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Consumer Willingness to Pay a Premium for the Health Benefits of Organic Wine

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Abstract

Concerns about human health are evidently considered in the food and wine market and information at the domain of consumers has led them to become conscious of organic product as an alternative to the conventional products. However the exact behaviours of consumers towards the health benefits of organic wine are not clear. The primary objective of the study is to determine which factors affect the consumers' decision to pay a premium for the health benefits of organic wine. An online survey of respondents was carried out across the states and territories of Australia. The results show that on average, respondents were willing to pay \$2.30 premium for the health benefit. The behavioural factors were tested using the ordered probit model and all of them except for two were significant to influence willingness to pay for the health benefit of organic wine. The social demographic variables presented a mixed outcome. These outcomes have implications for the wine industry and government health policy. This study was exploratory and had presented a snapshot scenario. Longitudinal study is recommended for future research.

Keywords: Consumer; Health; Organic; Premium; Wine; WTP.

Introduction

The growth potential of consumer demand for organic products and their limits have been identified in some studies e.g. (Bhaskaran et al. 2006; Munene 2006; Steenkamp, Van Heerde & Geyskens 2010; Wine Australia 2011). Interestingly in Australia, the growth in the organic industry is strongly influenced by rapidly growing overseas demand (Willer & Kilcher 2012) while the domestic market is also expanding (BFA 2012; DAFF 2004; Remaud & Sirieix 2010).

Organic wine is taking a leap in the market, and is primarily promoted to consumers for the health and environmental benefits (Organic Research Centre 2008). These attributes play a critical role in consumer preference and choice of most of the products (Crisp et al. 2006; Loureiro 2003; Organic Research Centre 2008). Some consumers also purchase organic wine for prestige and social image purposes (Havitz & Mannell 2005; Mann, Ferjani & Reissig 2012; Rodrigo, Miranda & Vergara 2011; Tsourgiannis, Karasavoglou & Nikolaidis 2013). Therefore the diverse reasons for the purchase and consumption of organic wine have implications for the consumers' willingness to pay (WTP) a premium for it.

Previous studies presented diverse results on Australian wine consumers' WTP a premium for the benefits of organic wine. For example, according to Remaud et al. (2008), Australian consumers do not especially value organic wine and are not willing to pay premiums for it. Time is important and enough for changes in consumer behaviour to manifest; this creates a gap as to whether Remaud et al. (2008) holds now. The study of consumers' WTP for organic wine is often done at the product level; this study intention is to evaluate how much premium consumers will pay for organic wine at attribute level. The objectives of this study therefore are (1) to determine consumer willingness to pay a premium for the health benefits of organic wine and; (2) to identify and analyse the determinants of consumer willingness to pay a premium for the health benefits of organic wine.

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Background

Generally, Australian consumers' interest in the consumption of organic products is increasing (Bezawada & Pauwels 2012) as they are receptive to the perceived health and environmental benefits that are linked to them (BFA 2012; Bhaskaran et al. 2006; Brugarolas et al. 2005; Gil, Gracia & Sanchez 2000; Magnusson et al. 2003). However, producers and consumers face challenges with price levels.

From the producer perspective, organic production has issues that include limited chemical use; full production takes longer to achieve; production levels seldom reach those of conventional vineyards; labour intensive; small economy of scale and high certification costs. Some organic systems have quite low input costs, but generally the flexibility to use a wide range of inputs is limited. The result is higher cost in terms of production losses from weed pressure and diseases (Brugarolas et al. 2005; Jonis et al. 2008; Wright & Grant 2011; Wynen 2002).

Under an organic system, a vineyard is slower to yield, and the grape yield is lower. Over time, growers can pick significantly fewer tonnes of product than their conventional competitors (de Ponti, Rijk & van Ittersum 2012; Jonis et al. 2008; Seufert, Ramankutty & Foley 2012; Wright & Grant 2011). Labour for the production of organic crops in a mono crop system such as viticulture is relatively high compared with conventional production practices. The benefit of low labour usage for the chemical weeding is lost. Though economies of scale are increasing, organic production is still small scale. Post-harvest handling, marketing, distribution and certification costs of relatively small volumes of organic products from small farm units usually translate into higher average costs for the producers (Jonis et al. 2008).

From the consumers' perspective, the desire for organic products is based on the perceived benefits for the environment and health of consumers. Consumers' awareness of these benefits is increasing; so also is their knowledge of some of the factors that affect human health (Bhaskaran et al. 2006). Some of the factors include the use of synthetic chemicals – fertilizers, herbicide and stimulants and other unsustainable production systems. These chemicals, some untested (Lantz 2008) are used in the production of food and drinks and can have adverse effects such as cancer and other chronic cardiovascular diseases on consumers and the community (Youl, Baade & Meng 2012). Aside from the direct effects of these chemicals on humans, their production, distribution, use and disposal result in the emission of greenhouse gases and the pollution of the ecosystem (Wine Australia 2011).

While consumers and the producers have shown interest in organics, there exist gaps in their common interest. Producers require premiums for their products based on the peculiarity of their production circumstances and the perceived benefits inherent in their products. Predicting how much consumers are willing to pay for the benefits of organic products is a challenge (Gribben & Gitsham 2007).

While consumers have generally positive attitudes towards organic products, the actual dollar amount spent is quite small (Oberholtzer, Dimitri & Greene 2005; Remaud et al. 2008). However, at the wine retail points, there are doubts whether consumers pay more per bottle of organic wines versus conventional ones that are directly comparable. It has been suggested that one reason organic wines are not commanding the desired price relative to conventional ones is that many wine consumers are not concerned about wine's organic status, since the quality

of a conventional wine is similar to good organic wine (Oberholtzer, Dimitri & Greene 2005; Wright & Grant 2011).

Theoretical Framework

This theoretical framework unveils willingness to pay for the health benefit of organic wine and the factors that influence it. Willingness to pay (WTP) is one method that is commonly used to determine the amount consumers would pay for products or the attributes of the products. This is very useful where the price of the products or their attributes is not known. Laroche et al. (2000) noted that WTP for perceived healthy products is growing as there is mounting and convincing evidence supporting consumer pro-organic product behaviour. The amount consumers are willing to pay for organic products depends on the type of product, the relative cost of a comparable conventional alternative and the absolute price of the product (Jolly 1991). Therefore the WTP consumers show toward the health benefit of organic wine is a function of their attitude and behaviour towards the benefit.

Behavioural variables that include knowledge of organic wine, consumer attitude, motivation, perceived risk and risk reduction strategy and, the social-demographic factors have been incorporated into this model as influencers of WTP. The attitude an individual displays towards a product is important in determining intentions to purchase the item or not and what amount is to be paid (Fishbein & Ajzen 1980). It is a structured way to respond in a consistently favourable or unfavourable manner regarding a given object or concept. This perspective of attitude reaffirms its central role in analysing and predicting consumer behaviour as it embeds the individual beliefs, whether positive or negative, about an object. Consumers' personal values and culture affect their attitudes toward organic products and the associated benefits (Bech-Larsen & Grunert 2003) and WTP a premium for them.

Drawing from Alba and Hutchinson (1987) and Langer (1983), product knowledge of consumers is affected by the type and quality of information available to them. When the level of knowledge is low or there are doubts about the knowledge or information, consumers can perceive risk in a buying situation and could hinder WTP. The product attributes need to be known and consumers' understanding of the health claims, as well as the regulatory bodies accountable for the claims is also important. These create a learning situation that consumers do contend with because according to Endres (2007), violations that involve deceptive behaviour in the organic market have negative effects upon consumer confidence in the benefits of organic produce. This makes consumers doubt the health and other claims made. Therefore, the effect of product knowledge and information on consumer affect WTP for the benefit of organic wine.

Consumers' motivation is the attribute that encourages action to be taken in any products acquisition (Broussard & Garrison 2004). It is the property that organises behaviour and defines its end state (Guay et al. 2010; McCarthy, et al.1994). Human behaviour therefore creates patterns and is best understood through inference that is guided by a purpose or goal. Motivation for product purchases are based on physiological and psychological needs and can influence demonstrated behaviours (Maslow 1954; Olsen, Thach & Hemphill 2012; Watchravesringkan, Hodges & Kim 2010). The nature or type of product affects attitude, motivation and the follow up activity. Motivating product involves extensive information search effort that helps consumers establish feelings regarding the object. These feelings will

then affect the individual's behaviour toward the product or its attributes and the WTP for it (Novack 2010).

Consumers' perception of risk affects WTP. Consumers are worried about taste and health claims, unsafe production practices and health care, which are key factors in organics consumption (Rodriguez & Toca 2006). Specifically, some wine consumers perceive claims laid to organic product may not be correct. Hollingsworth (2001) stated that consumers are slow to embrace organic food and wine as a result of health claims, many of which they perceive as having little visible or quantifiable effects. The presence of this cloud impacts on consumer decision: first whether to purchase and second how much should be paid.

Where perceived risk exists, risk reduction strategy must be put in place to allay that perception. Unawareness and mainly lack of adequate product information are some of the problems facing organic product consumers (Gil, Gracia & Sanchez 2000). Naspetti and Zanolli (2009) found that awareness about organic product has increased (and is still increasing), however product knowledge has not matched awareness level of occasional and even regular consumers. Little knowledge exists on how organic products are produced and processed, and which characteristics are fundamental for the consumer with regard to quality and safety. Convincing consumers to support organic production and the associated social and cultural adjustments must be an ongoing issue. Consumers can be initially attracted to the organic concept because of personal reasons, the challenge is in communicating and cultivating their primary interest about the remote benefits in the product (IFOAM 2003).

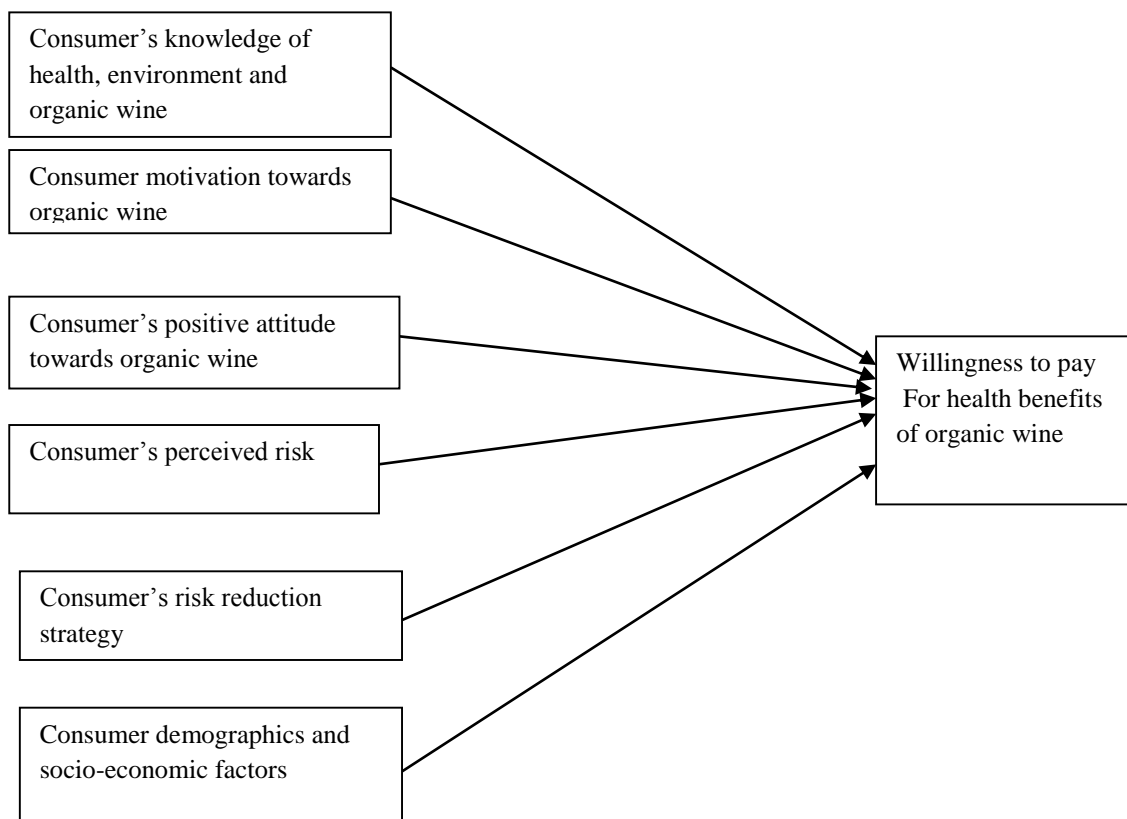


Figure 1 Conceptual framework showing factors influencing willingness to pay for the attributes of organic wine.

Consumers' demographics may also affect their behaviour toward organic wine benefits and ultimately their WTP for organic product attributes. The studies by Gil, Gracia and Sanchez (2000) and Lockie et al. (2006) show that some socio-economic factors including age, gender, education level, family size and income level are important in determining WTP for organic product, which consumers perceive as healthier than conventional alternatives. The consumers' family life cycle creates a string of changes that occur over time in the life of the individual family members (Loudon & Della 1993; Schiffman & Kanuk 2006). Depending on the stage of the cycle consumers occupy, the composition of the household may be a causal factor that influences the consumers' WTP for organic wine benefit (Chrysohoidis & Krystallis 2005; Tsakiridou, Mattas & Tzimitra-Kalogianni 2006).

Hypotheses

It has been suggested that consumers assess the outcome of purchase actions before making the actual purchases (Fishbein & Ajzen 1980). This assessment can be consequent upon the value to be derived from the purchase, the amount of knowledge available to the consumers to make decisions and the level of uncertainty entertained. Knowledge can be gained formally or informally but one benefit it provides is the ability to infuse the consumers with confidence about making the right choice in buying and consuming situations (Alba & Hutchinson 1987). In view of these assumptions about consumer's knowledge of organic wine, it is hypothesised that:

H1: the greater the consumer's knowledge of organic wine, the greater the WTP a premium for the health benefit of organic wines.

A consumer's hedonistic lifestyle is positively linked to the belief that wine leads to a more enjoyable life, but this does not lead to organic wine purchases (Olsen, Thach & Hemphill 2012). The need or motive of socialisation with organic wine by consumers is subsumed by the health motives, because wine consumers concern is taste first and foremost, before making a sacrifice for functional needs. Consumers can be willing to make self-sacrifice in organic food and wine purchases because they believe self-sacrifice is necessary for protecting their health (Olsen, Thach & Hemphill 2012). Based on these postulations about consumer's motivation towards organic wine, the study therefore hypothesises that:

H2: The greater the consumer's motivation to purchase organic wine, the greater the willingness to pay for the health benefit of organic wine.

There are consumers with 'green self-perception' who have a positive relationship with the intensity of organic food consumption (Squires, Juric & Cornwell 2001). However, study by Oberholtzer, Dimitri and Greene (2005) found that certain attitudes and beliefs can influence the likelihood of being an organic consumer. Also noted by Sirieix, Persillet and Alessandrin (2006) Gil, Gracia and Sanchez (2000) is that most consumers have a positive attitude towards organic products and perceive them as healthier, of a higher quality and being tastier than conventional alternatives. On this assumption about consumer's attitude, it is hypothesised that:

H3: The greater the consumer's positive attitude towards organic wine purchase, the greater the willingness to pay for the health benefit of organic wine.

Some products appear similar yet vary markedly in price, actual quality and ethical issues about their production processes. These create some elements of perceived risk (such as the social risk of being disclosed as a person that does not have wine knowledge, the financial risk of not getting value for money or the health risk of organic grapes having contact with some chemicals) in the mind of consumers. It has been studied that risk influences or transforms individuals, organisations, and cultures in terms of serving and meeting consumer's wants and needs (Castaños & Lomnitz 2009; Turner et al. 1990). For example consumers intending to purchase products that they are not familiar with or have not purchased previously have many questions that beg for answers. All the many questions can constitute uncertainty to consumers and must be answered before the decision to buy or not to buy is made. From these assumptions about consumers' perceived risk, it is hypothesised that:

H4: The greater the consumer's perceived risk in organic wine purchase, the lesser the willingness to pay for the health benefit of organic wine.

The studies by Celsi and Olson (1988); Espejel, Fandos and Flavian (2009) have proposed the use of product intrinsic and extrinsic signals as being relevant in the alleviation of perceived risk. The choice of intrinsic risk reduction strategy, however, is assumed to be dependent on the level of knowledge the consumer has about the product. Hershey and Walsh (2001) found that the more knowledgeable the consumer is about the whole acquisition processes, the more decisive and confident the consumer is, and less the perceived risk. Consumers, particularly those inexperienced in wine acquisition, may not have the knowledge about the intrinsic attributes of wine. Instead they use knowledge of peripheral cues. From these assumptions about intrinsic and extrinsic risk reduction strategy, it is hypothesised that:

H5: The greater the consumer's risk reduction strategy in organic wine purchase, the greater the willingness to pay for the health benefit of organic wine.

There is much research about the influence of socio-demographics on consumer's WTP for organic products. Some studies are in support while others are against this variable as an influencer of WTP. For example, higher income has a positive relationship with the individual's tendency to buy organic products (Tsakiridou, Mattas & Tzimitra-Kalogianni 2006). While Crescimanno, Ficani and Guccion (2002) found that organic consumers constitute medium to high income group in Italy, Adamsen, Lyons and Winzar (2007) in their studies noted that income does not really affect a person's willingness to buy organic product. Information relating to consumers' socio-demographics as a determinant of WTP is not consistent and this could be the effect of cross cultural and cross national differences. Relying on these assumptions on the social demographic characteristics of the consumers, it is hypothesised that:

H6: The social demographic characteristics of consumers will positively influence their WTP for the health benefit of organic wine.

Data collection method

The respondents were prequalified by age and purchase/consumption habit. They were surveyed online from wine consumer list, using stratified random sampling method. A total of 2099 complete survey was obtained Australia wide. To determine the willingness to pay (WTP)

for the health benefits of organic wine, the contingent valuation method (CVM) was chosen as it is very flexible and can be used to estimate the economic value of goods and service. Cheap talk was used to make the method more incentive compatible. Cheap talk is a script that was a part of the questionnaire, presented to the respondents. It explained the importance of responding to the survey questions honestly as if the respondents were making actual purchase in the store and also explained the problems associated with hypothetical bias to the respondents (Lusk 2003; Ready, Navrud & Dubourg 2001). Payment card method was used to determine the WTP following Rowe, Schultze and Breffle (1996) protocol.

The CVM questions were framed following Ready, Navrud and Dubourg (2001) recommendation. Sampled organic wine with health attributes was defined for the respondents first including the price of an equivalent conventional wine, and the questions and response options followed:

- Would you be willing to pay for the health benefits of organic wine? (Yes or No);
- If yes, what is your maximum WTP? (Payment cards with four classes of price - \$4.00, \$3.00, \$2.00 and \$1.00 premiums were presented to the consumer to choose from);
- How sure are you about your payment decision? (A response scale from less than 95%, 95% or 100% certain was provided);
- If you are less than 95% sure, please indicate the most you would be willing to pay at 95% or more certainty level.

The respondents were exposed to these questions and other social demographic questions one at a time such that the response to each question was not influenced by prior knowledge of subsequent questions. The data collected were analysed in Stata 12 statistical software. Research ethics were followed. The research process, materials and the respondents were protected in the study. The principle of voluntary participation was applied such that participants were not coerced or manipulated to participate in the study. In this regard, there was the requirement of informed consent to be given before information was elicited from respondents.

Result and Discussion

Sample Description

In the study, descriptive statistics was used to reveal the characteristics of the respondents. The gender, age, education and income statistics were consistent in pattern with the outcome of some Australian and other countries studies on conventional wine. Geographically, the surveyed consumers spread across 807 postcode areas of Australia and yielded an approximate average of 3 respondents per postcode. The New South Wales wine consumers represented 31.1% of the sample followed by Victoria – 26.9% and Queensland – 19.3%. Northern Territory represented 0.6% of the sampled wine consumers (see Table 1). The result also shown that the sample was skewed towards male respondents – 61.6%. The categories of respondents without university qualifications constituted 58.2% of the sample. This is an indication of a shift in the wine consumer demography. This study is not exactly sure of the reason for this outcome; it is not uncommon that the boom in the mining industry that utilises large number of artisan staff could be driving this change. The sample statistics indicates more than 68% of

the respondents were on an annual income of over \$50,000.00. This demonstrates that, barring other hindrances, income is unlikely to be a major limitation to respondents' willingness to pay for the health benefit of organic wine.

Table 1. Demographic Profile of Sample (n=2099)

Characteristics		# of Respondents	% Respondents
Gender	Male	1292	61.6
	Female	807	38.5
Age Group	18 - 24 years	45	2.1
	25 - 28 years	91	4.3
	29 - 34 years	221	10.5
	35 - 40 years	262	12.5
	41 - 45 years	206	9.8
	46 - 54 years	408	19.4
	55 - 65 years	539	25.7
	65 + years	327	15.6
Highest Education obtained	School Leaver's certificate.	306	14.6
	Higher school certificate	255	12.2
	TAFE certificate/diploma	660	31.4
	Bachelor's degree	418	19.9
	Graduate/Postgraduate diploma	237	11.3
	Master's degree	158	7.5
	Doctorate degree	28	1.3
Others	37	1.8	
Marital Status	Single	305	14.5
	Married or cohabiting	1462	69.7
	Separated	69	3.3
	Divorced	194	9.2
	Widowed	69	3.3
Occupation	Engineering and design	90	4.3
	Clerical and administrative	352	16.8
	Education	207	9.9
	Management and professional	566	27.0
	Sales and service	310	14.8
	Warehouse and distribution	64	3.1
	Others	510	24.3
Income	\$25,000	221	10.5
	\$25,001 - \$50,000	448	21.3
	\$50,001 - \$75,000	421	20.1
	\$75,001 - \$100,000	444	21.2
	\$100,001 - \$150,000	381	18.2
	\$150,001 - \$200,000	117	5.6
	\$200,000 plus	67	3.2
Race	Caucasian (white)	1794	85.5
	Indigenous Australian	48	2.3
	American	27	1.3
	African	10	0.5
	Asian	192	9.2
	Others	28	1.3
Household type	No dependants	448	21.3
	0-24 Months children	169	8.1
	Children 3-17 years	565	26.9
	Adult 18 years or older	917	43.7
State	New South Wales	652	31.1
	Victoria	565	26.9
	Queensland	405	19.3
	Western Australia	215	10.2
	South Australia	171	8.2
	Tasmania	54	2.6
	Australia Capital Territory	25	1.2
	Northern Territory	12	0.6

Ranking of Health Benefits by Respondents

Seven items – convenience, health benefit of wine, price of wine, taste, safety, environmental benefit and brand name were ranked to ascertain their influence on purchase decision making. Table 2 shows exclusively the ranking of the health benefits of organic wine as a factor that influences wine purchase decision. The respondents that considered health benefit as most important in their decision to purchase wine represented 4.8% and least important represented 6.2% of the sample. Respondents see organic wine from a different perspective compared to other organic products. Organic foods are consumed mainly for the functional benefits. Organic wine consumers are pleasure seekers and it is the pleasure that forms the core value central to wine consumers' cognition and thus influences their behaviour (Cohen & Chakravarti 1990).

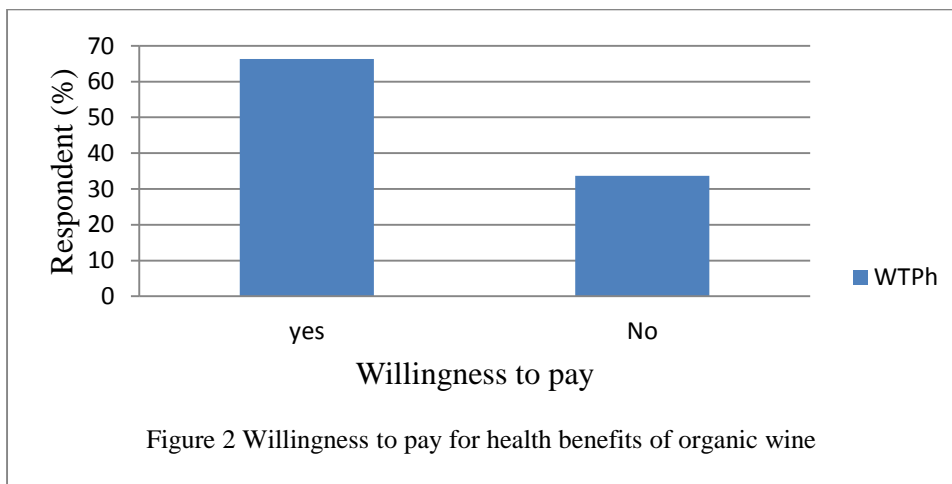
Table 2 Respondents' ranking of the importance of health benefit of organic wine in their purchase decision

Rank - Health	# of Respondent	Percentage
Most important 1	101	4.8
2	194	9.3
3	281	13.4
4	432	27.3
5	662	31.6
6	299	14.3
Least important 7	129	6.2
Total	2099	100

However, 54.8% of respondents indicated that health benefit ranked in their top four consideration factors when making their wine purchase decision. It means that wine consumer consider the health implication when they buy wine generally which may or may not translate into buying organic wine or paying premium for it.

Willingness to Pay for the Health Benefits of Organic Wine

Respondents were asked to indicate their WTP for the health attribute of organic wine. Respondents that provided a “yes” response showed willingness to pay a premium for the health benefit of organic wine while those that provided a “no” response were not willing to pay premium or willing to pay \$0.00 for the attribute, see Figure 2.



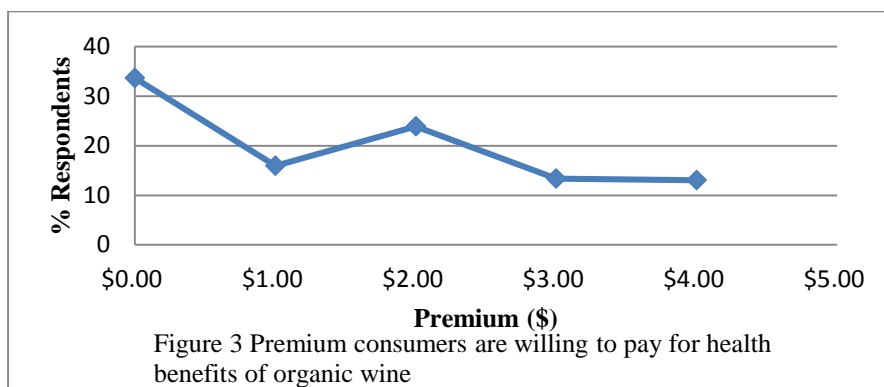
The result shows that approximately 66% of the respondents expressed WTP for health benefits while 34% of the sample stated unwillingness to pay a premium. The percentage of respondents willing to pay a premium for the health benefit almost doubled those unwilling to pay; an indication of consumer desire to maintain their health even at extra cost.

Result of Premium Respondents are willing to Pay

Respondents that indicate WTP \$1.00 premium for health benefit constituted 16% of the sample while 23.9% of the respondents who expressed WTP at least a \$2.00 (20.1%) premium.

Respondents that indicated WTP a premium of \$3.00 (30.2%) for the health benefit of organic wine constituted 13.4% of the sample. More than 13% of respondents expressed willingness to pay a \$4.00 (40.2%) premium for wine with health benefits.

On average, respondents indicated WTP a premium of \$2.30 (approximately 23% premium) for health benefit of organic wine.



Premium options low in respondent count were not presented in Figure 3 but were included in deriving the average WTP. The average premium respondents were willing to pay was approximately 23%, close to 20.9% reported by Brugarolas et al. (2005) and the 22.0% organic wine premium reported by Remaud, et al. (2008). The premium currently attracted by organic wines in the same price range as the study wine samples in some of the retail stores where prices were compared is \$1-\$3 (10-30%).

Factor Analysis of Variables used in the Ordered Probit Regression

Table 3 shows the summary of the result of the factor analysis and detail result is in Appendix 1

Table 3 Factor analysis and reliability test

Latent variable	Items	Cronbach Alpha
Motivation for the purchase of organic wine	3 items	0.91
Consumers' attitude toward the health benefits of organic wine	4 items	0.78
Knowledge of organic wine	4 items	0.84
Perceived risk – likelihood	5 items	0.88
Perceived risk – seriousness	3 items	0.76
Risk reduction strategy - Intrinsic Product related	4 items	0.81
Risk reduction strategy - Extrinsic Product related	4 items	0.90
Risk reduction strategy – Store related	5 items	0.87

The numbers of items that displayed uni-dimensionality and extracted variance of 0.5 and above are here presented

The Appendix 1 shows the factor loading from the factor analysis of the five latent variables - knowledge of organic wine, motivation for the purchase of organic wine, consumers' attitude, perceived risk and risk reduction strategy. The factor loading for each of the observed variables

reported is above 0.5. Also, multicollinearity was considered in the choice of the items to retain (Hair et al. 2010; Tabachnick & Fidell 2007). All observed variables that had multicollinearity were deleted from analysis. The values of Kaiser-Meyer-Olkin measure of sampling adequacy (KMO-MSA) were within the accepted threshold (equal to and above 0.5). Cronbach's alpha values for knowledge of organic wine, motivation for the purchase of organic wine, consumers' attitude, perceived risk and risk reduction strategy were equal to or above 0.7, indicating the variables are on the recommended threshold (Hair et al. 2010)

Ordered Probit Regression

Result

Table 4 shows the results of the ordered probit analysis of consumers' WTP a premium for the health benefit of organic wine. The model significance was verified by calculating the Chi-squared statistics resulting from the likelihood functions. A likelihood ratio criterion was used to test the null hypothesis where the coefficient estimated was zero. The Chi-square was 470.17 and a p value 0.001. The result indicated the model for WTP is statistically significant at 1% or above. This implies that the relationship that exist between the explanatory variables and the outcome variable is not a chance effect. A z-test was used to test the null hypothesis such that the associated coefficient is zero.

To establish the effect of one independent variable on the WTP a premium for the health benefit of organic wine, other independent variables were held constant. In the model, the coefficients associated with consumers' attitude (ATTITUDE, $\beta = .059$), perceived risk (PACIV_RK, $\beta = -.020$) and risk reduction strategy (RRS_A, $\beta = .020$) were significant at the 1% level of confidence. The coefficient of consumer knowledge of organic wine (KNOWOW, $\beta = .022$) was also significant at the 5% level of confidence while motivation for the purchase of organic wine was not significant in determining WTP the premium. The outcomes of the ordered probit regression was summarised as indicated in Table 5.

For consumer's knowledge, the result was significant at 5% level to impact on the WTP a premium for the health benefit positively. When consumers are provided with, or have access to reliable information about the health benefit of organic wine, awareness and subsequently knowledge is gained to form a positive perception and finally stimulate WTP. Organic wine knowledge particularly at attribute level instils confidence in consumers during purchase decision process. They are better able to assess the product and put a value on it (Alba & Hutchinson 1987; Dodd et al. 2005).

The study found that consumer's motivation was not significant statistically to determine WTP a premium for the health benefit of organic wine. Possible rationale for the outcome is that consumers may have conflicting insight about organic wine, particularly the taste measure, the certification and authenticity of the associated claims. This study corroborated Penn's (2010) that organic wine consumers are cautious or weary of benefit claims.

Table 4 Results of Ordered Probit Analysis of Consumers' WTP for Health Benefits

Variable	Variable name	Coefficient	Standard Error	Z	P>z
Gender1	Female	-0.144**	0.055	-2.61	0.009
Age1	25 - 28 years	-0.384*	0.201	-1.91	0.056
	29 - 34 years	-0.415**	0.183	-2.26	0.024
	35 - 40 years	-0.464 **	0.182	-2.55	0.011
	41 - 45 years	-0.450**	0.187	-2.41	0.016
	46 - 54 years	-0.210	0.180	-1.17	0.243
	55 - 65 years	-0.251	0.181	-1.38	0.166
	65 + years	-0.268	0.195	-1.37	0.170
Education1	Higher school certificate	-0.067	0.095	-0.71	0.478
	TAFE certificate/diploma	-0.072	0.079	-0.91	0.363
	Bachelor's degree	-0.111	0.091	-1.21	0.227
	Graduate/Postgraduate diploma	-0.032	0.101	-0.72	0.469
	Master's degree	0.159	0.120	1.33	0.184
	Doctorate degree	-0.210	0.233	-0.90	0.368
	Others	-0.169	0.194	-0.87	0.382
Marital Status1	Married or cohabiting	-0.037	0.079	-0.46	0.643
	Separated	0.020	0.153	0.13	0.895
	Divorced	-0.112	0.110	-1.02	0.309
	Widowed	0.178	0.154	1.15	0.249
Gross annual Income1	\$25,001 - \$50,000	0.065	0.093	0.70	0.485
	\$50,001 - \$75,000	0.133	0.097	1.37	0.169
	\$75,001 - \$100,000	0.158	0.101	1.56	0.119
	\$100,001 - \$150,000	0.191*	0.106	1.80	0.072
	\$150,001 - \$200,000	0.173	0.137	1.27	0.205
	\$200,000 plus	-0.036	0.171	-0.21	0.834
Race1	Indigenous Australian	0.122	0.162	0.76	0.449
	American	-0.126	0.221	-0.57	0.568
	African	-0.944**	0.391	-2.41	0.016
	Asian	0.026	0.091	0.29	0.775
	Others	-0.117	0.210	-0.55	0.579
Occupation1	Clerical and administrative Education	0.058	0.139	0.42	0.673
	Management and professional	0.012	0.145	0.09	0.932
	Sales and service	0.015	0.130	0.11	0.910
	Warehouse and distribution	0.132	0.139	0.94	0.346
	Others	0.161	0.184	0.88	0.381
		-0.038	0.140	-0.27	0.788
Household type	CHILD2	0.170*	0.095	1.78	0.075
	CHILD17	0.155 **	0.062	2.48	0.013
	CHILD18	0.011	0.050	0.22	0.826
Knowledge of organic wine	KNOWOW	0.022 **	0.009	2.50	0.013
Motivation for the purchase of organic wine	MOTIV	0.010	0.010	0.96	0.335
Consumers' attitude	ATTITUDE	0.059***	0.010	6.18	0.001
Perceived risk	PACIV_RK	-0.020***	0.003	-5.72	0.001
Risk reduction strategy	RRS_A	0.020 ***	0.003	7.030	0.001
Ordered Probit Thresholds		Coefficient (β)	Standard Error (SE)		(β/SE)
	μ 1	1.556 ***	0.296		5.257
	μ 2	2.034 ***	0.297		6.849
	μ 3	2.755***	0.299		9.214
	μ 4	3.303***	0.299		11.047

X2 Log-L -2990.13; Chi-square = 470.17, p-v. 0.001 (n = 2099)

***, **, * Indicates estimated coefficient is significant at the .01 level, 0.05 level, 0.10 level

Gender1, Age1, Education1; exclude male gender, 18-24 age group category and leaving school certificate category of the highest education obtained. Marital status1, Gross annual income1 and Race1 excludes single marital status, gross annual income \$25,000.00, and race Caucasian.

Table 5 Summary of Outcome of the Hypotheses

Hypotheses #	Description of factors	Statistical implication	level/direction
1	The greater the consumer's knowledge of organic wine, the greater the WTP a premium for the health benefit of organic wines	Significant (accepted)	***+
2	The greater the consumer's motivation to purchase organic wine, the greater the willingness to pay for the health benefit of organic wine	Not significant (rejected)	
3	The greater the consumer's positive attitude towards organic wine purchase, the greater the willingness to pay for the health benefit of organic wine	Significant (accepted)	***+
4	The greater the consumer's perceived risk in organic wine purchase, the lesser the willingness to pay for the health benefit of organic wine	Significant (accepted)	***-
5	The greater the consumer's risk reduction strategy in organic wine purchase, the greater the willingness to pay for the health benefit of organic wine	Significant (accepted)	***+
6	The demographic characteristics of consumer may determine his or her willingness to pay a premium for the health benefit of organic wines	mixed outcome	

'- and +' defined the direction of the relationship. ***, **, * indicates estimated coefficient is significant at the .01 level, 0.05 level, 0.10 level. The demographic outcome is a mix of positive and negative significant on one hand and not significant on the other.

Furthermore, consumer's attitude was significant at 1% level. Consumers form attitude towards organic wine health attribute by combining multiple forces of product knowledge, health and lifestyle value or other values that complement healthy lifestyle to which consumers want to conform. When these forces are positive, they generate beliefs and positive attitude towards products that meet the need thus generating willingness to pay premium for that benefit. This study supports the findings of Barber, Taylor & Strick (2009) and Tsakiridou, Mattas and Tzimitra-Kalogianni (2006).

The study result also shows that consumer's perceived risk with organic wine was significant at 1% level to impact on the WTP a premium for the health benefit of organic wine negatively i.e. *ceteris paribus*, one unit increase in the consumer's perceived risk with organic wine will decrease WTP by 0.020. This highlights the value of product knowledge and its availability. Consumers weigh their perception of risk and the associated potential losses and adverse conditions on different dimensions, including financial, performance, psychological, and social. When risk perception is high, consumer are unlikely to pay premium for health benefits of organic wine.

Consumer's risk reduction strategy was found to determine WTP for the health benefit of organic wine with a significant positive relationship. This finding is in agreement with some previous studies on risk reduction strategy in general (e.g, Schiffman & Kanuk 2006) and particularly for WTP for organic product (Olsen, Thach & Hemphill 2012; Rodríguez, Lacaze & Lupín 2007). For consumers to pay a premium for the health benefit of organic wine, they must have confidence in the product benefits and when they are provided with the appropriate risk reduction strategy, it mitigates the perceived risk and stimulates willingness to pay a premium.

The effects of gender, age, education, marital status, annual income, race, occupation and household type on WTP were tested. This study found females were not willing to pay premium for the health benefits of organic wine as the variable is significant negatively for the attribute at 5% level of confidence. Squires, Juric and Cornwell (2001) and Gotschi, Vogel and Lindenthal (2007) noted that females are more concerned with health and the environment, therefore, they are more inclined to purchase organic products over men. However this concern has not been tied to organic wine purchase probably because of lack of conviction about the attribute or due to perception of it as low quality wine (Mann, Ferjani & Reissig 2012).

Age was found to be significant amongst age groups 25-28 years, 29-34 years, 35-40 years and 41-45 years. Young adults in prime employment age and less family commitments are interested in preventive health practices probably as part of wine related lifestyle and have WTP for healthy product. On the other hand, senior citizens mainly retirees are on fixed or limited income; may not be able to make the sacrifice of paying premium for the health benefit of organic wine. Though findings using age as a determinant of WTP for organic products are not always consistent, this finding is similar to that of Magnusson et al. (2001) that health concern increases at all age groups except those aged 55 and above.

Educational qualification was generally not significant in determining WTP; but significant in determining WTP for consumers with Technical and Further Education (TAFE) certificates and diplomas. Although TAFE qualification can be considered as tertiary education, previous studies have found that post-graduate and graduates are more likely to buy organic products than people who have not attained a university education (Denver, Christensen & Krarup 2007; Krystallis, Fotopoulos & Zotos 2006).

This study also found marital status of the respondents was not statistically significant to determine the WTP a premium for the health benefit of organic wine. Marital status plays an influential role in household income spending and the decisions that are made. WTP a premium for health benefit of organic wine may be influenced positively if individuals are health conscious. Similarly, income as a determinant of WTP was statistically not significant. However consumers are able to use organic products when they have the financial resources to afford them and this impact on the attitude towards healthy products and WTP for them (Fishbein & Ajzen 1980).

In terms of respondents' occupation, this study found that it was not statistically significant in determining the WTP a premium for the health benefit of organic wine. However for race as a determinant of WTP, the result was mixed. Generally race can be said to be not significant in determining WTP, Africans had a negative coefficient of -0.944 and is significant at 5% level of confidence in WTP the premium. The fact that Africans are not willing to pay premium for the organic wine stems more from wine perception and is linked culturally. Africans are primarily beer and local whisky consumers and that drink culture has stocked with them, relegating wine. A study by Munene (2006) supported race as a determinant of WTP positively.

Finally, household types with dependants 0-24 months old, and 3-17 years old were significant at 10% and 1% levels respectively. Studies indicating household with children buy organic products (Chryssohoidis & Krystallis 2005; Tsakiridou, Mattas & Tzimitra-Kalogianni 2006). While this study is unsure about the motivation for households with dependants 0-24 months old to pay premium for the health benefit of organic wine, the study found that there is link with drinking organic wine; probably to ensure that pesticide residue that may be contained in conventional drinks consumed by mothers are not passed to the children during their development. This outcome requires further investigation.

Households with dependants 18 years and over that have positive attitude towards health can indoctrinate the young adults that organic products and by extension organic wines are worth the sacrifice made by the increased payment relative to the conventional wine. For households with dependants 3-17 years old, it is expected to be a better time to introduce

organic knowledge to the household to prepare the dependant for adulthood. This proposition has not influenced respondents in this group's WTP premium for health benefit of organic wine for.

Conclusion and Implications

In detail, the study objectives evaluated the factors that affect consumers' willingness to pay for the health benefit of organic wine. Achieving these objectives involved the application of a positivist approach methodology in which a survey questionnaire was used to obtain quantitative data. The descriptive statistics and other results have been presented and discussed. Positive attitude towards organic wine attributes and effective risk reduction strategy that accumulate into consumer knowledge of organic wine positively influenced greater WTP by the respondents.

The results obtained from this study provide valuable information about the consumers, consumer behaviour and the organic wine market. The findings of this study have several practical implications for managers and governments. The results indicated that the knowledge of health and organic, the consumers' attitude, motive, perceived risk and risk reduction strategy will affect WTP a premium for organic wine in particular, and any other organic products being evaluated. Apart from these variables determining WTP, it is also implied to influence decision on how much premium the consumers are willing to pay for the health benefits of organic wine.

One may be tempted to think the market growth is a given, however the ranking of consumers' decision factor when purchasing wine averagely supports the health attribute because of lack of or limited organic product knowledge on the part of most survey participants. Consumers' under-awareness and lack of knowledge obscure their need to be assisted through the creation of knowledge stimulating environments. This implies that sensitisation and enlightenment programs that are geared toward perceiving this need must be embarked upon to effectively help consumers move toward more organic wine consumption. A wide range of methods to communicate information about 'organic' can cut across the print and electronic media and word of mouth can be directed to consumers emphasising the role and benefits of the organic concept.

Trust is a very important component of market such that when it is in decline or absent, risk perception increases. There is global diversity in certification of organic products. This has created a proliferation of organic products with different certification criteria. For instance, how does one convince a consumer that two different wines in the organic section of a store are actually organic when the label information is different? This problem is magnified by the hundreds or thousands of different brands claiming organic status on the shelf.

The implication here is that there is a compelling and immediate need to harmonise and standardise the certification process and regulations around organic product. This is important as the diversity in the process and regulation is a source of perceived risk to consumers. Governments, through their surrogate corporations and agencies, should negotiate and formulate general cross-cultural policy for organic production. As difficult as this could be, a regional or trading bloc framework approach or inclusion of common organic regulations in trade agreements among trading partners may serve to aggregately harmonise the certification

process, reduce perception of risk and increase the WTP for the health benefit of the organic products.

Limitations of the Study

Inevitably, there are limitations in any research. The fact that the study is not a longitudinal survey is a limitation, as attitudinal variables cannot be fully understood in a snapshot. Also, that the research is exploratory presents a short coming in itself as similar research is required to confirm the results of the study. One of the screening criteria of “must have consumed/purchase at least a bottle of wine every month in the last six month” may have discriminated against the new wine converts and thus reduced the variability in the data.

In the case of data analysis, the stringent requirement in using ordered probit regression model for the statistical analysis required that for managerial implications, scale items should have extracted variance of 0.5. Also, to produce a summated scale, all items must exhibit uni-dimensionality and any items that did not meet these requirements were eliminated, despite having been supported conceptually. However, confidence exist that these limitations did not affect the quality of this study and its recommendations.

Future Research Direction

The cross-sectional approach presents a snapshot of the factors that influence consumers’ WTP for the health benefits. The attitudinal characteristics used for the study cannot be fully understood of consumers in a snapshot. Therefore, a longitudinal study is recommended to give a clearer picture of how these factors and changes in socio-demographics might influence consumers’ WTP over time.

This study was conducted in Australia. A transnational research, for example of the Asian Pacific Rim or Australia trading partners, is recommended. This will enable a comparison of any cultural differences that can influence the behaviour variables that affect WTP, and also identify the best possible way to create an effective regional framework for organic produce marketing.

WTP a premium by consumers may not translate into profitability which is the reason why business operates. It is important to evaluate at what WTP point are organic wine businesses likely to make profit.

References

- Adamsen, J.M., Lyons, K., & Winzar, H. (2007). An agenda to construct an improved understanding of Australian organic consumers. Proceedings from ANZMAC Conference: 3Rs - Reputation, Responsibility & Relevance Dunedin, New-Zealand.
- Alba, J.W., & Hutchinson, J.W. (1987). Dimensions of Consumer Expertise. *Journal of Consumer Research*, 13, 411-454.
- Barber, N., Taylor, C., & Strick, S. (2009). Wine consumers’ environmental knowledge and attitudes: Influence on willingness to purchase. *International Journal of Wine Research*, 1 59-72.

- Bech-Larsen, T., & Grunert, K.G. (2003). The perceived healthiness of functional foods: a conjoint study of Danish, Finnish and American consumers' perception of functional foods. *Appetite*, 40, 9-14.
- Bezawada, R., & Pauwels, K. (2012). What is special about marketing organic products? How organic assortment, price and promotions drive retailer performance. *Journal of Marketing*, pp. 1-50.
- BFA, (2012). Australian Organic Market Report. Retrieved from <http://www.bfa.com.au/Portals/0/Organic%20market%20report%202012-web.pdf>.
- Bhaskaran, S., Polonsky, M., Cary, J., & Fernandez, S. (2006). Environmentally sustainable food production and marketing. *British Food Journal*, 108, 677-690.
- Broussard, S.C., & Garrison, M.E.B. (2004). The relationship between classroom motivation and academic achievement in elementary school-aged children. *Family and Consumer Sciences Research Journal*, 33, 106-120.
- Brugarolas, M., Martinez-Carrasco, L., Martinez, P.A., & Rico, M. (2005). Determination of the surplus that consumers are willing to pay for an organic wine. *Spanish Journal of Agricultural Research*, 3, 43-51.
- Castaños, H., & Lomnitz, C. (2009). Ortwin Renn, Risk Governance: Coping with Uncertainty in a Complex World. *Natural Hazards*, 48, 313-314.
- Celsi, R.L. & Olson, J.C. (1988). The role of involvement in attention and comprehension processes. *Journal of Consumer Research*, 15, 210-224.
- Chryssohoidis, G., & Krystallis, A. (2005). Organic consumers' personal values research: Testing and validating the list of values (LOV) scale and implementing a value-based segmentation task. *Food Quality and Preference*, 16, 585-599.
- Cohen, J.B., & Chakravarti, D. (1990). Consumer psychology. *Annual Review of Psychology*, 41, 243-288.
- Crescimanno, M., Ficani, G.B., & Guccion, G. (2002). The production and marketing of organic wine in Sicily. *British Food Journal*, 104, 274-286.
- Crisp, P., Wicks, T., Bruer, D., & Scott, E. (2006). An evaluation of biological and abiotic controls for grapevine powdery mildew 2 Vineyard trials. *Australian Journal of Grape and Wine Research*, 12, 203-211.
- DAFF (2004). The Australian Organic Industry: A Summary, Commonwealth of Australia. Retrieved from <http://www.daff.gov.au/foodinfo>.
- Davies, A., Titterington, A.J., & Cochrane, C. (1995). Who buys organic food? A profile of the purchasers of organic food in Northern Ireland. *British Food Journal*, 97, 17-23.
- Denver, S., Christensen, T., & Krarup, S. (2007). How vulnerable is organic consumption to information? Nordic Consumer Policy Research Conference towards a New Consumer? Towards a New Policy?, Helsinki, Finland.
- Ogbeide et al*

de Ponti, T., Rijk, B., & van Ittersum, M.K. (2012). The crop yield gap between organic and conventional agriculture, *Agricultural Systems*, 108, 1-9.

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

Endres, A.B. (2007). An Awkward Adolescence in the Organics Industry: Coming to Terms with Big Organic and Other Legal Challenges for the Industry's Next Ten Years. *Drake Journal of Agricultural Law*, 12, 17-59.

Espejel, J., Fandos, C., & Flavian, C. (2009). The influence of consumer involvement on quality signals perception, An empirical investigation in the food sector. *British Food Journal* 111, 1212-1236.

Fishbein, M., & Ajzen, I. (1980). *Understanding Attitudes and Predicting Social Behaviour*, Prentice Hall, Englewood Cliffs, New Jersey NJ.

Guay, F., Chanal, J., Ratelle, C.F., Marsh, H.W., Larose, S., & Boivin, M. (2010). Intrinsic, identified, and controlled types of motivation for school subjects in young elementary school children. *British Journal of Educational Psychology*, 80, 711-735.

Gil, J.M., Gracia, A., & Sanchez, M. (2000). Market segmentation and willingness to pay for organic products in Spain. *International Food and Agribusiness Management Review*, 3, 207-226.

Gotschi, E., Vogel, S., & Lindenthal, T. (2007). High school students' attitudes and behaviour towards organic products. Survey results from Institute for Sustainable Economic Development, University of Natural Resources and Applied Life Sciences, Vienna Austria.

Gribben, C., & Gitsham, M. (2007). Food labelling: understanding consumer attitudes and behaviour, Berkhamsted: Ashridge Report. Retrieved from [http://www.ashridge.org.uk/website/IC.nsf/wFARATT/Food%20labelling:%20understanding%20consumer%20attitudes%20and%20behaviour%20-%202007/\\$file/FoodLabellingUnderstandingConsumerAttitudesAndBehaviour.pdf](http://www.ashridge.org.uk/website/IC.nsf/wFARATT/Food%20labelling:%20understanding%20consumer%20attitudes%20and%20behaviour%20-%202007/$file/FoodLabellingUnderstandingConsumerAttitudesAndBehaviour.pdf).

Hair, J.F., Black, W.C., Babin, B.J. & Anderson, R.E. (2010). *Multivariate Data Analysis*, 7th edition, Pearson Prentice Hall, New Jersey.

Havitz, M.E., & Mannell, R.C. (2005). Enduring involvement, situational involvement and flow in leisure and non-leisure activities. *Journal of Leisure Research*, 37, 152-177.

Hershey, D.A., & Walsh, D.A. (2001). Knowledge versus Experience in Financial Problem Solving Performance. *Current Psychology*, 19, 261-292.

Hollingsworth, P. (2001). Margarine: The Over-the-Top Functional Food. *Food Technology*, 55, 59-62.

IFOAM (2003). Organic Agriculture Worldwide. IFOAM Directory of Member Organisations and Associates, IFOAM, Germany.

- Jolly, D.A. (1991). Determinants of organic horticultural products consumption based on a sample of California consumers. *Acta Horticulture*, 295, 141-148.
- Jonis, M., Soltz, H., Schmid, O., Hofmann, U., & Trioli, G. (2008). Analysis of organic wine market needs. Paper presented at 16th IFOAM Organic World Congress, Modena, Italy.
- Krystallis, A., Fotopoulos, C., & Zotos, Y. (2006). Organic Products Consumers' Profile and Their Willingness To Pay (WTP) for Selected Organic Food Products in Greece. *Journal of International Consumer Marketing*, 19, 81-106.
- Langer, E.J. 1983, *The Psychology of Control*. Sage Publications, London.
- Lantz, S. (2008). *Chemical Free Kids*. Buddina, Joshua Books, Queensland.
- Laroche, M., Saad, G., Cleveland, M., & Browne, E. (2000). Gender differences in information search strategies for a Christmas gift. *Journal of Consumer Marketing*, 17, 500-524.
- Lockie, S., Iyons, K., Lawrence, G., & Halpin. (2006). *Going organic : Mobilizing networks for environmentally responsible food production*, CABI, Oxfordshire:
- Loudon, D.L. & Della, B.A.J. (1993). *Consumer behaviour : concepts and applications*, 4th edition, McGraw-Hill, New York.
- Loureiro, M.L. (2003). Rethinking new wines: implications of local and environmentally friendly labels. *Food Policy*, 28, 547-560.
- Lusk, J.L. (2003). Effects of Cheap Talk on Consumer Willingness-to-Pay for Golden Rice. *American Journal of Agricultural Economics*, 85, 840-856.
- Magnusson, M., Arvola, A., Hursti, U., Aberg, L., & Sjoden, P. (2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal*, 103, 209-226.
- Mann, S., Ferjani, A., & Reissig, L. (2012). What matters to consumers of organic wine? *British Food Journal*, 114, 272 - 284.
- Maslow, A. (1954), *Motivation and personality*, Harper, New York NY.
- McCarthy, E.J., Perreault JR., W.D., Quester, P.G., Wilkinson, J.W., & Lee, K.Y. (1994). *Basic Marketing, A Managerial Approach*, Richard D Irwin Inc., Sydney.
- Munene, C.N. (2006). Analysis of Consumer Attitude and their Willingness to Pay for Functional Foods. Unpublished MSc thesis, Louisiana State University and Agricultural and Mechanical College, Louisiana.
- Naspetti, S., & Zanolli, R. (2009). Organic Food Quality and Safety Perception Throughout Europe. *Journal of Food Products Marketing*, 15, 249-266.

- Novack, J. (2010). Internal influences - lifestyle and attitude. Retrieved from <http://www.marketingteacher.com/lesson-store/lesson-internal-influences-lifestyle-attitude.html>
- Oberholtzer, L., Dimitri, C., & Greene, C. (2005). Price premiums hold on as organic produce market expands. Outlook Report VGS-308-01. USDA Economic Research Service.
- Olsen, J., Thach, L., & Hemphill, L. (2012). The impact of environmental protection and hedonistic values on organic wine purchases in the US. *International Journal of Wine Business Research*, 24, 47 - 67.
- Penn, C. (2010). Marketing conundrum - research shows organic practices raise wine scores and prices if the wineries don't talk about them. *Wine Business Monthly*, 27, p. 42.
- Ready, R.C., Navrud, S., & Dubourg, W.R. (2001). How Do Respondents with Uncertain Willingness to Pay Answer Contingent Valuation Questions. *Land Economics*, 77, 315-326.
- Remaud, H., Mueller, S., Chvyl., P., & Lockshin, L. (2008). Do Australian Wine Consumers Value Organic Wine. 4th International Conference of the Academy of Wine Business Research, Siena. Retrieved from http://academyofwinebusiness.com/wp-content/uploads/2010/04/Do-Australian-wine-consumers-value-organic-wine_paper.pdf
- Remaud, H., & Sirieix, L. (2010). Consumer perceptions of eco-friendly vs. conventional wines in Australia. 5th International Conference of the Academy of Wine Business Research, Auckland, New Zealand.
- Rodrigo, R., Miranda, A., & Vergara, L. (2011). Modulation of endogenous antioxidant system by wine polyphenols in human disease. *Clinica Chimica Acta*, 412, 410-424.
- Rodríguez, E., Lacaze, V., & Lupín, B. (2007). Willingness to pay for organic food in Argentina: Evidence from a consumer survey. Paper presented at 105th EAAE Seminar, International Marketing and International Trade of Quality Food Products, Bologna, Italy
- Rodriguez, S., & Toca, J.L. (2006). Industrial and biotechnological applications of laccases: a review. *Biotechnology Advances*, 24, 500-513.
- Rowe, R.D., Schultze, W.D., & Breffle, W.S. (1996). Test for Payment Card Biases. *Journal of Environmental Economics and Management*, 31, 178-185.
- Schiffman, LG & Kanuk, LL 2006, *Consumer Behaviour*, Prentice Hall International, New Jersey NJ.
- Seufert, V., Ramankutty, N., & Foley, J.A. (2012). Comparing the yields of organic and conventional agriculture. *Nature*, 485, 229-232.
- Sirieix, L, Persillet, V & Alessandrin, A 2006, Consumers and organic food in France: a means-end chain study, in Holt, G.C. and Reed, M.J. (Ed), *Sociological Perspectives of Organic Agriculture*, (pp. 70-87). Wallingford UK: CABI.

Squires, L., Juric, B., & Cornwell, B.T.B. (2001). Level of market development and intensity of organic food consumption: Cross cultural study of Denmark and New Zealand customers. *Journal of Consumer Marketing*, 18, 392-409.

Steenkamp, J.B.E.M., Van Heerde, H.J., & Geyskens, I. (2010). What Makes Consumers Willing to Pay a Price Premium for National Brands over Private Labels? *Journal of Marketing Research*, 47, 1011-1024.

Tabachnick, B.G. & Fidell, L.S. (2007). *Using multivariate statistics*, 5th edition, Pearson International, Upper Saddle River, New Jersey.

Tsakiridou, E., Mattas, K., & Tzimitra-Kalogianni, I. (2006). The Influence of Consumer Characteristics and Attitudes on the Demand for Organic Olive Oil. *Journal of International Food & Agribusiness Marketing*, 18, 23-31.

Tsourgiannis, L., Karasavoglou, A., & Nikolaidis, M. (2013). Exploring Consumers' Purchasing Behaviour Regarding Organic Wine in a Convergence E.U. Region: The Case of East Macedonia and Thrace, Greece', In A Karasavoglou & P Polychronidou (ed), *Balkan and Eastern European Countries in the Midst of the Global Economic Crisis*, (pp. 133-155). Berlin: Heidelberg, Physica-Verlag HD.

Turner, B.L., Clark, W.C., Kates, R.W., Richards, J.F., Mathews, J.T. & Meyer, W.B. (1990). *The Earth as Transformed by Human Action*, University Press, Cambridge.

Watchravesringkan, K., Hodges, N.N., & Kim, Y.K. (2010). Exploring consumers' adoption of highly technological fashion products: The role of extrinsic and intrinsic motivational factors. *Journal of Fashion Marketing and Management*, 14, 263 - 281.

Willer, H., & Kilcher, L. (2012). *The World of Organic Agriculture - Statistics and Emerging Trends 2012*. Research Institute of Organic Agriculture (FiBL), Frick, and International Federation of Organic Agriculture Movements (IFOAM), Bonn. Retrieved from <http://www.organic-world.net/yearbook-2012.html>.

Wine Australia, (2011). *Organics and Biodynamics* Retrieved from <http://www.wineaustralia.com/australia/Default.aspx?tabid=5238>.

Wright, S., & Grant, B. (2011). Niche-Marketing Organic Wines: Ethical Dilemmas and the Importance of Stewardship as the Foundation of Sustainable Business. *Australasian Agribusiness Perspectives*, 19, 1-6.

Wynen, E. (2002). What are the key issues faced by organic producers? In: *Organic Agriculture - Sustainability, Markets and Policies*. Proceedings of an OECD Workshop, Washington DC, United States.

Youl, P., Baade, P., & Meng, X. (2012). Impact of prevention on future cancer incidence in Australia. *Cancer Forum*, 36, 37-41.

Appendice

Appendix 1 Factor analysis and reliability test

	<i>variance</i>
"Knowledge of organic wine"; Cronbach Alpha: 0.84	
Organic wine has specific health benefits that reduce the risk of developing heart disease. (KNOWOW1)	0.80
The organic wine market is growing (KNOWOW2)	0.82
When you buy organic wine, you help the environment (KNOWOW3)	0.85
Organic wines do not contain artificial additives (KNOWOW4)	0.79
"Motivation for the purchase of organic wine"; Cronbach Alpha: 0.91	
Organic wines taste better than conventional ones (MOTIV1)	0.80
Organic wines are better for the environment (MOTIV2)	0.91
The purchase of organic wine helps to promote sustainable lifestyle (MOTIV3)	0.90
Organic wines are a healthier option for wine consumption (MOTIV4)	0.90
"Consumers' attitude"; Cronbach Alpha: 0.78	
Humans need to adapt to the natural environment (ATTITUDE1)	0.80
I am concerned about the health and environment issues of the use of chemicals (ATTITUDE2)	0.79
Health and environment claims should be verified (ATTITUDE3)	0.79
When you buy organic wine, you make a financial sacrifice for the environment (ATTITUDE5)	0.74
"Perceived risk - likelihood"; Cronbach Alpha: 0.88	
The wine may not taste good (PERRISKL1)	0.81
The benefit may not be commensurate to the premium paid (PERRISKL2)	0.81
The wine may not meet friends' or family's expectations (PERRISKL3)	0.80
It may not create any environmental benefits (PERRISKL4)	0.84
The health benefits claim may not be true (PERRISKL5)	0.85
"Perceived risk - seriousness"; Cronbach Alpha: 0.76	
I could be sick (PERRISKS1)	0.79
I could be let down or embarrassed among friends and family members (PERRISKS3)	0.76
I could suffer psychological discomfort over poor choice of wine (PERRISKS5)	0.77
"Risk reduction strategy - Intrinsic Product"; Cronbach Alpha: 0.81	
Relying on the style to buy an organic wine (RISKREDI1)	0.78
Relying on the vintage year when choosing organic wine (RISKREDI2)	0.77
Relying on smell to buy an organic wine (RISKREDI3)	0.83
Relying on mouth feel to buy an organic wine (RISKREDI5)	0.81
"Risk reduction strategy - Extrinsic Product"; Cronbach Alpha: 0.90	
Choosing organic wine with expert endorsement (RSKREDEP1)	0.84
Buying organic wine based on the information on the label (RSKREDEP2)	0.85
Choosing organic wine by the reputation of brand (RSKREDEP3)	0.88
Purchasing familiar brand of organic wine (RSKREDEP4)	0.87
"Risk reduction strategy - Store"; Cronbach Alpha: 0.87	
Purchasing wine from the store that has reviews on wine (RSKREDS1)	0.85
Using reputation of the wine store to make a purchase decision (RSKREDS2)	0.84
Purchasing from a store that has friendly and knowledgeable staff (RSKREDS3)	0.77
Purchasing wine from stores recommended by friends and colleagues (RSKREDS4)	0.80
Buying wine from a store that has won some awards (RSKREDS5)	0.81