

Influence of wine colour on consumer behaviour

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The paper titled 'Influence of wine colour on consumer behaviour' first addresses a theory that seeks to familiarise the reader with wine as a product. The reader will look at wine throughout history, learn about the way wine is made, the types of wine and how it is paired with food. The process of making a decision to buy wine will also be thoroughly considered. This is followed by an introduction to the colour of the wine itself, which is its most recognisable feature. By observing the colour of the wine, many factors can be discovered, such as grape variety, its youth or age, its origin, and the mode of vinification. The subject of this thesis is to determine consumer's perceptions of wine, their preferences, and their purchasing and consumption behaviours.

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Introduction

Wine is actually fermented grape juice. The recipe for wine has been around since ancient times – its usage for therapeutic purposes can be dated back to 2200 B.C., which makes it the world's most famous man-made medicine. There are many various kinds of wine, and some of the most well-known ones are French, Bulgarian, and Croatian. Wines can be categorised by colour: there are white, rosé (rosé, opolo) and red wines [1]. This extremely popular subject opens various opportunities for cooperation between wineries and restaurants or wineries and local food producers (f. e. prosciutto, cheese, and mushrooms can all be perfectly paired with wines). Furthermore, this is a great opportunity for tourism and hospitality staff to promote authentic, local foods and create a unique tourism- and gastro-enological experience. Consumer education and a gradual creation of the so-called 'wine culture' is highly encouraged. The purpose of this approach is to take a step back from consumption of wine as an alcoholic beverage, as well as to create some distance from accusations of alcoholism promotion. Both education and creation of 'wine culture' serve to expand the horizons of those who enjoy an occasional quality drink and potential consumers [2]. Like any other culture, true wine culture is attained over time and encompasses certain knowledges on grapevines, wine production, wine types (by quality, colour, CO₂ and sugar content, etc.), and the ways of serving wine. The most delicate wine culture element is pairing wine with various foods and the aforementioned knowledges are crucial to do so successfully [3].

White wines are traditionally bottled using white and light glass bottles, whereas green or dark bottles are typically used for reds. The 'Vetropack' factory from Hum na Sutli decided to conduct a study ('The Colour of the Bottle and the Effects of Light' research project) in order to explain this. The project was conducted in cooperation with the Faculty of Food Technology and Biotechnology, University of Zagreb, Croatia. The objective of this study was to determine how much light exposure influences the wine taste, with regards to the colour of the bottle. Both red (Cabernet Sauvignon, Agrolaguna d.d.) and white (Malvazija, Agrolaguna d.d.) wines were poured into white, olive-green and black bottles. The bottles were then sealed shut with a screw cap and exposed to bright light or complete darkness over a one-year period. Quality control was conducted every six months: the scientist analysed changes in polyphenol antioxidants (the healthy substances in wine), colour and aroma [4].

Wine colours

Apart from the clarity, fluidity and vividity, the most significant impression is an observation made by the eye. Even though wines aren't sooth-black or snow-white, it is common to categorise them into white, rosé (or opolo), and black (or red) wines, with a special shade spectrum for each category [3,5]. These are mostly described as reddish-yellow, white, bright-yellow or hay-yellow, greenish-yellow, golden-yellow, amber, dark yellow, a dull yellow which is also often referred to as brownish or, if the shade is darker, as dark-brown. Black and pink wines are commonly called red wines and are categorised into pinkish-red, pink, ruby-red, etc. It is important to note that wines get their colours from a group of ingredients that are commonly referred to as dyes [1].

White wine consumers are shaped by white wines

Discussing white wine production technology and white wines in general means discussing a very sensible and refined technology. One might dare say that white wine technology greatly differs from red wine technology, particularly due to red wines' ability to survive a greater quantity of smaller and larger technological hiccups (as opposed to white wines). This is best illustrated by the following jovial and funny saying: 'Red wines always turn out just fine - even after an oenologist's intervention.' White wines demand completely different processing conditions than reds [3].

In these modern times, white wine vinification encompasses new technological and professional terms, modern equipment and zero room for mistakes. White wines are to be processed differently from red ones – when it comes to white wines, the period of maceration is either non-existent or very short, the possibilities of keeping these wines in wooden barrels are very limited, their value doesn't increase with age (some wines reach their peak after only a couple of months), they are light-bodied, can also be consumed without meals and are to be served at lower temperatures. Their vinification demands a certain balance - unlike red wines, even the smallest unwanted change or variation can create consequences that are hard to undo later in the process. The characteristics of white wines, i.e. their youth, freshness and light body can be compared to a young dancer who reaches their peak in the full bloom of youth. Consumers who prefer white wines mostly like a homey ambiance, take vacations in their domicile country and are happy with their career and position in life. White wine lovers usually make between 180.000 and 230.000 kuna per year, and only 43% of them are college graduates. Most of them aren't interested in career advancements – over two fifths of the respondents stated that they aren't very ambitious [6-7].

The 'Colour of the Bottle and the Effects of Light' research project has shown that the colour of the bottle greatly affects wine quality if wine is stored in a place exposed to bright light. Black bottles

basically protect the wine just as well as a dark storage unit. However, olive-green and white bottles are not able to shield the wine from the influence of light that well. The influence of light has resulted in degradation of polyphenol antioxidants, loss of wine colour, and loss of aroma intensity, followed by and increased reductive character of the wine [4].

Rosé consumers are shaped by rosé wines

Pink (rosé) and opolo wines are made from black grapes. The dye is contained within the skin of the grape (with the exception of 'teinturiers,' whereby even the grape flesh contains the dye). A pale juice is obtained by careful mashing of black grapes and a quick separation of juice and skin. The first fraction of light pressing is then added to this juice. Colour intensity depends on the intensity of the pressing. There is also an alternative way of making rosé: after the mashing process, the juice isn't separated from the skin and a short maceration period is initiated instead. A very short fermentation with the skin is also possible. Regardless of the method, pink wines are treated just like white wines once the fermentation is completed [6-7].

Pink wine can either be made by mixing white grape must with red grape must or by mixing white and red wines (which is generally prohibited). People who prefer rosé are mostly shy and quiet. According to a research conducted by Daily Mail, these people are usually kings and queens of social media such as Facebook, are loud and charming in social situations and usually drink up to two glasses every week [6-7].

Red wine consumers are shaped by red wines

One might believe that red wines were named after their colour, but in actuality, all wines are red to a certain degree. As opposed to the majority of wine-growing countries, where red wines are called 'red,' in Croatia they are usually called 'black' [6-7].

Red wine is made of grape varieties that contain anthocyanins – plant segments that give wine its red colour (water-soluble pigments). These pigments are mostly contained in the skin of the grape, with the exception of the aforementioned teinturiers, whereby the pigments can also be found in the grape flesh. Once the ripe grapes are crushed and mashed, the juice isn't separated from the skin and the seeds; instead, the skin and the seeds are left soaking in the grape juice (maceration) in order to obtain all the pigments, tannins, flavours and other ingredients. The quality of red wine greatly depends on the quantity of ingredients that are transferred into the juice from the solid parts of the grape. Alcoholic fermentation of the must begins during the maceration. The must fermentation occurs in large, open containers made of wood or stainless steel. During this phase, sulphur, sugar or acid are added as necessary. In modern vineries, the fermentation process is controlled through temperature and yeasts. For example, the fermentation can be accelerated or slowed down by heating up or cooling down the must, whereby it's very important to take into consideration the sort (or sorts) of grapes one is working with. When it comes to light red wines that are meant to be consumed young, the fermentation can only go on for a few days, whereas the fermentation period for other sorts can take anywhere from two to four weeks. Once the alcoholic fermentation is completed, some vintners extend the maceration period to get more phenols, whereas others pour must into smaller barrels before all the sugar ferments into alcohol. In both cases, pressing follows. The grape juice has now been separated [1,6,8]. Malolactic fermentation is the final phase in the fermentation of all red wines (and only some whites).

Nowadays the colour is usually induced right after the fermentation, with the use of certain bacteria. Some winemakers prefer the traditional methods of winemaking and therefore let it happen spontaneously in the spring, with the rise of temperatures [6]. Afterward, the wine ages in either wooden

barrels or steel containers (wine maturation). Fresh fruity wines (the kinds that are meant to be consumed young) are filtered and bottled. Wine should be transfused during its aging process in order to get rid of the residue. The number of transfusions depends on the time wine spends inside the barrel. Some wines are made by mixing certain sorts or by mixing the same sort that was previously nurtured in different positions. Wine clarification and filtering occurs before bottling (even though some winemakers claim filtering causes the wine to lose some of its character). Many world-famous wines have matured in new oak barrels. Red wine lovers are very ambitious, strong, and intelligent and tend to drink up to four glasses per week [6-7].

The research project 'Colour of the Bottle and the Effects of Light' has found a different situation when it comes to red wine: despite the effects of light, both black and olive coloured bottles provided just as much protection as storage in a dark place. The negative effects of light were most pronounced in wines stored in white bottles.

Depending on the bottle colour, the quality of red and white wine can be significantly altered when exposed to light, wines in white bottles must either be consumed immediately or stored exclusively in dark places [4].

Wine production factors and their influence on wine purchases

Wine quality refers to factors that arise from wine production, as well as indicators or characteristics that indicate a high-quality wine [8].

Consumer behaviour encompasses research of processes that occur when individuals choose and purchase products, services, ideas or experiences in order to satisfy their wants and needs. Consumer behaviour is interdisciplinary: it is studied by researchers from many different areas of expertise who share an interest in the way people interact with the market [9].

In the field of psychology, it is well known that the influences of the aforementioned factors can be mutually intertwined. Some of them can be both the cause and the consequence of certain other factors. This is why they must be studied together, as only such observation can offer knowledge convincing and stable enough to provide a foundation for a marketing strategy. The third aspect of the definition emphasises exchange, which is in accordance with the general principles of marketing. The whole purpose of marketing is exchange with the consumers, as designed by a marketing strategy [10].

Colour psychology is a part of psychology that studies emotions and reactions that occur when people observe certain colours. It has been proven that people react to different colours in different ways; moreover, different colours can cause different emotional states, behaviours and moods in different persons. Apart from physiological reactions to colours, colour psychology also studies the cultural and traditional customs that are deeply engraved into the human consciousness and that produce different effects in different parts of the world [11].

Colours are very significant to the people observing them and can represent a powerful psychological tool. Psychological use of colour can send a positive or a negative message, entice or calm down people, and therewith boost sales. Colour psychology is used in all aspects of marketing, particularly in shop window-, webpage- and product packaging design [12].

If you know what influences and indicates wine quality, you'll be in a better position when shopping for wine. Soon you'll be able to recognise your preferences and notice how your favourites may change with every harvest. From climate to winemaking, there are countless factors that make some wines exceptional. There are several hundreds of chemical compounds in the wine, and almost every single one can affect its overall quality. The interactions between individual ingredients are also crucial. Even

a very detailed chemical analysis can't provide exact data on the best harmonious ratio of certain wine ingredients [13-14]. The results of a chemical and an organoleptic analysis complement each other, thus providing a complete insight into wine characteristics and qualities. Basically, an organoleptic assessment is comprised of impressions obtained by observation of colour, clarity, aroma and taste of the wine, which are also the most important consumer impressions that influence opinions on wines and other products [15]. In some countries with a well-developed wine production tradition, there are special trainings for wine tasters in place. The wine tasters must possess subjective qualities (healthy and well developed senses) that complement their knowledge on tasting techniques and organoleptic characteristics of certain wines. The top wine tasters are able to register a large number of impressions when tasting different kinds of wine. They can also recognise wines of different sorts, geographical origins and even micro locations [1-2].

Organoleptic wine appraisal is conducted on different occasions. However, appraisements conducted in vineries or oenological laboratories may differ from wine tasting during fairs or exhibitions. Regardless of the place and destination, wine tasting must be conducted in accordance with some predetermined, purpose-specific rules. The location of the wine tasting must be bright, airy, noisy and moderately warm. The wine tasting space must be free of foreign smells. It is best to have a designated room that serves exclusively as a wine tasting space. Wine tasting should be performed by wine connoisseurs, especially during fairs and exhibitions [16-17].

The organoleptic wine analysis includes colour, clarity, aroma, and taste appraisal. Champagne quality is appraised when tasting sparkling wines. In order to appraise the wine colour, the taster must have excellent eyesight and the ability to tell apart different colours. The colour of white wine can be: greenish-yellow (the most prized white wine colour), light yellow, yellow, golden-yellow, dark yellow and reddish-yellow. Light yellow is the most common colour of table white wines, whereas yellow and golden-yellow represent older and oxidised wines. A dark yellow colour indicates that solid and liquid fractions were in touch longer during wine production or the breaking down of wine oxidase. The reddish-yellow colour is found in white wines made of red grapes. It isn't a desirable white wine colour. Depending on the sort, pink wines are characterised by a light red colour of a lower or higher intensity. The colour of red wines varies from red, over ruby-reds to maroon. Brown tones diminish the colour of red and pink wine [5,18].

When it comes to clarity, wines can be described as: crystal clear (clear and filtered wines, all bottled wines must exhibit this clarity), clear wines, cloudy wines (grey), cloudy wines (microbe activity or roof crystallisation), and very cloudy wines (subsequent fermentation or spoilage). When appraising the clarity, the wine glass must be observed with a well-light background or next to a light source [5,18].

The taste of wine is appraised using the sense of taste. The nerve endings responsible for the sense of taste are mostly placed on the tip and the root of the tongue. When appraising the taste, a smaller quantity of wine is poured into the mouth using the tongue, so that the wine can reach its root. The wine is either swallowed or spat out afterwards. The wine aroma is determined by exhaling through the nose during the tasting. Wine taste is a complex impression that stems from alcohol, extract, acids, sugar and tannins. According to the influence of alcohol on the taste, wines are perceived and described as weak, moderately strong or strong. The extract affects the so-called fullness of the wine. Wines with more extract are characterised by a fuller taste. According to the acidity, the tasters describe wines as dull, not sour enough, moderately sour and very sour. Wines can also be sweet, which depends on the sugar contents [1,5].

Research methodology

The previous chapters have provided an insight into the theoretical portion of winemaking and wine consumption, whereas this chapter serves to conduct a complete analysis and interpretation of the obtained research results [19]. This research has been conducted using a survey questionnaire created in Google Forms. The respondents have been questioned both online and in person in order to obtain the most relevant answers possible. Three-hundred-and-four respondents participated in the survey. The survey questionnaire was comprised of 26 questions about wine knowledge and personal views and opinions on wine. The majority of questions were closed-ended, whereby the respondents were able to pick one or several answers. Some questions had the added option of 'something else,' which allowed the respondents to give their own answers. Social media, primarily Facebook, was utilised to invite potential respondents to fill out the questionnaire. This helped us collect an appropriate sample with various demographic characteristics. The survey was conducted between December and January of 2020 using Facebook Groups. The questionnaire was in Croatian and the estimated survey time was 2 to 3 minutes. The problem this research uncovered is a general unsatisfactory knowledge on enology. The objective of this research was to determine the consumers' perception of wine, their preferences and consumer behaviours when purchasing and consuming wine.

The research hypotheses are as follows:

H1. Consumers can recognise the wine sort by its colour

H2. Croatian consumers mostly consumed red wines

Discussion of the research results

The first three questions referred to the demographic structure of the respondents, i.e. their sex, age and the region they come from.

The obtained results show that 304 respondents participated in this research. 171 of the respondents were female (56,25%) and 133 were male (43,75%).

The majority of the respondents were between the ages of 31 and 40 (105 persons or 34,5% of respondents); 76 respondents (25%) stated they were between the ages of 21 and 30; 56 respondents were between the ages of 41 and 50 (34,5%); 38 persons claimed to be between the ages of 51 and 60 (12,5%), 19 respondents were over the age of 61 (6,3%) and 10 respondents were under the age of 20 (3,3%).

The majority of respondents – 99 persons or 32,6% - lived in the northwestern part of Croatia, followed by 92 persons (30,2%) who lived in the north of the Adriatic Coast and Lika; 48 respondents (15,8%) of the respondents lived in central Croatia; 41 respondents (13,5%) lived in the central and southern portion of the Adriatic Coast, whereas 24 persons (7,9%) lived in the east of Croatia. The majority of the respondents – 288 persons or 94,70% - had a positive opinion on consumption of wine, 15 respondents (4,90%) had a neutral opinion, whereas only 1 person (0,30%) had a negative opinion. The majority of the respondents – 127 persons or 41,80% – said they liked wine, 117 respondents (38,50%) stated they loved wine, 58 persons perceived wine as okay (19,10%), whereas 2 respondents (0,70%) said they didn't like it. When asked about their enological culture, 110 respondents (36,20%) said their enological culture was satisfactory, 79 persons stated it was very good (26%), 67 respondents (22%) stated their enological culture was bad, 32 respondents (10,5%) said it was excellent, whereas only 16 persons (5,30%) claimed their enological culture was non-existent. See Table 1.

		Frequency	Percent (%)	Valid percent (%)	Cumulative percent (%)
Valid	Good	110	36,2	36,2	36,2
	Bad	67	22	22	58,2
	None	16	5,3	5,3	63,5
	Great	32	10,5	10,5	74
	Very good	79	26	26	100
	Total	304	100	100	---

Table 1: What is your enological culture like? (H1).

The next question referred to the part of the enological culture the respondents were most familiar with. It was possible to select multiple answers. 229 respondents stated they were familiar with wine sorts, 119 reported they were familiar with grape sorts, 116 were familiar with wine colours, 85 with production processes, whereas 70 persons stated they were mostly familiar with planting, cutting, and picking grapes. The remaining respondents said they weren't familiar with anything in particular. When asked 'How often do you consume wine,' almost half of the respondents – 142 persons or 46,70% - said they consumed wine at least once a week, 74 respondents (24,30%) consumed it every day, 44 persons (14,50%) consumed it at least once a month, whereas 43 respondents (14,10%) said they consumed wine only on special occasions. Only 1 person (0,30%) claimed they never consumed wine. The next question asked about consuming wine with meals. 103 respondents stated they consumed wine with meals often, 88 consumed wine with meals occasionally, 66 persons said rarely, whereas 28 respondents stated they always consumed wine with meals. Only 19 persons said they never consumed wine with meals. The next question was: 'How often do you consume wine when going out?' 107 respondents reported they consumed wine during outings often, 95 persons said sometimes, 46 persons said rarely, and 43 respondents said always. Only 13 respondents said they never consumed wine during outings. When asked 'How often do you consume wine during a celebration (birthdays, weddings etc.)?' 130 respondents said they consumed it often, 89 persons said very often, 58 respondents said sometimes, whereas 24 persons said rarely. Only 3 respondents stated they never consumed wine during celebrations. The last question was on wine consumption unrelated to an occasion: 113 respondents stated they consumed wine sometimes, 74 persons said rarely, 71 respondents said often, 25 persons said never and 21 respondents said they always consumed wine.

According to the colour, the majority of respondents (161 persons or 53%) prefer white wine, 126 (41,40%) prefer red wine, whereas only 17 respondents (5,60%) prefer rosé (see Table 2).

		Frequency	Percent (%)	Valid percent (%)	Cumulative percent (%)
Valid	White wine	161	53	53	53
	Red wine	126	41,4	41,4	94,4
	Rosé wine	17	5,6	5,6	100
	Total	304	100	100	---

Table 2: Which colour of wine do you prefer? (H2).

The majority of the respondents (120 persons or 39,50%) said they might be able to recognise the wine sort, 83 respondents (27,30%) said they would not be able to recognise the wine sort, 50 respondents (16,40%) said they weren't sure, 44 respondents (14,50%) said they would probably be able to recognise the wine sort, whereas only 7 respondents (2,30%) said they would definitely be able to recognise the wine sort. See Table 3.

		Frequency	Percent (%)	Valid percent (%)	Cumulative percent (%)
Valid	May be	120	39,5	39,5	39,5
	I do not know	50	16,4	16,4	55,9
	No way	83	27,3	27,3	83,2
	Safe	7	2,3	2,3	85,5
	Probably	44	14,5	14,5	100
	Total	304	100	100	---

Table 3: Are you able to recognise the wine sort by its colour? (H1).

The respondents were asked to grade the importance of the inner characteristics of the wine on a scale from 1 to 5, whereby 1 stands for a completely irrelevant characteristic and 5 stands for a very important characteristic.

The majority of the respondents (107) said that wine colour was an important characteristic, whereas some respondents said colour was both an important and an irrelevant characteristic. 82 respondents said colour was a very important characteristic, 20 respondents said colour wasn't an important characteristic, whereas only 7 respondents said colour was a completely irrelevant characteristic.

The majority of respondents (155 persons) said smell was an extremely important characteristic, followed by respondents who said smell was merely important. 25 respondents said smell was neither important nor irrelevant, 4 respondents said smell wasn't an important characteristic, whereas nobody said smell was an irrelevant characteristic.

The majority of the respondents (260 persons), said wine taste was an extremely important characteristic, followed by 34 respondents who said taste was merely important. 8 respondents remained neutral.

Sample reliability was analysed using the Cronbach's Alpha Coefficient. Nine Likert – scale questions were analysed.

Cronbach's Alpha Coefficient demonstrated a satisfactory reliability level ($\alpha=0,74$). Accordingly, we can conclude this test was reliable (see Table 4).

Reliability statistics		
Cronbach's Alpha	Cronbach's Alpha based on standardised items	No. of items
0,736	0,744	9

Table 4: Cronbach's Alpha Coefficient.

The first question was asked in order to prove the hypothesis H1. H1 was herewith confirmed. The second question also confirms H1.

The first goal of the research was to examine the connection between wine and certain colours. The associations that certain wine colours evoke in consumers can be very powerful tools when it comes to choosing wine. When choosing a wine, consumers associate the colour of the wine with the wine garden, the food and the brand. The use of wine colour as a peripheral meaning in persuasive communication can potentially be very successful, when it comes to women as consumers in whom wine colour has an extremely large impact. Despite the fact that the sample is intentional and appropriate in a study conducted on the influence of wine colour on wine selection when considering the influence of colour and gender of respondents, it is clear that the selection of such a sample significantly reduces external validity. Despite the aforementioned shortcoming, the implications of the research are important. Although it seems intuitively clear, it is important to prove empirically how different wine colour evoke different associations when choosing, and to investigate the best colour choice for each individual

circumstance, i.e. to determine which colour(s) best fits the occasion when drinking wine, in the food consumed. The influence of colour-based wine selection varies depending on the target population and situation, depending on the year of harvest, the type of grapes, the method of processing and the like.

This was the first question asked in order to prove the hypothesis H2. H2 was herewith discarded.

In order to prove the hypothesis H2, the respondents were asked to state their favourite wine sort in an open-ended question. The obtained results indicated that the respondents preferred white wine (Malvasia, Yellow Muscat, Welschriesling, Chardonnay).

The second question also serves to discard H2.

Conclusions

A total of 304 respondents participated in this research. The research was conducted using a questionnaire comprised of 26 questions about wine knowledge and personal views and opinions on wine. Most questions were closed-ended, allowing the respondents to pick one or multiple answers. Some questions offered an additional option of 'something else,' allowing the respondents to add their own answers. More females than males participated in this research. The majority of the respondents were between the ages of 31 and 40, followed by the respondents between the ages of 21 and 30. Only a small number of respondents were under the age of 20. The majority of the respondents lived in the northwest of Croatia, whereas the least number of respondents lived in the east. The majority of the respondents said they had an average life standard, whereas only a small number reported a life standard that was below average. The majority of the respondents had a positive attitude with regards to wine consumption. Sample reliability was tested using Cronbach's Alpha Coefficient for 9 Likert-scale questions. The obtained Cronbach's Alpha Coefficient indicated a satisfactory reliability level ($\alpha=0,74$), and we can therefore conclude the test was reliable.

H1. Consumers can recognise the wine sort by its colour.

The first question was asked in order to confirm H1. The consumers were asked about their enological culture and general knowledge on grape and wine sorts, processing procedures etc. The majority of respondents (36%) said their enological culture was satisfactory, another 36% said their enological culture was very good and 11% stated it was excellent. The next question asked the respondents what they were most familiar with. The respondents were able to choose from the following answers: grape sorts; wine sorts, planting, cutting, and picking processes; production processes; none of the above; and something else. 116 respondents claimed to be familiar with wine colours. When asked whether they were able to recognise the wine sort by its colour, 40% of the respondents said yes. Based on the statistical analysis, H1 is hereby confirmed.

H2. Croatian consumers mostly consume red wines.

The first question was asked in order to confirm H2. The respondents were asked about the colour of wine they preferred. 53% of the respondents said they mostly consumed white wine, 41% said they preferred red wine, whereas only 6% stated they consumed rosé. Based on the obtained answers, hypothesis H2 is herewith discarded. The respondents were asked to name their favourite wine sort in an open-ended question. The obtained results indicate that the respondents preferred white wine (Malvasia, Yellow Muscat, Welschriesling, Chardonnay). Based on the obtained statistical data, H2 is herewith discarded.

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