

Does supplying organic wines enhance a firm's
brand image? An empirical approach on the
Swedish red wine market

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Abstract

In an era of growing popularity of organic products, the term *Organic* remains a resonant symbol of quality in Sweden. It conveys a certain image of the brand, which is vital for a firm to build a successful brand image to attract and maintain customer loyalty. Therefore, this paper is devoted to understand and assess whether the effect of an organic counterpart enhances a brand's brand image, by constructing an online survey with binary comparisons and estimate this effect in a choice model. This data suggests that, the presence of an artificial information does enhance a brand image and the majority of respondents did choose the wines with organic counterparts.

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1 Introduction

When a consumer faces vast amounts of alternatives in a particular product or service, it is not solely the content of the product or service that induce the consumer to purchase, but also the brand image associated with it. Consequently, a brand image of any product or service is crucial for a firm's success in any given competitive market. A brand image is formed by general impression that is unique for all consumers, where it can be strengthened from advertising, past experience, the appearance of the product or service, packaging, feedback from other consumers etc. One may expect positive brand image, such as fame, advertisement and functionality of the product or service to enhance the brand value of the firm. Another factor that may positively affect brand image is if a firm produces organic products, that is if the firm enters the organic market it would be beneficial in the long-run, since, organic products are likely to be perceived environmentally friendly and "healthy". In terms of the food and beverages market, any product claiming to be organic must be free from artificial food additives. However, consumers may perceive brands with organic products to compromise on the taste. For instance, some consumers purchase organic products since it is a more "health" oriented product but not for better taste, which can explain why in some food brands, it took time for consumers to accept "diet" products. Further, Swedes are conscientious people and if there is a choice between sustainable or chemicals with identical prices, consumers will most likely to choose sustainable. Moreover, the wine market offers a broad range of alternatives for consumers and is one of the most differentiated products on the food market, which a few studies have focused in this area. Therefore, the intention of this paper is to study the brand image of red wine brands in Sweden, particularly if a brand has an organic counterpart would effect a consumer's choice. But before moving on, a few definitions are useful to acknowledge.

Brand

”A name, term, sign, symbol or design, or a combination of these, intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of competitors” *Tasci & Kozak (2006)*.

Brand knowledge

”It is conceptualized as consisting of a brand node in memory to which a variety of associations are linked” *Keller (1993)*.

Brand awareness

”It is related to the strength of the brand node or trace in memory, as reflected by consumers’ ability to identify the brand under different conditions” *Rossiter & Percy, (1987)*.

Brand equity

”The differential effect of brand knowledge on consumer response to the marketing of the brand” *Keller (1993)*.

Brand Identity

“Brand identity is a unique set of brand associations that the brand strategists aspire to create or maintain. These associations represent what the brand stands for and imply a promise to customers from the organization members” *Aaker (1993)*.

Brand Image

“Brand image is defined here as perceptions about a brand as reflected by the brand associations held in consumer memory” *Keller (1993)*.

The potential issue for a firm in wine industry is how to enter into the organic wine market. According to Systembolaget, the organic wine market has been populated by low price products. Therefore, an important question would be for a medium to a more ”luxury” (high-end) firms how they should enter into the market. It has a risk, since consumers may perceive the move into organic

market as shifting into low quality market and that could compromise their cherished brand image. On the one hand, if they create a separate brand for their organic products, then those organic products would not receive the benefit of their high brand image. On the other hand, the organic market could provide a unique opportunity for "less luxury" (low-end) brands. Marketing their organic products may improve their brand images, which could help their brands to become competitive in medium quality market as well. Hence, organic products could be an effective vehicle for penetrating the higher quality market. Furthermore, it may be costly for firms to properly assess those opportunities and risks because experimentation by firms in the wine market that results in a wrong move could tarnish their brand image for a long time. This paper proposes a survey procedure to collect data that may help firms to empirically assess the effect of the introduction of organic products on their brand image with little cost. To do so, a description on each wine is added in each choice sets if a certain brand has an organic counterpart or not to examine the brand image in the artificial wine market environment. Next is to pick existing brands that have no organic products and add the artificial information. Then, presenting them to survey respondents with and without the organic counterpart information, and assess how the assessment and demand for non-organic product differs between those that have the organic product in their consideration set and those that do not. The difference between the two groups can be interpreted as the effect of organic products on the brand image and thus, the hypothesis becomes: Does the presence of an organic counterpart enhances a firm's brand image?

The rest of the paper is structured as follows. Background is presented shortly, following by related literature in section 2. Section 3 describes the data and section 4 introduces the methodology framework. The results are presented in section 5, following by limitations in section 6. Finally, section 7 concludes.

1.1 Background

The Swedish food and beverage consumption is gradually shifting towards the more ecological market, as the Swedes become more educated and increasingly influenced of health consciousness, as well as environmental concern. These aspects in combination with increased product availability, new product development and improved marketing strategies have led to a significant impact on wine consumption patterns in Sweden, where organic products are perceived to signal qualities.

Sweden, with a population of 9.9 million consumed 23,7 litres of wine per capita in 2016 in total (*Statista, 2018*). Any retail sales of beverages containing more than 3,5% alcohol by volume are sold solely at Systembolaget, which is a government owned chain of liquor stores that operates 400 shops throughout Sweden. In 2016, the total sales of organic food and beverage sector accounted for 25,4 billion Swedish Crowns (SEK), which is a 18% or 3,9 billions SEK increase from the previous year (*EcoWeb, 2017*). Moreover, organic food sales rose from 7.7 percent to 8.7 percent of the total food market, and online sales stood out with organic food sales now 25 percent of the market. Within the organic market of food and beverages, Systembolaget was the second biggest player with a total sales of 4,5 billion SEK in 2016, with a market share of 16% during the same period (*EcoWeb, 2017*). Since the organic wine industry in Sweden is in a strong growing trend and has many but still differentiable alternatives, it allows me to select existing wines to examine the effect of creating a corresponding organic counterpart version of the high-end wine brand on the Swedish consumption pattern. Further, organic products are often more expensive than non-organic product. However, this is not necessarily the case in the wine market, which is unusual in an interesting way in this particular market. Except for “bag-in-box”, the common price for a cheaper wine is around 69-89 SEK, where most of the organic wines belong to this price category.¹ According to Systembolaget, there are 68 bottles of organic wine for less than 85 SEK, 76 between the price range of 85-100 SEK, 69 between 100-180 SEK and 65 bottles of organic wine for more than 180 SEK.

1.1.1 What is organic wine?

The production of organic wine is essentially emphasized on restricting the amount used of synthetic chemical fertilisers and pesticides. According to the European Commission, organic wine is wine made from grapes grown according to the rules of organic farming, which typically excludes the use of artificial chemical fertilizers, pesticides, fungicides and herbicides. The legal definition of organic wine differs among countries, but the main difference in the definition of organic wine relates to the amount allowed to use certain substances during the wine-making process. And in order for a wine to be labeled on the shelf with Systembolaget's green Eco-label in Sweden, it must be certified by an independent organization that checks if the wine meets the EU's organic farming and organic wine rules (*Systembolaget*).

Manufacturing Requirements

Organic wine also means that the production meets the EU's requirements for organic wines (EU Regulation 203/2012). To use eco-labeling, the grapes must be ecologically grown, without chemical pesticides and manure. In addition, for wines produced in 2012 and later, the rules state that producers should not use as many additives and processing aids as in conventional wine production (45 substances instead of 63) when producing an organic wine. The limit for the amount of sulfur dioxide (used as preservative) that may be added is also lower: 100mg/l instead of 150mg/l for red wine and 150mg/l for white and rosé wine compared to 200mg/l in conventional wines (*European Commission*).

2 Literature Review

A large body of empirical literature has attempted to examine consumer purchasing behavior but literature on organic responsiveness incorporate with brand image is scarce. In Sweden, the inclusion of the word *Organic* or *Eko* (Ekologiskt in Swedish) conveys the necessarily features of organic products or the process of production. From previous discussions, wines that are eligible to be sold at Systembolaget must satisfy certain rules set by the European Commission. These features then enter consumers perceptions along with other observable product attributes to finalize their decisions.

2.1 Organic food and beverage

Health is in general associated with organic food consumption, which is supported by a large pool of researchers such as Schifferstein & Ophuis (1998), Torjusen et al. (2001), Zanolli & Naspetti (2002), Honkanen et.al. (2006), Roitner-Schobesberger et al. (2008) and Bryla (2016). As well as Chrysohoidis & Krystallis (2005) and Hjelmar (2011) with the addition finding that organic food tastes better, whereas Fillion & Arazi (2002) found the opposite. De Magistris & Gracia (2008) concludes that consumers have positive environmental attitudes when following a healthy diet and well-balanced lifestyle, which they considered organic food healthier and have higher quality than conventional food.

These studies in consumers attitudes towards organic food have been conducted in specific food or beverage categories and different locations. For instance, Fotopoulos et.al. (2002) finds that Greeks' attitudes towards organic wines are positively related with higher quality and healthier, which are supported by Chekima et.al. (2017) and Asif et.al (2018), where they examine the organic food purchase intentions in general with the inclusion of role of awareness in Malaysia and in the Middle east (Turkey, Iran and Pakistan) respectively. Including in India, where Singh & Verma (2017) confirms five factors (health consciousness, knowledge, subjective norms, price and availability) that influence the consumer attitude towards organic food products.

Further, Zagata (2012) suggests that consumers' willingness to pay premium for organic food quality will increase by raising the availability of the organic food. Czech Republic and Schaufele & Hamm (2017) later extended that quality differentiation can be enhanced by producing and marketing wine with sustainability characteristics. In summary, despite using different methods to understand consumer behavior towards organic food, they reach to a common final conclusion. That is, organic food is generally desired and positively related to quality signaling.

2.2 The concept of brand image

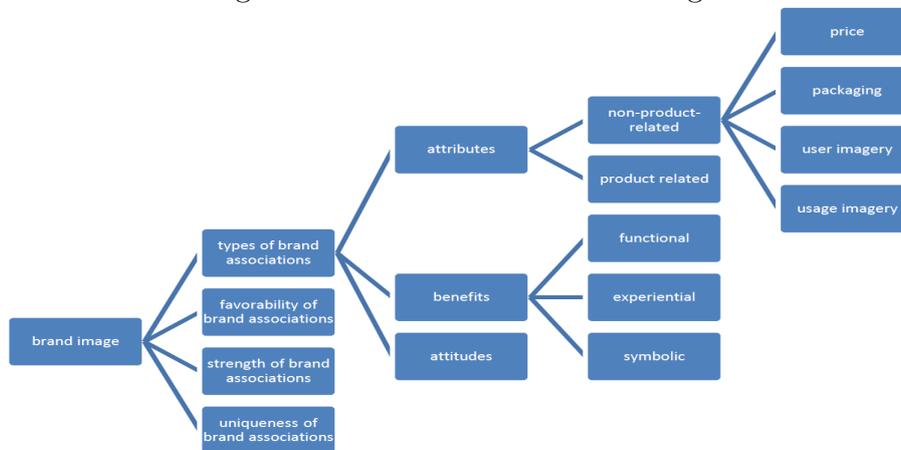
Keller (1993) uses a theoretic framework to provide practical structure for managers to develop brand strategies from creating to extensions of a brand. He emphasizes the importance of recognizing the marketing activity that can potentially enhance or maintain brand awareness of a brand that will enable marketers to effectively market their products and services in both short and long-term planning. He later concludes that brand awareness plays another important role for an organization to obtain a strong brand in 1998, that is created by the familiarity of the brand, meaning that the consumer should be repeatedly exposed through, for example, advertisement. Further, Randall (2000) states that brand image is defined by the customers' point of view and that the brand always needs to deliver value, which is also supported by Ind (2007) where he suggests that it is not solely the organization that makes up a brand, but also because of its customers, especially loyal customers, therefore brand image is crucial for a firm's existence aside from that a brand creates uniqueness and consumers can be emotionally linked to a specific brand via observable factors. Having a strong brand does not solely attract customers but also the employees for a firm in a competitive market, found by Christensen & Askegaard (2001), along with product variety of a brand offers, as Berger et.al (2007) proposes in their research. They meant that product variety often serves as a signal of quality and influences a consumer's brand perceptions and thus, his/her choice of a brand. All and all, these aspects provide valuable insights for future marketing activities, as suggested by Mirzai et. al (2016). Literature incorporating the role of brand-

ing with consumer purchasing behavior can be found within different areas. Sackett et.al (2012) analyzes consumer purchasing behavior when faced with competing food production attributes such as "organic" and "local", using a hypothetical choice experiment and to estimate preferences for "sustainably produced" food products, whereas Hartmann et.al (2017) investigates the role of branding and price in motivating children to choose healthier snack options. Moreover, Bronnenberg et.al (2015) examines the effect of information and expertise on consumers' willingness to pay for food & drink categories, with the addition of national brands in retail health products. Finally, Allison & Uhl (1964) examines the brand image of beer producers to shed lights on company evaluation and marketing efforts in a competitive market. They suggest that, advertisement is the main force of changes in product images, holding other variables constant among the competitive firms. In their experiment, 326 beer drinkers participated with the aim to examine if there exist a difference between in taste perception when consuming a beer with the presence of the labels and from nude bottles and asked to rank the beers. They conclude that beer drinkers could not distinguish the taste differences among the brands in general and the differences in the ratings were assumed to be due to the presence of labels, which are the only modified factors of their experiment. For the study in this paper, each choice set contains two different brands with similar observed product attributes similarly to Allison & Uhl's paper. Although efforts have been made in terms of selecting each binary pair with as much similarities as possible, in order of maximize the effect of the artificial information. Further, since consumers associate organic products with higher quality in general. Then, any attribute that contributes to a higher quality should enhance a brand image.

Quality of products, environmental & health concern and lifestyle are the most repeated reasons for purchasing organic foods. These factors enter the perception of a consumer who then incorporate them with other drivers, such as past experience, brand, price and perceived quality to finally make a decision in choosing a particular product among alternatives, based on his/her utility maximization function. When consumers face a certain type

of product among a pool of alternatives, a brand helps consumers to distinguish one from another. Roy & Banerjee (2007) and Gromark (2011) divide the concept of brand into two categories, brand identity and brand image. Brand identity is what a brand owner wants the brand to be perceived and brand image is how the brand is viewed by a consumer. Since this paper focuses on the latter one rather than brand identity, I will briefly discuss the components of a brand image.

Figure 1: Dimensions of brand image



Keller 1993

The term *Brand Image* has several definitions, but this paper is only briefly touching the surface of brand image in accordance to Keller's description of brand image. He defines a brand image as *the perceptions about a brand as reflected by the brand associations held in consumer memory*. It is decomposed into four brand associations that convey information of the brand to consumers. Favourability, strength and uniqueness associations help to distinguish brand knowledge, which makes up the brand equity. The types of brand associations is defined by how much information is summarized in the association. It is then divided into three categories: attributes, benefits and attitudes. Attributes that are either product related or non-product related, where product related attributes describe the physical composition of a product and are defined as the required components to produce the products. The non-product related attributes are defined as the aspects associated to purchase and consumption, such as, price information and packaging appear-

ance (*Keller, 1993*). Brand benefits are the values that consumers attach to the product attributes, i.e., what the consumers think of the product can do for him or her. The definition of brand attitudes is the overall evaluation of a brand composed by consumers, that are consumers perceptions towards certain product, such as quality perceived and functional benefits. This is a determinant factor in consumer behavior, since it is directly linked why consumers choose a certain brand. In other words, the stronger the beliefs the brand has a certain attributes or benefits affect the perceptions of how good or bad those attributes or benefits are (*Keller, 1993*). In summary, the four pillars form a brand image and it is the key of understanding how consumers make their choices after gathering information about the particular brand and the alternatives. Therefore, a brand image or how a consumer perceives a brand is important to incorporate in the indirect utility model for this study.

3 Data description

Ultimately, the aim of this paper is to examine if the presence of the artificial information that is, if a brand has an organic counterpart or not would influence a respondent's decision. Therefore, there is no existing data for this measurement and hence, the purpose and the necessity of constructing an online survey which allows the artificial information to be added and measured. The tool used is Google doc that is without costs, which is the main reason of selecting this tool. It was then distributed through personal invitations through social media (Facebook) and mass e-mails to students at Handelshögskolan. Undoubtedly, this caused sample selection bias, although inevitably.

3.1 Measures

Sociodemographic Variables

Characteristics variables of the decision makers include gender, age, highest education level obtained, marital status and monthly income. Highest education level obtained was categorized as "High school degree", "Bachelor degree", "Graduate or post graduate degree". To assess respondents' purchase frequency, they were asked: "In the past 30 days, how often did you purchase alcohol?" and the categories were "None", "Once to twice a month", "Once every week" and "At least once a week". And "In the past 30 days, how often did you purchase organic wines?" the choices were "None", "Once to twice a month", "Once every week" and "At least once a week".

Outcome measures

Organic related perceptions were measured by asking respondents: "Have you ever tasted organic red wine before?" To assess if respondents have tasted organic red wines before, with answers "yes" and "No". "How much are you willing to pay for a bottle of wine?" with categories "Less than 85kr", "85-100kr", "100-180kr", "180-250kr", "250-330kr", "More than 330kr", to measure the Willingness To Pay (WTP) of each respondent. Brand related perceptions were measured by asking: "Do brand names influence your choice

of purchasing a bottle of red wine?” with the categories ”Yes”, ”No” and ”To what extent do brands influence your choice of purchasing a bottle of red wine? with a scale from 1 (Not at all) to 5 (completely). Further, a short description was presented in the beginning of each choice set to clarify what an organic counterpart meant, that is, a brand that also produces organic wine. Then, respondents were asked to answer 6 choice sets in total with each one included the following questions: ”Please choose one bottle of wine of your liking.” With 2 pictures and a brief information on each of the wines (the survey is presented in the Appendix section). ”Please rate how you perceived the brand (of the chosen wine)” with a scale from 1 (Not positive at all) to 5 (Very positive), to assess which attribute was relatively more important given the other option. Also, ”Please rate how you perceived the quality (of the chosen wine)” from 1 (Low quality) to 5 (High quality) to assess quality related perceptions of the each of the chosen wine. In order to check for survey consistency, a similar question to the brand related question with a different formulation was given: ”How much do brands affect your choice of buying a bottle of red wine?” with a reverse scale from 1 (A lot) to 5 (Not at all). Finally: ”Will you be interested in an organic version of a ”fine” red wine?” with categories ”Definitely”, ”Depends on the price”, ”Depends on the brand”, ”Maybe”, ”No (because it will ”ruin” the taste)”, ”No (in general). The last question captures respondents’ attitudes towards organic wines. Then, all mentioned questions will produce a certain number of dummy variables that correspond to each available answer.

The construction of the choice sets is described as follows with the ultimate goal to investigate if respondents will choose the wine with an organic counterpart or not. First of all, each respondent faced a total of 6 choice sets. In each of the choice set, respondents were asked to pick one out of two wines of his liking in a binary comparison setting, where one out of two choices has the additional information. Each wine has a picture, a brief description, the origin (country and region) of the wine, year produced and food that goes well with that particular wine included as observable attributes. The selection of wines was based on the presumably well-established grapes such

as, Amarone and Barolo, which were chosen depending on the availability of *Systembolaget's* supply on their webpage with the requirements of the mentioned information. In the end, a total ten bottles of wines (in five of the choice sets) were from Italy and the last choice set contained two bottles from France. As mentioned previously, the aim was to construct the choice sets similarly to the ones conducted by Allison and Uhl (1964), with only one factor being different in comparisons to the two alternatives, which is the presence or absence of the labels. However, it was not possible to construct the binary comparisons in such a manner, partly due to the presence of the labels on all the wines in the survey and partly because of the insufficient similarities of the product attributes. Ideally, two red wines from Italy, France and Spain respectively would be relevant for this study with similar attributes, such as year and regions. However this would not be the case, due to lack of information and pictures from *Systembolaget*.

Let z_i^o stands for the brand with an organic counterpart for respondent i and z_i^n stands for the brand with non organic counterpart. Then, the aim is to analyze if respondents chose z_i^o over z_i^n , with the presence of the added information. The respondents evaluated their quality based on the given information and chose a bottle of wine accordingly. Therefore, each respondent produced 6 binary variables, one for each set. Further, real market prices were given according to *Systembolaget*. By comparing the consumer evaluation and the choice probability of the two high-end brands with and without the organic counterpart, the effect of adding an organic product on the brand image can be identified. This is the core of the construction of the choice sets, that will enter equation 1 and 5 (in the model specification section), together with the interaction terms (will be discussed shortly) and the observed characteristics of each of the wine. Finally, to compute the choice probability for consumer i to choose a certain product j , using the LPM. Firstly, the sample population should be random and sufficient large in order to obtain representative results. However, since the online survey is distributed through Facebook and at Handelshögskolan, the sample selection is not generalizable i.e. low external validity. In addition, the orders of the

pictures in each choice set is not random, due to technical difficulties with the survey construction, therefore the order of the choice sets are identical for each respondent. The expected results are firstly, having an organic counterpart will not have an significant effect on its brand image, with or without any individual characteristics. Since "risk averse" consumers may not want to purchase well established wine brands that are usually more expensive and taste differently in comparison to the non-organic one.² In contrast, organic food and beverage are steadily gaining attention in our society, thus having the artificial information weather a specific wine has an organic counterpart or not could perhaps, nudge respondents unintentionally to some degree.

3.2 Data Statistics

The tables below exhibit the statistics of the data approximated with one decimal with a total of 108 respondents and 648 observations, since each respondent answered 6 choice sets, therefore $108 * 6 = 648$ observations. Column 3 shows the percentage of each category for each variable. The forth column shows the percentage that product j is chosen *within* each category for each respondent. For instance, 69,1% stands for the percentage that the wines with organic counterparts are chosen within each choice set among females. Overall, respondents were more inclined to pick the ones with an organic counterpart of their likings.

Table:1 Descriptive Statistics (%)			
Variable	Category	Average	Product $j = 1$
Gender	Female	53,8	69,1
	Male	46,2	60,8
Age	18-25	47,1	67,7
	26-35	42,3	60,6
	36-45	3,8	62,5
	46-60	6,7	78,6
Income	Less than 17000kr	53,8	61,6
	17000-25000kr	15,4	71,9
	25000-38000kr	23,1	69,4
	Above 38000kr	7,7	64,6
Marital Status	Domestic Partner	28,8	71,9
	Married	9,6	69,4
	Single	61,5	64,6
Education	High School Degree	26	75,3
	Bachelor Degree	52,9	63,3
	Grad or Post Grad Degree	21,2	57,6
Frequency (Purchase)	At least once a week	3,8	62,5
	Once every week	22,1	62,3
	Once to twice a month	51,9	64,8
	None	22,1	69,6
Frequency (Organic)	At least once a week	1	83,3
	Once every week	2,9	56,6
	Once to twice a month	28,8	66,7
	None	67,3	64,8
Brand	Yes	51	67,6
	No	49	62,8
Number of observations = 648			

Table: 2 Descriptive Statistics (%)			
Variable	Category	Average	Product $j = 1$
Information	Friends and family	51	67,3
	Internet	12,5	61,5
	Magazines/News	2,9	66,7
	Retailers	1,9	41,7
	Systembolaget	27,9	66,7
	None of the above	3,8	50
Organic Experience	Yes	80,8	65,1
	No	19,2	65,8
WTP	Less than 85kr	9,6	60
	85-100kr	32,7	60,8
	100-180kr	44,2	68,9
	180-250kr	7,7	68,8
	More than 250kr	5,8	66,7
Attitudes	Definitely	33,7	71,4
	Depends on the brand	4,8	53,3
	Depends on the price	42,3	64,3
	Maybe	15,4	58,3
	No (In general)	2,9	61,1
	No ("Ruined" taste)	1	83,3
Number of observations = 648			

3.3 Choice of variables

Due to the small sample size obtained, there are restricted number of the additional variables that can be included due to degrees of freedom. Consequently, all data from any category variables such as "information" and "Brand perception" obtained from a scale system are excluded. First of all, two vectors containing the *difference* in product attributes $z_{(j-k)}$ are included (explanation is discussed in the next section). Then interaction terms are created by interacting each individual characteristics with the two attributes differences. The age indicators is intuitive to include, however, several dummy variables would have to be created, since the age variable is created from category variables. Hence, it would produce too many interactions terms for this study with a small sample size, therefore the age indicators will be absence in the regression. The first included individual characteristic is the brand perception, to examine its effect on decision makers. Hence, a dummy variable "Brand" equals to 1 if a brand does influence a respondent's choice when making decisions, and 0 otherwise. The second one is WTP, which is a determinant factor in consumer purchase behavior and is determined by income when purchasing. WTP is a more relevant variable instead of income, since an individual's WTP incorporates his/her own heterogeneity, which can differ significantly regardless of his/hers income. The way to include WTP is to calculate the average of each categories. Next, a vector of these averages are included in one single vector WTP . Finally, two interaction terms with WTP and the vectors product attributes. The reason of including individual characteristics by creating interaction terms instead of using their levels is because the dependent variable varies in each of the choice set, then any levels of the individual characteristics would not be identified, since all these variations do not occur on the levels. In summary, the variables included are $z_{(j-k)}^p$, $z_{(j-k)}^o$, $Brand$, WTP , where $z_{(j-k)}^p$ stands for the difference in price and $z_{(j-k)}^o$ indicates if product j has an organic counterpart or not. Finally, the interaction terms are, $z_{(j-k)}^p * Brand$, $z_{(j-k)}^o * Brand$, $z_{(j-k)}^p * WTP$ and $z_{(j-k)}^o * WTP$.

4 Model specification

A mixed logit model is more intuitive to conduct this discrete choice experiment. However as mentioned, each respondent faces 6 choice sets with different wines in each one and since a logit model calculates the probabilities of choosing one out of two *fixed* alternatives for each individual, it would be computationally burdensome to use this method in this setting. Therefore, a Linear Probability Model (LPM) will be implemented using the *difference* of each of the product attributes as the independent variables instead. Then in this setting, one assumption has to be made, that is the utilities of the respondents follow a linear form. First is to estimate the indirect utility function from the information on the consumers' preferences. That is, respondents were asked to choose one option of their liking shown to them. In this LPM framework, the dependent variable is a dummy variable, taking the value of 1 indicating product j if option 1 was chosen and 0 otherwise. The independent variables reflect the *difference* in attributes differences of each product that is available for purchase and individual characteristics.

The purpose of using the vectors of differences as observable product attributes and how they are created is discussed in this paragraph. First of all, two vectors are obtained, the dependent variable j for option 1 in each choice set and for each respondent that equals to 1 if option 1 is chosen and 0 otherwise. Same for k equals to 1 if option 2 is chosen and 0 otherwise. Notice, these vectors only indicate which option respondents choose. Since every respondent faced six *different* choice sets, hence the variation of the dependent variable, therefore only the differences in utilities can be identified and not the levels. Further, the difference between price is obtained by subtracting k from j to extract the observable difference in price for individual i , that is the price of j minus the price of k , $z_i^p(j-k)$. By applying the same process to obtain a vector indicating if product j has an organic counterpart or not, $z_i^o(j-k)$ that equals to either 1 or -1 , since there is always one out of two options with an organic counterpart which equals to 1 and 0 otherwise in each choice set. This is the method to estimate the indirect utility models in equation 1 and 5, using LPM to analyze the effect of each individual and

product attribute on: if respondents choose the brands with organic counterparts or not.

First, assume that product evaluation is a good proxy for measuring the utility of the consumer, and perform an OLS regression where the dependent variable is the consumer evaluation and the RHS variables are price and if the additional information is presence or not. Let us consider the indirect utility model without any individual characteristics with j and k in each respective choice set, where consumer i 's indirect utility function of buying product j based on random utility theory is:

$$U_{ij} - U_{ik} = \beta_0 + \alpha_1 z_i^p(j-k) + \alpha_2 z_i^o(j-k) + \epsilon_{ij} \quad (1)$$

where $U_{ij} - U_{ik}$ is the difference between utilities obtained from choosing product j and k , where $j, k = 1, \dots, 6$ that stands for the number of choice sets. $z_i^p(j-k)$ is the price difference between the two products for consumer i , $z_i^o(j-k)$ indicates if product j has an organic counterpart or not and ϵ_{ij} is an idiosyncratic shock. Then, the probability of an individual choosing product j over k is determined by the difference between U_{ij} and U_{ik} is given by,

$$Pr(Y_{ij} = 1) = Pr(U_{ij} - U_{ik} > 0) = \beta_0 + \alpha_1 z_i^p(j-k) + \alpha_2 z_i^o(j-k) + \epsilon_{ij} \quad (2)$$

where α_1 and α_2 are the corresponding parameter vectors for the difference in observable product attributes and ϵ_{ij} is an idiosyncratic shock. This is the main model and the primary interest is the coefficient estimate of α_2 , which measures the effect of having an organic counterpart in the brand. If it is positive, then including an organic counterpart enhances the brand image. If it is negative, it reduces the brand image.

Next is to include individual characteristics, but interaction terms need to be constructed in order to identify these individual characteristics. The approach to estimate these is to allow the parameters of the differences, i.e. α_1 and α_2 to be functions of the individual characteristics and estimate the coefficients of these characteristics, since the levels will not be identified.

Now, B_i and WTP_i are the chosen observed characteristics, thus

$$\alpha_1 = \gamma_1 + \gamma_2 B_i + \gamma_3 WTP_i, \quad (3)$$

$$\alpha_2 = \gamma_4 + \gamma_5 B_i + \gamma_6 WTP_i \quad (4)$$

by adding the above equations into equation 1 and rearrange, we obtain,

$$\begin{aligned} U_{ij} - U_{ik} = & \beta_0 + \gamma_1 z_i^p(j-k) + \gamma_2 B_i z_i^p(j-k) + \gamma_3 WTP_i z_i^p(j-k) \\ & + \gamma_4 z_i^o(j-k) + \gamma_5 B_i z_i^o(j-k) + \gamma_6 WTP_i z_i^o(j-k) + \epsilon_{ij} \end{aligned} \quad (5)$$

hence, the probability that an individual i chooses product j over k becomes,

$$\begin{aligned} Pr(Y_{ij} = 1) = Pr(U_{ij} - U_{ik} > 0) = & \beta_0 + \gamma_1 z_i^p(j-k) \\ & + \gamma_2 B_i z_i^p(j-k) + \gamma_3 WTP_i z_i^p(j-k) + \gamma_4 z_i^o(j-k) + \\ & \gamma_5 B_i z_i^o(j-k) + \gamma_6 WTP_i z_i^o(j-k) + \epsilon_{ij} \end{aligned} \quad (6)$$

where, γ_2 & γ_5 are the additional effects if $Brand_i = 1$ of product attributes on Y_{ij} and γ_3 & γ_6 are the additional effects from WTP_i on Y_{ij} via the product attributes. Equation 1 will produce the main findings, whereas equation 5 is an extension of the previous model.

5 Results

The regression outputs are presented below, table 3 represents the baseline model and table 4 represents the extension of the previous one.

Table: 3 Model 1				
Variables	Coefficients	Robust Std. Err	t.-stat	$P > t $
Organic	0.155	0.019	8.03	0.000
Price	0.001	0.001	1.05	0.291
Constant	0.514	0.019	26.87	0.000
Number of obs = 648				
F(2, 630) = 37.99				
Prob > F = 0.0000				
R-squared = 0.1047				
Root MSE = 0.47386				

Table: 4 Model 2				
Variables	Coefficients	Robust Std. Err	t.-stat	$P > t $
Organic	0.103	0.062	1.69	0.092
Price	-0.004	0.002	-1.76	0.079
Brand	-0.005	0.038	-0.14	0.889
Organic*Brand	0.029	0.039	0.74	0.457
Price*Brand	0.0002	0.002	0.14	0.885
WTP	0.0001	0.0004	0.26	0.797
Organic*WTP	0.0003	0.0004	0.65	0.519
Price*WTP	0.00004	0.00002	2.33	0.020
Constant	0.503	0.059	8.46	0.000
Number of obs = 648				
F(11, 630) = 11.74				
Prob > F = 0.0000				
R-squared = 0.1157				
Root MSE = 0.47315				

The estimated OLS coefficient on the organic counterpart difference (*Organic*) is 0.155 and significant in Model 1, implying that the presence of the artificial information increases the likelihood of a respondent of choosing the wines with an organic counterpart by 15.5%. Similarly, a 1kr increase in the price difference is estimated to increase the probability of choosing product j is 1%, although insignificant. In Model 2, the estimates of both organic counterpart and the price are only significant at the level of 10%. However, the latter one is negative, which is more intuitive since a larger price difference should decrease the demand for product j . In terms of the individual characteristics obtained from model 2. The sole interaction term that is significant is the one with the price difference and WTP, which is significant at a level of 5%. This interaction term can be interpreted as follows, for instance, the positive coefficient of price*WTP would imply that the higher the price *difference* is, the greater or more positive the effect of WTP on the dependent variable. In contrast, the higher the WTP, the greater or more positive the effect of price *difference* is on the dependent variable. Similar interpretation applies to the remaining interaction terms. Moreover, in order to check for potential correlation between the independent variables, a correlation matrix between the coefficient estimates is presented below and no particular strong correlations between the variables of interest were found, except for the interaction terms.

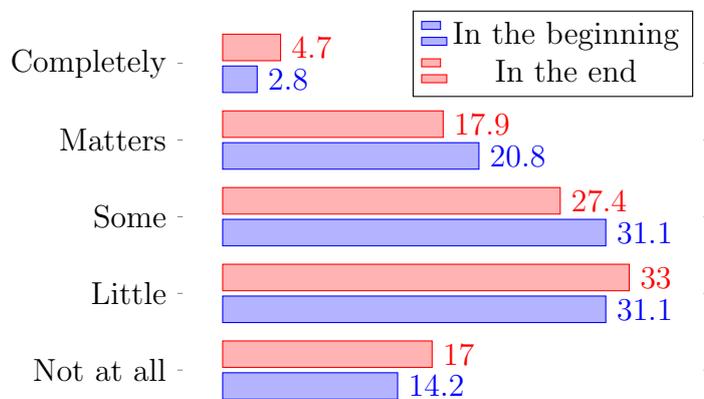
Figure 2: Correlation Matrix

$e(v)$	<i>Organic</i>	<i>Price</i>	<i>Brand</i>	<i>Organic * Brand</i>	<i>Price * Brand</i>	<i>WTP</i>	<i>Organic * WTP</i>	<i>Price * WTP</i>	<i>Constant</i>
<i>Organic</i>	1.0000								
<i>Price</i>	-0.3210	1.0000							
<i>Brand</i>	-0.0005	0.0911	1.0000						
<i>Organic * Brand</i>	-0.1778	0.0359	0.0424	1.0000					
<i>Price * Brand</i>	0.0348	-0.2411	-0.2106	-0.2906	1.0000				
<i>WTP</i>	-0.0647	0.1278	-0.1280	-0.0184	-0.0216	1.0000			
<i>Organic * WTP</i>	-0.8930	0.3122	-0.0176	-0.1565	0.0616	0.0743	1.0000		
<i>Price * WTP</i>	0.3293	-0.8867	-0.0224	0.0670	-0.0966	-0.1161	-0.3892	1.000	
<i>Constant</i>	0.0650	-0.1851	-0.2139	-0.0005	0.0896	-0.8881	-0.0627	0.1305	1.0000

5.1 Survey consistency

To check for survey consistency, two similar questions with different scale systems were included in the online survey and the aim is to measure if respondents were consistent when making choices. The graph below shows the frequencies of the two questions, where *In the beginning* and *In the end* indicate the positions the questions were asked in the survey. Respondents faced the questions "To what extent do brands influence your choice of purchasing a bottle of red wine?" in the beginning and "How much do brands affect your choice of buying a bottle of red wine?" in the end. Notice that the scale implemented was from 1(Not at all) to 5(Completely) in the beginning and a reverse scale at the end. The indicators *Matters*, *Some* and *Little* are simply a more convenient way of exhibiting this graph instead of using integers, as used in the survey. In summary, the majority of the respondents were fairly consistent when answering the survey.

Figure 3. Survey Consistency (%)



6 Discussion

To begin with, the presented models are suffering from endogeneity since have an organic counterpart is likely to be correlated with quality as well as omitted variable bias. One potential issue could be that firms that choose to produce organic counterparts use it as a marketing strategy to improve its already bad brand image. Then, a possible solution is to included an instrument that takes this endogeneity into account. Further, the sample size is restricted, since the majority of the respondents were young adults or students. Consequently, this study could not identify the effect of the artificial information on brand image for people outside this range. Therefore, further research could extend this study by including respondents born in the earlier generations to separately assess attitudes and purchase behavior in organic wines for different age groups, which may provide insights on suitable marketing strategies depending on which age group marketers choose to focus on. Another potential extension could be focused on a specific group of consumers, that are the "experienced" red wine drinkers to assess their attitudes toward organically grown wines. Since, quality may be the sole determinant when purchasing a bottle of wine and hence, this could enable researchers to more effectively examine the role of presence of an organic counterpart on a brand image.

Limitations of the survey

Firstly, a proper online survey tool that allows more observed product attributes and clear pictures of the wines would be desirable. However, efforts have been made to obtain such a tool without spending. Also, more variation in types of wines would enable this study to conduct in a more realistic way, where consumers face more alternatives than solely wines from two countries, and the order of the choice sets should be random. Secondly, it would be less exhausting for respondents to answer without any further questions directly after each set. Then, more choice sets with solely the binary comparisons could be included and obtain greater variations in the regression models. Thirdly, since income is an important factor in consumer purchase behavior that has not been taken into account for, therefore the presence

of some sort of budget constraint would reflect a more realistic behavior of the respondents, such as a Cheap Talk Script.⁴ Finally, the additional information may unintentionally nudge respondents to choose the option with an organic counterpart. An alternative way to include this information that is more subtle could be for instance, by mentioning this information in a brief "background" of the producers, stating that this particular producer also produces organic wines.

7 Conclusion

As organic food and beverage has gained and still gaining larger market share for each year and popularity among Swedish consumers, it is important for firms to understand how organic products affect consumers purchase behavior and adapt its products and marketing strategies accordingly. This paper studies if the presence of an organic counterpart conveys positivity on its brand image in the red wine market, by distributing online surveys and constructing a binary comparison setting for respondents to choose one out of two alternatives, accordant to their likings. Using the *difference* in utilities between the j th and k th alternatives, the main finding estimated from a LPM framework is that, the presence of the artificial information does increase the brand image by 15.5%, without individual characteristics. However, there is a weak evidence to support this hypothesis when taken individual characteristics into account. Further, the larger the gap in price is, the more it reduces the likelihood of consumers to choose the wines with an organic counterpart in the model with individual characteristics. According to the obtained statistics, the majority of the respondents chose the options with organic counterparts, regardless of their individual characteristics. This, together with the regression outputs suggest that, the respondents were more inclined to choose the brands with organic counterparts. However, it is difficult to understand if it is solely the effect of having an organic counterpart or if it is the combination between the brand and the presence/absence of an organic counterpart by coincidence and thus, lowering the internal validity. One alternative to solve this could be by removing the pictures, although much more information is needed for respondents to choose from.

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9 Appendix

Survey

Consumer behavior in the Swedish wine market.

The aim of this survey is to examine how consumers preferences and attitudes are formed towards different brands within the red wine consumption.

Gender *

- Female
- Male

Marital status *

- Single
- Domestic partner
- Married

Highest education level obtained *

- High school degree
- Bachelor degree
- Graduate or post graduate degree

In the past month, how often did you purchase alcohol at Systembolaget? *

- None
- Once to twice a month
- Once every week
- At least once a week

In the past month, how often did you purchase organic wines at Systembolaget? *

- None
- Once to twice a month
- Once every week
- At least once a week

Do brand names influence your choice of purchasing a bottle of red wine? *

- Yes
- No

To what extent do brands influence your choice of purchasing a bottle of red wine? *

	1	2	3	4	5	
Not at all	<input type="radio"/>	Completely				

Where do you acquire information about a bottle of red wine? *

- Friends and family
- Internet
- Retailers
- Magazines/News
- Systembolaget
- None of the above

Have you ever tasted organic red wine before? *

- Yes
- No

How much are you willing to pay for a bottle of red wine? (For your own consumption) *

- less than 85kr
- 85-100kr
- 100-180kr
- 180- 250kr
- more than 250kr

Please RANK the following characteristics when choosing a bottle of wine from 1 (least important) - 7 (most important) with ONE unique number for each answer. *

	1	2	3	4	5	6	7
The price	<input type="radio"/>						
Previous ex...	<input type="radio"/>						
Organic or not	<input type="radio"/>						
The descript...	<input type="radio"/>						
The purpose...	<input type="radio"/>						
The quality ...	<input type="radio"/>						
The brand	<input type="radio"/>						

Meaning of having an organic counterpart: In this setting, it is a brand that also produces organic wine.

Please choose one bottle of wine of your liking. *

Option 1



Brunello di Montalcino
 Col d'Orcia, Toscana,
 Brunello di Montalcino, Italy
 Year: 2012
 Freshly developed, developed flavor with
 pickle character, elements of raisins, cedar,
 dried cranberries, cocoa, nypon,
 cinnamon and sage.
 Served at about 18° C for dishes of dark meat.
 Price: 279kr
 This brand has an organic counterpart

Option 2



Brunello di Montalcino
 Barbi, Toscana, Brunello di Montalcino,
 Italy
 Year: 2012
 Mature, nuanced flavor with pickle character,
 elements of dried cherry, cinnamon,
 pomeranian, cocoa and nuts.
 Served at about 18° C for dishes of dark meat.
 Price: 279kr
 This brand does not have an organic counterpart

Please RANK the following reasons why you chose that particular wine from ^{*} 1 (least influential) - 6 (most influential) with ONE unique number for each answer.

	1	2	3	4	5	6
Previous exper...	<input type="radio"/>					
The organic co...	<input type="radio"/>					
The descriptio...	<input type="radio"/>					
The taste	<input type="radio"/>					
The price	<input type="radio"/>					
The brand	<input type="radio"/>					

Please rate how you perceived the brand (of the chosen wine). ^{*}

	1	2	3	4	5	
Not positive at all	<input type="radio"/>	Very positive				

Please rate how you perceived the quality (of the chosen wine). ^{*}

	1	2	3	4	5	
Low quality	<input type="radio"/>	High quality				

Meaning of having an organic counterpart: In this setting, it is a brand that also produces organic wine.

Please choose one bottle of wine of your liking. *

Option 1

	<p>Château des Jacques Morgan Côte du Py Maison Louis Jadot/Château des Jacques Bourgogne, Beaujolais, Beaujolais Cru, Morgon, France Year: 2015 Bitter, nuanced flavor with bowls of berries, blueberries, raspberries, mint, chocolate, sweet peel and spices. Served at about 16 °C to fat or wild birds, or to non-tasteful dishes of pork or lamb. Price: 239kr</p> <p>This brand does not have an organic counterpart</p>
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Option 2

	<p>Château de la Negly La Falaise Languedoc-Roussillon, Coteaux du Languedoc La Clape, France Year: 2015 Freshly spiced flavor with barrels of berries, blackberries, Jager leaves, chocolate, raspberries, black olives and fresh herbs. Served at about 18 °C for dishes of dark meat. Price: 220kr</p> <p>This brand has an organic counterpart</p>
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Please RANK the following reasons why you chose that particular wine from 1 (least influential) - 6 (most influential) with ONE unique number for each answer. *

	1	2	3	4	5	6
Previous exper...	<input type="radio"/>					
The organic co...	<input type="radio"/>					
The descriptio...	<input type="radio"/>					
The taste	<input type="radio"/>					
The price	<input type="radio"/>					
The brand	<input type="radio"/>					

Please rate how you perceived the brand (of the chosen wine).*

	1	2	3	4	5	
Not positive at all	<input type="radio"/>	Very positive				

Please rate how you perceived the quality (of the chosen wine).*

	1	2	3	4	5	
Low quality	<input type="radio"/>	High quality				

Meaning of having an organic counterpart: In this setting, it is a brand that also produces organic wine.

Please choose one bottle of wine of your liking.*

Option 1

	<p>Tommasi Amarone della Valpolicella Classico, Venetien, Valpolicella, Amarone della Valpolicella Classico, Italy Year: 2013 Spicy, shredded taste with little sweetness, chunks of barrels, dried cherries, rhubarb, nuts, vanilla and chocolate. Serve at about 18 ° C to heavy dishes of dark meat or to stored hard foods. Price: 295kr</p> <p>This brand has an organic counterpart</p>
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Option 2

	<p>Amarone Selezione Antonio Castagnedi, Venetien, Valpolicella, Amarone della Valpolicella, Italy Year: 2013 Spicy, nuanced flavor with barrels of raspberry, raisins, dried cherries, chocolate pralines, arrack, black pepper and cinnamon. Served at about 18 ° C to stored hard food or to tasty dishes of dark meat. Price: 269kr</p> <p>This brand does not have an organic counterpart</p>
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Please RANK the following reasons why you chose that particular wine from ^{*} 1 (least influential) - 6 (most influential) with ONE unique number for each answer.

	1	2	3	4	5	6
Previous exper...	<input type="radio"/>					
The organic co...	<input type="radio"/>					
The descriptio...	<input type="radio"/>					
The taste	<input type="radio"/>					
The price	<input type="radio"/>					
The brand	<input type="radio"/>					

Please rate how you perceived the brand (of the chosen wine). ^{*}

	1	2	3	4	5	
Not positive at all	<input type="radio"/>	Very positive				

Please rate how you perceived the quality (of the chosen wine). ^{*}

	1	2	3	4	5	
Low quality	<input type="radio"/>	High quality				

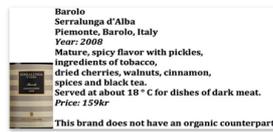
Meaning of having an organic counterpart: In this setting, it is a brand that also produces organic wine.

Please choose one bottle of wine of your liking. *

Option 1



Option 2



Please RANK the following reasons why you chose that particular wine from 1 (least influential) - 6 (most influential) with ONE unique number for each answer. *

	1	2	3	4	5	6
Previous exper...	<input type="radio"/>					
The organic co...	<input type="radio"/>					
The descriptio...	<input type="radio"/>					
The taste	<input type="radio"/>					
The price	<input type="radio"/>					
The brand	<input type="radio"/>					

Please rate how you perceived the brand (of the chosen wine).*

	1	2	3	4	5	
Not positive at all	<input type="radio"/>	Very positive				

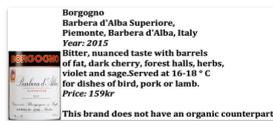
Please rate how you perceived the quality (of the chosen wine).*

	1	2	3	4	5	
Low quality	<input type="radio"/>	High quality				

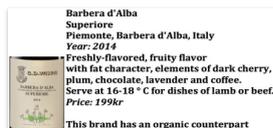
Meaning of having an organic counterpart: In this setting, it is a brand that also produces organic wine.

Please choose one bottle of wine of your liking.*

Option 1



Option 2



Please RANK the following reasons why you chose that particular wine from ^{*} 1 (least influential) - 6 (most influential) with ONE unique number for each answer.

	1	2	3	4	5	6
Previous exper...	<input type="radio"/>					
The organic co...	<input type="radio"/>					
The descriptio...	<input type="radio"/>					
The taste	<input type="radio"/>					
The price	<input type="radio"/>					
The brand	<input type="radio"/>					

Please rate how you perceived the brand (of the chosen wine). ^{*}

	1	2	3	4	5	
Not positive at all	<input type="radio"/>	Very positive				

Please rate how you perceived the quality (of the chosen wine). ^{*}

	1	2	3	4	5	
Low quality	<input type="radio"/>	High quality				

Meaning of having an organic counterpart: In this setting, it is a brand that also produces organic wine.

Please choose one bottle of wine of your liking. *

Option 1

Serego Alghieri Vaio Armaron
 Amarone
 Venetien, Valpolicella, Amarone della
 Valpolicella, Italy
 Year: 2011
 Complex, spicy flavor with fat character,
 elements of dried cherries, prunes, chocolate,
 nuts and figs. Serve at about 18 ° C for dishes
 of dark meat or crushed cheese.
 Price: 399kr



This brand does not have an organic counterpart

Option 2

Amarone della Valpolicella
 Classico
 Venetien, Valpolicella, Amarone della
 Valpolicella Classico, Italy
 Year: 2013
 Spicy flavor with barrels of garlic, rhizome,
 chocolate, dried cherries, nuts and cinnamon.
 Serve at about 18 ° C to well-baked hard
 cheese or to delicious dishes of dark meat.
 Price: 399kr



This brand has an organic counterpart

Please RANK the following reasons why you chose that particular wine from *
 1 (least influential) - 6 (most influential) with ONE unique number for each
 answer.

	1	2	3	4	5	6
Previous exper...	<input type="radio"/>					
The organic co...	<input type="radio"/>					
The descriptio...	<input type="radio"/>					
The taste	<input type="radio"/>					
The price	<input type="radio"/>					
The brand	<input type="radio"/>					

Please rate how you perceived the brand (of the chosen wine). *

	1	2	3	4	5	
Not positive at all	<input type="radio"/>	Very positive				

Please rate how you perceived the quality (of the chosen wine). *

	1	2	3	4	5	
Low quality	<input type="radio"/>	High quality				

How much do brands affect your choice of buying a bottle of red wine? *

	1	2	3	4	5	
A lot	<input type="radio"/>	Not at all				

Would you be interested in purchasing an organic version of a "fine" red wine? *

- Definitely
- Depends on the price
- Depends on the brand
- Maybe
- No (because the taste would be "ruined")
- No (in general)

Thanks for your participation! ^^

Notes

¹A "bag-in-box" is a type of container for the storage and transportation of wines.

²"Risk averse" consumers are referred to the consumers who are reluctant to take risks in trying new products

³The number of digits greater than three depends on the appearance of the first number.

⁴A Cheap talk script involves reading a script that explicitly highlights the hypothetical bias problem before respondents make any decisions with the aim to generate unbiased responses.