consideration when choosing a wine. Mark only one information source in each column for the most and for the least important.

Least important	Wine Information Sources	Most important
☐	Information on the front label	☐
☐	Family member recommendation	☐
☐	Restaurant wine list	☐
☐	Tried wine previously	☐

Figure 1. Example of one table of best-worst choice sets presented to respondents

The best-worst (B-W) scores for each participant were calculated using the counting based method. BIBD are by far the most widely used designs for this type of analysis (Cohen, 2009). The counting method was applied to individual respondents and aggregated at the sample level. On the

individual level the number of times each item is chosen as most important (best) and least important (worst) was summed up across all choices and the worst were subtracted from the best, resulting in "best–minus–worst" (B–W) scores. On the aggregated level, the difference between all best and all worst counts was divided by the number of respondents and the appearance of each attribute in all choice sets resulting in an average B–W score for each item. The average B–W score was interpreted as the average number of times an attribute was chosen as most or least important, resulting in an interval scale based on choices (Marley and Louviere, 2005).

In the study, for each information source the average best-worst score and the standard deviation were calculated. Further, we calculated the difference between the population means regarding gender, knowledge and involvement subgroups of the sample using the Bayesian estimation. The purpose was investigating whether different subgroups of the sample use the same information sources the same.

Table 5. Balance incomplete block design for choice sets

Information sources	1	2	3	4	5	6	7	8	9	10	11	12	13	Appearance
														Choice sets
1	x				x						x		x	4
2	x	x				x						x		4
3		x	x				x						x	4
4	x		x	x				x						4
5		x		x	x				x					4
6			x		x	x				x				4
7				x		x	x				x			4
8					x		x	x				x		4
9						x		x	x				x	4
10	x						x		x	x				4
11		x						x		x	x			4
12			x						x		x	x		4
13				x						x		x	x	4
Total number of alternatives	4	4	4	4	4	4	4	4	4	4	4	4	4	

Note: x, the information source appearance in the choice set

3. Results

In this study 123 respondents provided a valid answer sheets. Of the respondents, 55 per cent were wine purchasers in Skopje and 56 per cent were male. The proportion of males with high knowledge and involvement in wine in the sample was higher than the proportion of female respondents (Table 6 and 7).

Table 6. Wine knowledge: Male and Female

		Wine Knowledge	
		Low %	High %
Gender	Male	54,7	70
	Female	45,3	30
Total		100%	100%

Table 7. Wine Involvement: Male and Female

		Wine Involvement	
		Low %	High %
Gender	Male	50.5	84
	Female	49.5	16
Total		100%	100%

The results from the cross-tabulation between knowledge and involvement present some interesting facts. In the Table 8, more low involvement high knowledgeable respondents compared to high involvement high knowledgeable respondents can be observed. Some explanation to this

situation is the fact that although many female respondents declared themselves as low involvement, otherwise presented a respectable knowledge in wine.

Table 8. Wine Knowledge: Wine Involvement

| | | Wine Knowledge | |
		Low %	High %
Wine Involvement	Low	82.1	70
	High	17,9	30
Total		100%	100%

The study as well measured respondents' wine drinking and purchasing frequency. The data in Table 9 show, that 52,8% of the respondents drink wine at least one per week, 35% ones per month, and 12,2% ones on six months. Concerning their wine purchases, 35,8% of the respondents stated that purchase wine weekly, 50,4% ones per month, and 13,8% up to 6 bottles per year.

Table 9. Frequency of wine purchasing and drinking (n=123)

| | % | |
	I purchase wine	I drink wine
Up to 6/year	13,8	12,2
Monthly	26,8	16,3
Fortnightly	23,6	18,7
Weekly	31,7	34,1
Most days	4,1	18,7
Total	100%	100%

Using the Pearson Chi-Square statistic, we found difference between genders in their frequency of wine dinking ($p=0,022$), while no difference was found in their purchasing habits ($p=0,105$). The data are presented on the table 10. Furthermore, we have analyzed the frequency of drinking and purchasing wine between deferent knowledge and involvement segments (Table 11 and 12). From the data, we can conclude that high knowledgeable and high involvement respondents are consuming and purchasing wine more often than their counterparts. This result was expected.

Table 10. Frequency of wine purchasing and drinking per gender

| | Frequency (%) | | | |
| | I purchase wine | | I drink wine | |
	Male	Female	Male	Female
Up to 6/year	8,7	20,3	5,8	20,4
Monthly	23,2	31,5	11,6	22,2
Fortnightly	23,2	24,1	18,8	18,5
Weekly	39,1	22,2	39,1	27,8
Most days	5,8	1,9	24,7	11,1
Total	100%	100%	100%	100%

Table 11. Frequency of wine purchasing and drinking per knowledge group

	Frequency (%)

	I purchase wine		I drink wine	
	Low Know.	High Know.	Low Know.	High Know.
Up to 6/year	14,5	10	13,6	5,0
Monthly	27,2	25,0	18,4	5,0
Fortnightly	25,2	15,0	21,4	5,0
Weekly	29,1	45,0	32,0	40,0
Most days	4	5,0	14,6	40,0
Total	100%	100%	100%	100%

Table 12. Frequency of wine purchasing and drinking per involvement group

	Frequency (%)			
	I purchase wine		I drink wine	
	Low Invol.	High Invol.	Low Invol.	High Invol.
Up to 6/year	15,3	8,7	14,3	4,4
Monthly	26,5	30,4	20,4	0
Fortnightly	24,5	13,0	16,3	30,4
Weekly	31,6	34,8	33,7	34,8
Most days	2,1	13,1	15,3	30,4
Total	100%	100%	100%	100%

Table 13 reflects the means for each of the wine involvement items and the percentage and range of correct objective responses. Overall, the respondents answered only 36,5 per cent of the objective wine questions correctly, whereas their level of involvement was just at the midpoint (mean = 3,51; s.d. = 0,65), indicating that they considered themselves somewhat involvement about wine. Male respondents (39,63 per cent) answered the objective wine knowledge questions better than the female respondents did (33,69 per cent). No big difference was found between low and high wine involvement respondents answering on the objective wine knowledge questions (low 35,78 per cent; high 38,28 per cent).

Table 13. Respondents' wine involvement and objective knowledge

Characteristics	Mean score								
		Gender		Wine involvement		Wine objective knowledge		Age groups	
Wine involvement and objective knowledge	Overall mean	Male (n=69)	Female (n=54)	Low (n=98)	High (n=25)	Low (n=103)	High (n=20)	25-29 (n=53)	30-34 (n=70)
Wine involvement									
Wine is very important to me	4,40	4,59	4,17	3,99	6,08	4,23	5,35	4,15	4,61
I would be happy to help in making wine	3,13	3,72	2,31	2,46	5,72	2,98	3,9	2,72	3,45
I would like to take a part in a grape harvest	2,97	3,2	2,62	2,41	5,08	2,9	3,2	2,49	3,30
I like to read books about wine	3,52	3,2	2,62	3,12	5,24	3,35	4,6	3,09	3,90
Overall wine involvement	3,51	3,68	2,93	3,00	5,53	3,37	4,26	3,11	3,82
Objective knowledge, percent of correct responses	36,50	39,63	33,69	35,78	38,28	27,19	80,71	30,72	40,84

When respondents were asked about their involvement in wine, male respondents (mean = 3,58; s.d. = 0,65) were more likely than female respondents (mean = 2,93; s.d = 1.3) to be involved in wine. Regarding the knowledge in wine as it was expected, one with high are more involved than the one with low knowledge in wine. The results are also showing that consumers within the age of 25-34 are very much contributing in lowering the sample involvement and knowledge score. The main study objective was to determine which information sources influence the wine purchases of Macedonian young adults. This was done for the whole sample and according to respondents' gender, knowledge and involvement in wine. For measuring the importance towards information sources, as we mentioned above the best-worst scaling method was used. The B-W scores were calculated for each information source and for each individual. They were further summarized for the whole sample, for the different genders, knowledge and involvement groups. The B-W scores for each source of information and individual ranged from -4 to +4.

Table 14. Information sources importance on aggregated level and summary of individual average B-W Scores (n=123)

		Aggregated B-W Score	Average B-W Score (Mean)	Std. Deviation
1	Tried wine previously	262	2,130	1,660
2	Family member recommendation	203	1,650	1,570
3	Friends and colleagues recommendation	149	1,211	1,377
4	Restaurant wine list	21	0,170	2,006
5	Point-of-sale communication	15	0,121	1,476
6	Sales person recommendation	-1	-0,008	1,583
7	Information written on the back label	-14	-0,113	1,766
8	Waiter recommendation	-25	-0,203	1,560
9	Food and wine television programmes	-58	-0,471	1,422
10	Information written on the front label	-63	-0,512	1,405
11	Magazine and newspaper articles	-84	-0,682	1.532
12	Information on the billboard	-152	-1,235	1,680
13	Information on the radio	-247	-2,008	1,560

The best-worst scaling (BWS) scores that each information source obtained for the whole sample are presented in the table 14 and illustrated in the figure 2. The highest average sample B-W score was obtained for "tried wine previously" (2,130), whereas the lowest BW score was obtained for "information on the radio" (-2,008). The second most important information source was the "family member recommendation'', and the third was the ''friend and colleagues recommendation". The similar ratings can be seen in most other studies where this design has been used (Goodman et al., 2009; Yu et al., 2009; Teagle et al., 2010 ; Bernabeu et al., 2012; Chrysochou et al., 2012). A simple way of graphical presentation is plotting the B-W average scores vs the information sources as depicted in figure 2. In this figure, each information source is shown across the horizontal axis and the standard score on the vertical. All the information sources that received a positive score are those above the ''0'' line.
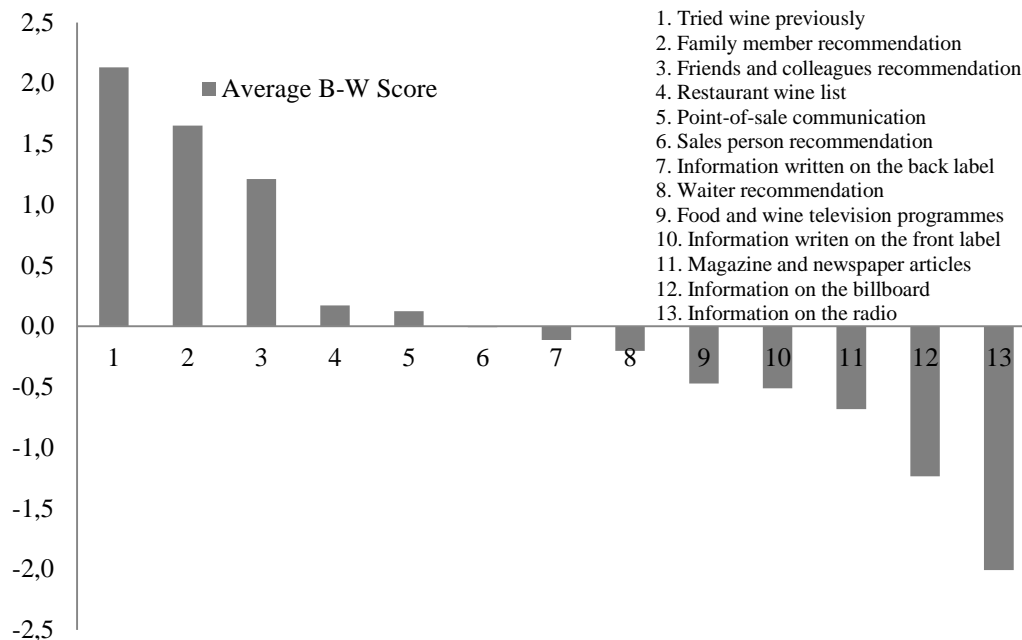
Figure 2. Average B-W scores for the whole sample (n=123)

In addition, we conducted a null hypotheses testing using the Bayesian statistics. For this purpose we used the package BEST, done under the R programming language (Kruschke, 2013). The BEST package provides a Bayesian alternative to a *t* test. The Bayesian estimation enables us to produce posterior estimates for group means and standard deviations and their differences.
In order to determine the importance respondents give to wine information sources, we estimate the mean posterior distribution and the 95% highest density interval (HDI) for each information source. The 95% highest density interval (HDI) presents where the bulk of the most credible values falls. By definition, every value inside the HDI has higher probability density than any value outside the HDI, and the total mass of point inside the 95% HDI is 95% of the distribution. If the 95% HDI of the difference of means falls well above or well below the zero then the null hypothesis is rejected, otherwise is accepted. As test value under the null hypothesis, we set the mean to be equal to zero ($H_0: \mu = 0$), which in fact is neutral importance regarding the information source under testing.

From the results in table 15, the Bayesian tests of inference fail to reject the null hypotheses for five information sources "restaurant wine lists", "point-of-sale communication", "sales person recommendation" and "information written on the back label" and "waiter recommendation" indicating that average BW scores (population means) are not different from zero. All other information sources were found to have significant impact on consumers' selection of wine. Some of them have strong positive influence such as "tried wine previously" and "family member recommendation", while some strong negative "information on the radio" and "information on the billboard".

Table 16 presents the mean values, standard deviations and 95% HDI for the gender subgroups of the sample. From the table, we can see that both genders use the information sources the same. To answer the question, how males and females, and how different knowledge and involvement groups differ in their use of wine information sources, we use the Bayesian estimation

for group means and their difference. Here, the null hypothesis argues that the difference of the group means is zero, while the alternative hypothesis different from zero.

Table 15. Results from testing the hypothesis H_0: $\mu=0$ for wine information sources (n=123)

	N	Mean (μ)	SD (σ)	HDI Lower	HDI Upper	95% HDI Ho: $\mu = 0$
1.Tried wine previously	123	2,130	1,660	1.810	2.420	Rejected
2.Family member recommendation	123	1,650	1,570	1.346	1,910	Rejected
3.Friends and colleagues recommendation	123	1,211	1,377	0,956	1,460	Rejected
4. Restaurant wine list	123	0,170	2,006	-0,172	0,548	Accepted
5. Point-of-sale communication	123	0,121	1,476	-0.156	0.377	Accepted
6. Sales person recommendation	123	-0,008	1,583	-0.265	0.312	Accepted
7. Information written on the back label	123	-0,113	1,766	-0.449	0.189	Accepted
8. Waiter recommendation	123	-0,203	1,560	-0.476	0.087	Accepted
9. Food and wine television programmes	123	-0,471	1,422	-0.729	-0.212	Rejected
10. Information written on the front label	123	-0,512	1,405	-0.747	-0.230	Rejected
11. Magazine and newspaper articles	123	-0,682	1.532	-0.933	-0.383	Rejected
12. Information on the billboard	123	-1,235	1,680	-1.523	-0.914	Rejected
13. Information on the radio	123	-2,008	1,560	-2.325	-1.750	Rejected

Notes: The posterior distributions were calculated by eliminating the importance of previous priors. For this purpose we use noninformative prior (flat prior). This flat prior assigns equal likelihood on all possible values of the mean

Table 16. Wine information sources mean scores, standard deviations and HDI for genders, ranked by male

	Mean Male	SD Male	HDI Males Lower	HDI Males Upper	Mean Female	SD Female	HDI Females Lower	HDI Females Upper
1. Tried wine previously	1,777	1,813	1,346	2,212	2,543	1,401	2,149	2,923
2. Family member recommendation	1,318	1,566	0,941	1,689	2,050	1,533	1,618	2,474
3. Friends and colleagues recommendation	0,968	1,389	0,629	1,299	1,531	1,969	1,160	1,898
4. Restaurant wine list	0,291	1,969	-0,234	0,593	0,042	2,112	-0,557	0,604
5. Information written on the back label	0,172	1,742	-0,234	0,593	-0,532	1,773	-1,015	-0,037
6. Point-of-sale communication	0,093	1,393	-0,242	0,422	0,145	1,632	-0,306	0,593
7. Sales person recommendation	-0,003	1,510	-0,367	0,361	0,055	1,724	-0,428	0,542
8. Food and wine television programmes	-0,149	1,337	-0,745	-0,098	-0,546	1,562	-0,976	-0,109
9. Waiter recommendation	-0,317	1,623	-0,717	0,070	-0,033	1,506	-0,450	0,391
10. Magazine and newspaper articles	-0,406	1,530	-0,764	-0,036	-0,988	1,523	-1,410	-0,571
11. Information written on the front label	-0,545	1,475	-0,911	-0,193	-0,417	1,351	-0,791	-0,031
12. Information on the billboard	-1,039	1,727	-1,451	-0,625	-1,457	1,633	-1,912	-1,008
13. Information on the radio	-1,878	1,620	-2,274	-1,488	-2,251	1,501	-2,674	-1,833

The genders' difference of the means for eight from thirteen information sources falls within 95% Bayesian credible interval. For these eight sources, we have accepted the null hypothesis and conclude that they are equally used by both genders. For the remaining five information sources the null hypothesis was rejected.
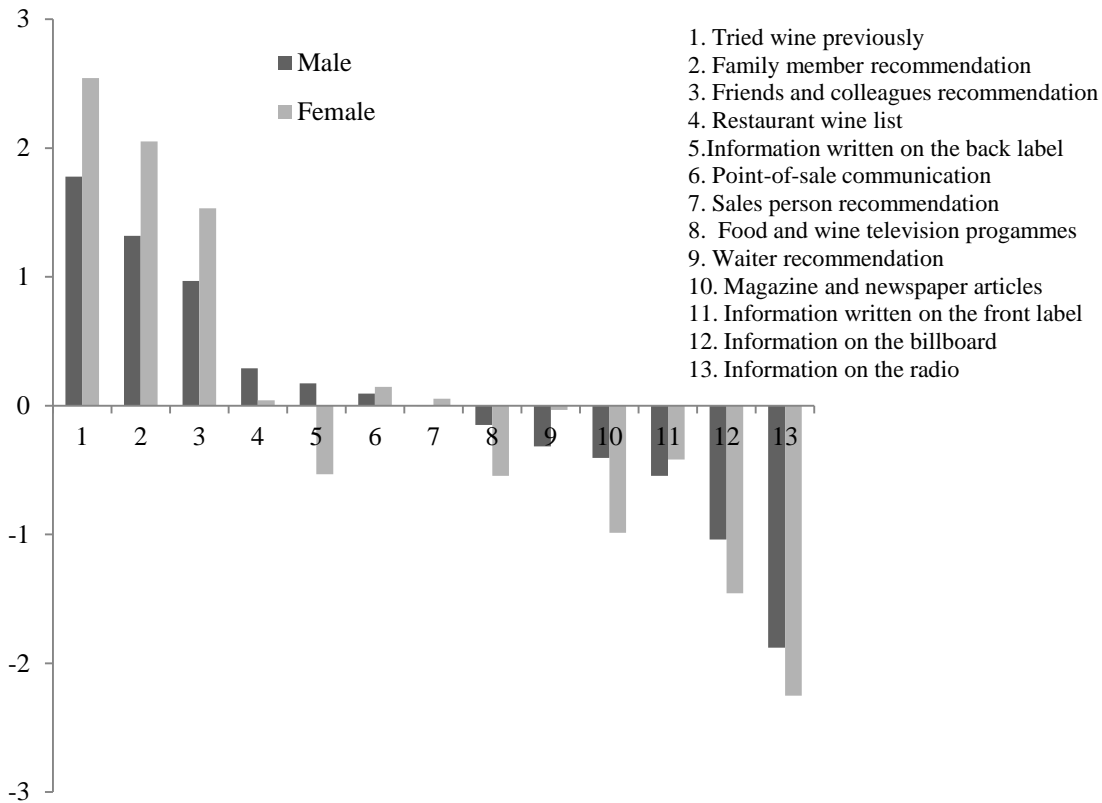
Figure 3. Best-worst scaling scores for genders, ranked by females

Table 17. Differences in information sources parameter scores, and test of means difference, between gender groups

	Group Means Difference	SD Difference	HDI for Mean diff.		95% HDI
			Lower	Upper	$H_0: \mu_{male} = \mu_{female}$
1. Tried wine previously	-0,767	0,412	-1,350	-0,188	Rejected
2. Family member recommendation	-0,733	0,034	-1,291	-0,176	Rejected
3. Friends and colleagues recommendation	-0,562	0,058	-1,065	-0,066	Rejected
4. Restaurant wine list	0,247	-0,143	-0,511	0,992	Accepted
5. Information written on the back label	0,706	-0,031	0,069	1,360	Rejected
6. Point-of-sale communication	-0,053	-0,234	-0,616	0,508	Accepted
7. Sales person recommendation	-0,063	-0,214	-0,648	0,552	Accepted
8. Food and wine television programmes	0,126	-0,225	-0,411	0,669	Accepted
9. Waiter recommendation	-0,283	0,117	-0,857	0,291	Accepted
10. Magazine and newspaper articles	0,582	0,007	0,033	1,135	Rejected
11. Information written on the front label	-0,129	0,125	-0,659	0,387	Accepted
12. Information on the billboard	0,418	0,095	-0,193	1,030	Accepted
13. Information on the radio	0,370	0,119	-0,216	0,930	Accepted

Young males compared to females see on wine back label and on magazines and newspapers to be more important in selecting wine, whereas females compared to males in their decision-making give more attention on wine previously tried and wine recommended from family members and friends (Table 17 and Figure 3).

The information sources population means, their standard deviations and HDI for each knowledge segment are presented in the Table 18, and illustrated on the Figure 4.

Table 18. Wine information sources mean scores, standard deviations and HDI for knowledge segments, ranked by high knowledge

	Mean High Know	SD High Know	HDI High Know.		Mean Low Know.	SD Low Know	HDI Low Know.	
			Lower	Upper			Lower	Upper
1. Tried wine previously	2,373	1,671	1,589	3,136	2,069	1,675	1,732	2,397
2. Family member recommendation	1,865	1,686	1,096	2,652	1,587	1,577	1,277	1,900
3. Restaurant wine list	1,086	1,437	-0,055	2,239	0,022	1,383	-0,354	0,395
4. Friends and colleagues recommendation	0,945	1,907	0,292	1,618	1,259	2,493	0,985	1,530
5. Sales person recommendation	0,388	1,968	-0,234	1,029	-0,050	1,752	-0,373	0,271
6. Information written on the back label	0,265	1,420	-0,628	1,193	-0,201	1,474	-0,538	0,147
7. Information written on the front label	-0,242	1,370	-0,841	0,354	-0,538	1,637	-0,828	-0,251
8. Waiter recommendation	-0,247	1,461	-0,997	0,496	-0,184	1,314	-0,495	0,128
9. Magazine and newspaper articles	-0,347	1,616	-1,156	0,477	-0,715	1,577	-1,014	-0,422
10. Point-of-sale communication	-0,595	1,766	-1,258	0,048	0,252	1,509	-0,036	0,542
11. Food and wine television programmes	-0,648	1,275	-1,258	-0,037	-0,440	1,444	-0,727	-0,147
12. Information on the billboard	-2,390	1,690	-3,182	-1,592	-1,010	1,590	-1,323	-0,693
13. Information on the radio	-2,734	1,743	-3,542	-1,882	-1,917	1,497	-2,218	-1,615

1. Tried wine previously
2. Family member recommendation
3. Restaurant wine list
4. Friends and colleagues recommendation
5. Sales person recommendation
6. Information written on the back label
7. Information written on the front label
8. Waiter recommendation
9. Magazine and newspaper articles
10. Point-of-sale communication
11. Food and wine television programmes
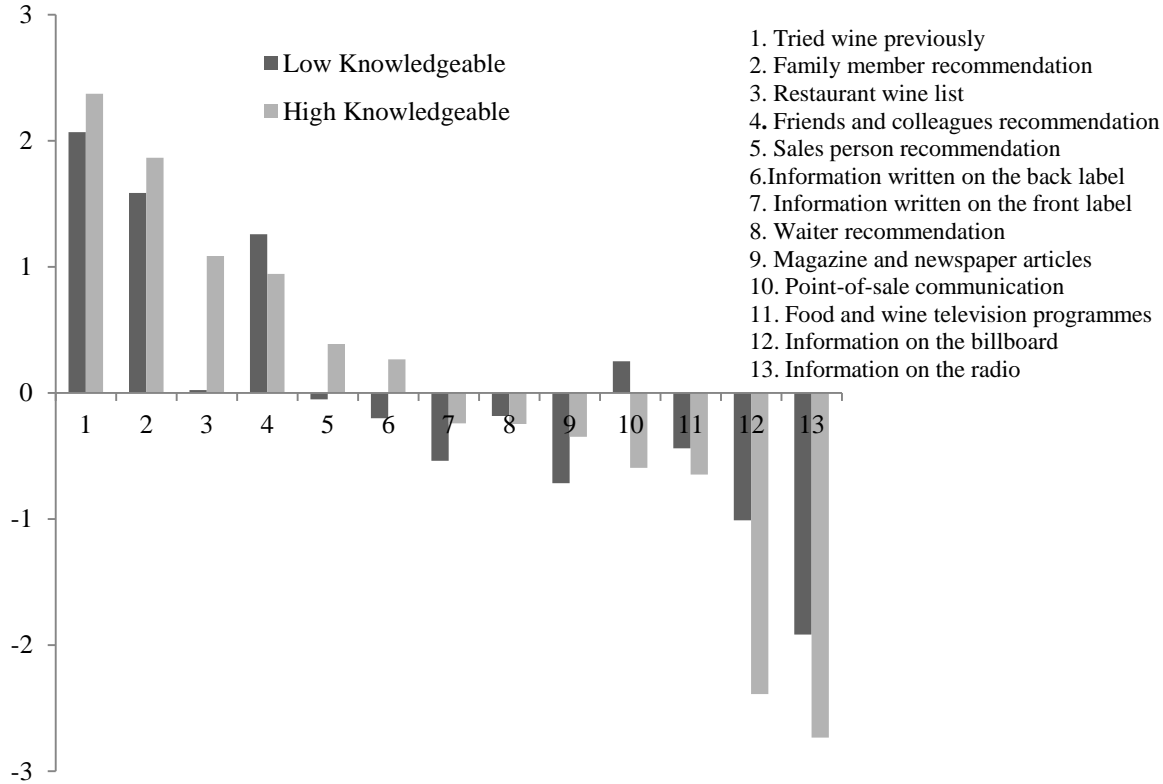12. Information on the billboard
13. Information on the radio

Figure 4. Best-worst scaling scores for knowledge groups, ranked by high knowledgeable group

The most important source of wine information for both knowledge groups was "tried wine previously", whereas the least important was "information on the radio". The 95% HDI of the difference of means for the knowledge groups for all 13 information sources is presented on the Table 19.

Table 19. Differences in information sources parameter scores, and test of means difference, between knowledge groups

	Group Means Difference	SD Difference	HDI for Mean diff. Lower	Upper	95% HDI $H_0: \mu_{high} = \mu_{low}$
1. Tried wine previously	-0,304	0,004	-1,140	0,535	Accepted
2. Family member recommendation	-0,279	-0,109	-1,110	0,533	Accepted
3. Restaurant wine list	-1,070	-0,586	-2,270	0,141	Rejected
4. Friends and colleagues recommendation	0,313	-0,053	-0,403	1,022	Accepted
5. Sales person recommendation	-0,435	0,266	-1,146	0,264	Accepted
6. Information written on the back label	-0,465	-0,216	-1,440	0,502	Accepted
7. Information written on the front label	-0,300	0,169	-0,963	0,368	Accepted
8. Waiter recommendation	0,062	-0,038	-0,743	0,869	Accepted
9. Magazine and newspaper articles	-0,367	-0,257	-1,242	0,480	Accepted
10. Point-of-sale communication	0,846	0,054	0,134	1,560	Rejected
11. Food and wine television programmes	0,207	0,147	-0,471	0,882	Accepted
12. Information on the billboard	1,380	-0,100	0,537	2,240	Rejected
13. Information on the radio	0,816	-0,208	-0,073	1,670	Rejected

Between different knowledge groups differences were found for "restaurant wine list", with high knowledgeable group finding this more important than low knowledgeable group; and "information on the radio", "information on the billboard" and "point-of sale communication" with low knowledgeable group finding this more important than their opposites.

The best-worst analysis for both low and high involvement respondents (Table 20 and Figure 5) evidenced difference in the score given to the three highest and four lowest ranking wine information sources. Even both groups give high score for information source "tried wine previously", and low for "information on the radio" the score intensity is very different. Therefore, the group means difference is high, and the null hypothesis of equal means is rejected.

The same is concluded for the information sources "friends and colleagues recommendation", "point-of-sale communication", "magazines and newspaper articles" and "information on the billboard". High involvement consumers give more importance to "restaurant wine list" , "magazine and newspapers articles", while low involvement to "tried wine previously", "friends and colleagues recommendation", "point-of-sale communication" (Table 21).

Regarding the importance given to the information sources, one group from all analyzed was quite reserved in giving high positive or negative scores to the information sources under consideration. The high involved respondents were very reluctant in giving high scores. This result corresponds with previous findings that argue as the product level of involvement rise consumers start to utilize more information and are interested in learning more (Lockshin et al., 2006).

Table 20. Wine information sources mean scores, standard deviations and HDI for involvement segments, ranked by high involvement group

	Mean High Invol.	SD High Invol.	HDI High Invol. Lower	HDI High Invol. Upper	Mean Low Invol	SD Low Invol.	HDI Low Invol. Lower	HDI Low Invol. Upper
Family member recommendation	1,163	1,988	0,355	1,980	1,742	1,479	1,448	2,044
Tried wine previously	1,153	1,837	0,408	1,919	2,349	1,570	2,029	2,671
Friends and colleagues recommendation	0,726	1,330	0,085	1,371	1,326	1,574	1,058	1,595
Restaurant wine list	0,538	2,046	-0,273	1,341	0,097	1,958	-0,322	0,504
Information written on the back label	0,208	1,693	-0,486	0,894	-0,213	1,804	-0,580	0,149
Waiter recommendation	-0,005	1,657	-0,678	0,681	-0,242	1,563	-0,566	0,074
Magazine and newspaper articles	-0,137	1,604	-0,810	0,513	-0,785	1,510	-1,089	-0,480
Sales person recommendation	-0,165	1,649	-0,833	0,519	0,070	1,591	-0,256	0,392
Television progammes	-0,385	1,499	-1,014	0,222	-0,494	1,428	-0,782	-0,202
Point-of-sale communication	-0,456	1,369	-1,028	0,100	0,259	1,488	0,040	0,565
Information on the billboard	-0,550	1,840	-1,308	0,203	-1,386	1,621	-1,721	-1,055
Information written on the front label	-0,623	1,302	-1,158	-0,077	-0,453	1,456	-0,760	-0,160
Information on the radio	-1,268	1,699	-1,956	-0,549	-2,228	1,498	-2,544	-1,923

1. Family member recommendation
2. Tried wine previously
3. Friends and colleagues recommendation
4. Restaurant wine list
5.Information written on the back label
6. Waiter recommendation
7. Magazine and newspaper articles
8. Sales person recommendation
9. Food and wine television programmes
10. Point-of-sale communication
11. Information writen on the front label
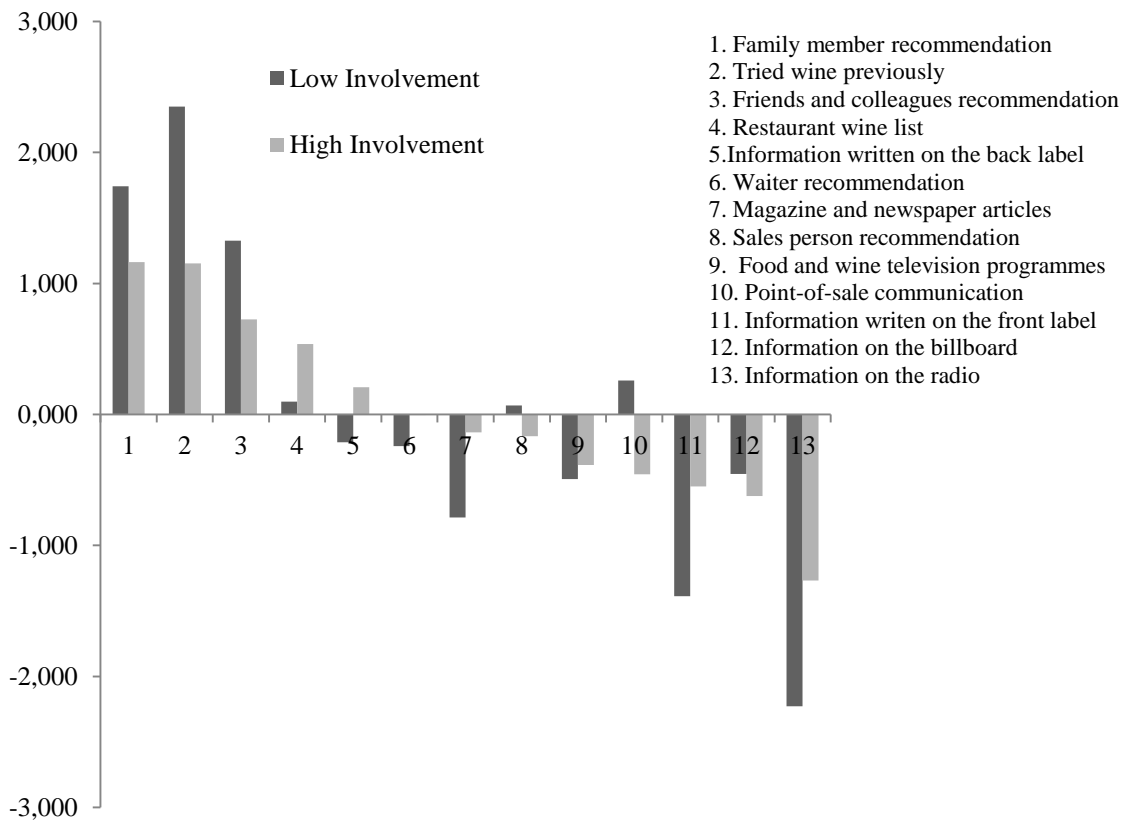12. Information on the billboard
13. Information on the radio

Figure 5. Best-worst scaling scores for involvement groups, ranked by high involvement group

Table 21. Differences in information sources parameter scores, and test of means difference, between involvement groups

	SD	HDI for Mean diff.	95% HDI

15

	Group Means Difference	Difference	Lower	Upper	$H_0: \mu_{low} = \mu_{high}$
Family member recommendation	0,596	-0,244	-0,300	1,440	Accepted
Tried wine previously	1,200	-0,267	0,383	2,000	Rejected
Friends and colleagues recommendation	0,596	-0,509	-0,108	1,290	Rejected
Restaurant wine list	-0,439	0,089	-1,341	0,453	Accepted
Information written on the back label	-0,423	0,111	-1,220	0,346	Accepted
Waiter recommendation	0,237	-0,093	-0,989	0,520	Accepted
Magazine and newspaper articles	-0,648	-0,094	-1,360	0,097	Rejected
Sales person recommendation	0,233	-0,058	-0,523	0,981	Accepted
Television progammes	-0,111	-0,072	-0,799	0,562	Accepted
Point-of-sale communication	0,713	0,119	0,063	1,349	Rejected
Information on the billboard	-0,836	-0,219	-1,660	-0,012	Rejected
Information written on the front label	0,173	0,155	-0,456	0,780	Accepted
Information on the radio	-0,961	-0,200	-1,729	-0,191	Rejected

4. Discussion and Conclusion

This research applied the best worst scaling method to investigate the degree of importance that young individuals give to 13 information sources related to choosing wine, and in particular the preference differences across gender, knowledge and involvement subgroups of the sample. The BWS method was employed on information sources which previous literature and wine marketing experts in Republic of Macedonia have pointed out as important for wine selection.

Specific differences exist in the wine consumption behaviour of males and females and between knowledge and involvement segments. Females purchase and drink wine less than males, are less involved in wine, and have lower level of wine knowledge compared to males. The level of knowledge and involvement of consumers younger than 30 years as it was expected is lower than the one of the consumers old between 30 and 35.

Findings regarding the selection of wine information sources in purchasing wine of young wine consumers were in line with previous research (Chaney, 2000; Chrysochou et al., 2012; Atkin and Thach, 2012; Bernabeu et al., 2012). A general analysis of BW scores shows that interviewees find "tried wine previously", "family member recommendation" and "friends and colleagues recommendation" more important than other information sources. Furthermore, the research found no attention towards the following information sources: "restaurant wine lists", "point-of-sale communication", "sales person recommendation", "waiter recommendation", and "information written on the back label" in order to stimulate wine purchases. For the least important information sources by young wine consumers were chosen "information on the radio", "information on the billboard", "magazines and newspapers articles", "information written on the front label" and "food and wine television programmes".

The second level analysis of best worst data for genders, knowledge and involvement subgroups of the sample showed that of the three segmentations, the one done by involvement presented a higher discriminant capacity. By analyzing involvement average best worst scores, we concluded difference in the preference of the following wine information sources: "tried wine previously", "friends and colleagues recommendation", "magazine and newspaper articles", "point-of-sale communication", and "information on the billboard". The other results showed that wine tried previously, friends, colleagues and family member recommendations were considered

statistically more important to females than to males. In addition, female respondents compared to males did not find magazine and newspapers articles and information written on the front label as very important sources of information in purchasing a wine. This information could be very important for markets when targeting different gender groups. The analyses of the knowledge segments show specific differences in the use of wine information sources "restaurant wine list" and "point-of-sale communication". The high knowledgeable consumers attached more importance to the restaurant wine lists, while low knowledgeable consumers to point-of-sale communication.

The findings of the present research provide useful implications for the wine industry in relation to marketing wine to young adult consumers. In light of these findings, it may be counterproductive for wine marketers to attempt to communicate with younger consumers using the information channels like radio, billboard and magazines and newspapers, as they are not viewed as important sources of wine information. Furthermore, more effort might be needed on the part of the domestic wine industry to educate young consumers for wine in general, since according to the percent of correct responses to objective knowledge test (36,50%), young consumers have presented a quite low level of knowledge. This is even more surprising as the study was performed in specialized wine stores and from the consumers was expected to know more about wine.

From methodological point of view, the study demonstrated the strong ability of the BW method to give clear and simple answers regarding the wine information sources that are most and least preferred by individuals in their selection of wine. It is clear that the method and approach have identified signals that might assist the Macedonian wine industry in preparing better marketing strategies towards young adult consumers.

5. Research Limitation

Though this investigation provides us with a good batch of information on the use of wine information sources for Macedonian young adult consumers, there is more work needing to be done. There are certain limitations that may impact the results of this study. One limitation is it was carried out in a two cities. Skopje and Bitola are very good representative of Macedonia, however, the wine purchasing behavior in other towns such as Kavadarci, Negotino, Veles, Strumica might be quite different because of consumers knowledge and involvement in wine and other social/economical factors. Therefore it is not possible without such research to generalize these results as "Macedonian". In addition, another limitation is the number of stores where the research was preformed. The research was conducted at four wine stores, three in Skopje and one in Bitola, and was limited to wine purchasers in these four wine stores. The research did not include all wine stores in Skopje and Bitola. In addition, a large portion of wine purchased by young adults is brought in retail stores (Hristov and Kuhar, 2014); consumers purchasing wine there may follow different criteria in their wine purchase decision making. Another possible limitation is the sample size. The final response rate is 72%. Time needed to complete the questionnaire can be seen as another limitation. For our survey the average time was 25 minutes. Best-worst scaling took 12 minutes on average. Furthermore, we carefully selected the information sources to put in the survey, according what the literature and experts suggested. However, it is not possible to state with certainly that these are the 13 most important information sources that influence wine choice behavior. Moreover, if one tries to include or remove one information source, BW scores change, as a result of the fact that the importance of each information source is evaluate in respect to the

others presented in the choice set. Conducting a research with best-worst scaling method as it was present has one more limitation. The method does not allow respondents to dismiss or to accept all of the proposed alternatives in a given choice set, or to choose more than one alternative for best or for worst. Recently, some modifications have been proposed in order to overcome this problem (Lagerkvist et al., 2012).

In this study, we have presented results which show the importance consumers give to wine information sources and the differences that exist between the different segments of one sample. Concerning the data obtained from BWS method, the future study could use different statistical procedures in analyzing BW scores (De Magistris et al., 2011; Auger et al., 2006; Mueller and Rungie, 2009; Al-Janabi et al., 2011; Casini et al, 2009; Flynn et al., 2008). In this context we should explore new segments using a latent class analysis or hierarchical cluster analysis methods.

References

Al-Janabi, H., Flynn, T.N., Coast, J., (2011). Estimation of a preference-based carer experience scale. Medical decision making. *An international journal of the Society for Medical Decision Making*, 31, 458-468.

Atkin, T. and Thach, L. (2012). Millennial wine consumers: Risk perception and information search. *Wine Economics and Policy,* 1: 54-62.

Auger, P., Devinney, T.M., Louviere, J.J. (2006). Using Best–Worst Scaling Methodology to Investigate Consumer Ethical Beliefs Across Countries. *Journal of Business Ethics,* 70, 299-326.

Barber, N. (2009). Wine consumers information search: Gender differences and implications for the hospitality industry. *Tourism and Hospitality Research,* 9: 250-269.

Bernabeu, R., Diaz, M., Olivas, R. and Olmeda, M. (2012). Consumer preferences for wine applying best-worst scaling: a Spanish case study. *British Food Journal* 114: 1228-1250.

Bruwer, J. and Johnson, R. (2010). Place-based marketing and regional branding strategy perspectives in the California wine industry. *Journal of Consumer Marketing*, 27(1): 5-16.

Casini, L., Corsi, A.M. and Goodman, S. (2009). Consumer preferences of wine in Italy applying best-worst scaling. *International Journal of Wine Business Research*, 21: 64-78.

Chaney, I. M. (2000). External search effort for wine. *International Journal of Wine Marketing*, 12(2): 5-21.

Chrysochou P., Krystallis A., Mocanu A. and Lewis R. L. (2012). Generation Y preferences for wine: An exploratory study of the US market applying the Best-Worst Scaling. *British Food Journal*, 114(4): 516-528.

Cohen, E. (2009). Applying Best-Worst Scaling to Wine Marketing. *International Journal of Wine Business Research,* 21(1): 8–23.

De Magistris, T.d., Groot, E., Gracia, A. and Albisu, L.M. (2011). Do Millennial generation's wine preferences of the "New World" differ from the "Old World"?: A pilot study. *International Journal of Wine Business Research,* 23: 145-160.

Dodd, T., Laverie, D., Wilcox, J., and Duhan, D. (2005). Differential effects of experience, subjective knowledge, and objective knowledge on sources of information used in consumer wine purchasing. *Journal of Hospitality & Tourism Research*, 29(1): 3- 19.

Finn, A. and Louviere, J. (1992). Determining the appropriate response to evidence of public concerns: the case of food safety. *Journal of Public Policy and Marketing*, 11(1): 12-25.

Frøst, M. B., and Noble, A. C. (2002). Preliminary study of the effect of knowledge and sensory expertise on liking for red wines. *American Journal of Enology and Viticulture*, 53(4): 275-284.

Goodman, S. (2009). An international comparison of retail consumer wine choice. International *Journal of Wine Business Research*, 21(1): 41-49.

Hristov, H. and Kuhar, A. (2014). Young urban adults' preference for wine attributes applying best-worst scaling: An exploratory study for republic of Macedonia, *Bulgarian Journal of Agricultural Science*, 20 (3): 554-564.

Kruschke, J. K., (2013). Bayesian estimation supersedes the t test. *Journal of Experimental Psychology: General*, 142(2): 573-603.

Lagerkvist, C. J., Okello, J., and Karanja, N., 2012. Anchored vs. relative best–worst scaling and latent class vs. hierarchical Bayesian analysis of best–worst choice data: Investigating the importance of food quality attributes in a developing country. *Food Quality and Preference*, *25*(1), 29-40.

Lockshin, L., Spawton, T., and Macintosh, G. (1997). Using product, brand and purchasing involvement for retail segmentation. *Journal of Retailing and Consumer Services*, 4(3): 171-183.

Lockshin, L. and Corsi, A. M. (2012). Consumer behaviour for wine 2.0: A review since 2003 and future directions. *Wine Economics and Policy,* 1(1): 2-23.

Lockshin, L. and Hall J. (2003). Consumer Purchasing Behaviour for Wine: What We Know and Where We are Going. International Wine Marketing Colloquium. Adelaide. Australia.

Lockshin, L., Jarvis, W., d'Hauteville, F., Perrouty, J. (2006). Using simulations from discrete choice experiments to measure consumer sensitivity to brand, region, price, and awards in wine choice. *Food Quality and Preference*, 17(3-4): 166-178.

Marley, A. and Louviere, J. (2005). Some probabilistic models of best, worst and best-worst choices. *Journal of Mathematical Psychology* 49(6): 464-80.

Mueller, S. Francis, I.L. and Lockshin, L. (2009). Comparison of best-worst and hedonic scaling for the measurement of consumer wine preferences. *Australian Journal of Grape and Wine Research* 15: 205-215.

Mueller, S. and Rungie, C. (2009). Is there more information in best-worst choice data?: Using the attitude heterogeneity structure to identify consumer segments. *International Journal of Wine Business Research* 21(1): 24-40.

Teagle J., Mueller S. and Lockshin L. (2010). How do millennials' wine attitudes and behaviour differ from other generations? Paper presented at the 5th International Conference of the Academy of Wine Business Research. Auckland. New Zealand.

Yu, Y., Sun, H., Goodman, S., Chen, S. and Ma, H. (2009). Chinese choices: a survey of wine consumers in Beijing. *International Journal of Wine Business Research* 21: 155-168.