

***Factors Influencing Consumers' Choices of Environmentally
Conscious Wines in the Netherlands***

An Analysis of Organic, Biodynamic, and Natural Wines

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Preface

The selection of environmentally conscious wine as the focal point of this research stems from my personal fascination with organic, biodynamic, and particularly natural wine. Following my relocation to Amsterdam, I have witnessed a remarkable surge in the demand for natural wine. This has sparked a persistent curiosity within me regarding the factors driving individuals to opt for environmentally conscious wine over the conventional and prevalent options available in the market.

I would like to express my sincere gratitude to Sabine Kuipers, Chateau Amsterdam, Predrag Cadan, the participants, and the academic community for their invaluable support and contributions to this thesis on environmentally conscious wine. Their guidance, insights, and willingness to share their experiences have greatly enriched the research. Additionally, I am deeply thankful for the support and encouragement of my friends and family, as well as the valuable feedback received from individuals interested in this study.

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Summary

The wine market offers various categories of wines, some of which are considered conventional and others that are less well-known including organic, biodynamic, and 'natural' wine. In the Netherlands, many consumers have limited awareness of the specific characteristics and benefits of environmentally conscious wine, and some harbor doubts about the authenticity of organic certification claims.

The existing body of research regarding consumer perceptions of environmentally conscious wines, such as organic, biodynamic, and natural wines, is notably limited. It is essential for farmers, producers, and buyers alike to acquire comprehensive insights into consumer preferences and decision-making factors across these distinct categories. Therefore, the main research question was "Which aspects have an impact on consumers' choices when buying environmentally conscious wine (organic-, biodynamic-, natural wine) in the Netherlands?" To address the research question, a combination of quantitative (questionnaire) and qualitative (blind wine tasting) research methods were used. The target group of this included people living in the Netherlands, that are above the age of 18 and consume environmentally conscious wine.

This research found that consumer preferences for environmentally conscious wines in the Netherlands are influenced by factors including age, gender, income, price sensitivity, willingness to pay, knowledge levels, and perceived attributes. Younger generations favor natural wine, while females show a strong interest in organic and natural options, and males lean towards natural wine. Lower-income consumers opt for organic and natural wines, while higher-income individuals are likely to buy all three categories. Price matters but isn't the sole determinant, and consumers are willing to pay more for natural wine. Knowledge about the wines shapes preferences, and consumers can better discern attributes in biodynamic and organic wines. Among the wine-tasting participants, favorable opinions are common for organic and biodynamic wines, while natural and conventional wines are seen as satisfactory.

The conclusions of the research suggest that in order to effectively promote environmentally conscious wines in the Netherlands, the wine industry should employ tailored marketing strategies for different demographic groups, emphasizing their preferences. Educational efforts about sustainable production can improve consumer understanding, and limited-time price promotions within the 6 to 15 euros range can attract budget-conscious consumers. Collaborating with retailers for in-store displays and online platforms can enhance visibility and encourage informed and sustainable purchasing decisions.

Chapter 1 Introduction

The Netherlands constitutes a notable European wine market. However, due to insufficient domestic wine production, the country remains open to wines of foreign origin (Centre for the Promotion of Imports [CBI], n.d.). Dutch vineyards span approximately 300 hectares, and because of the unsuitable Dutch climate for traditional grape varieties like Merlot and Cabernet Sauvignon, producers opt for more fitting options in the form of hybrid grapes that thrive in colder conditions (CBI, n.d.; Hannah et al., 2020). The dominance of major supermarket chains characterizes the wine market in the Netherlands, and pricing continues to play a pivotal role in shaping Dutch consumer choices when buying wine (CBI, n.d.).

When compared to other European nations, the level of wine consumption in the Netherlands is relatively modest. In the year 2022, the average adult in the Netherlands consumed around 16.9 liters of still wine (Statista, n.d.-a). According to Silva et al. (2017), wine appeals to individuals of all genders in the Netherlands. While it is often regarded as a healthier alcoholic beverage, this is not the primary motive behind its consumption. Instead, flavor, complementing food, and the social aspect play more significant roles in driving wine consumption. Consequently, wine is frequently savored during formal gatherings and special events (Silva et al., 2017). Wine enthusiasts connect it with sentiments of intrigue, enthusiasm, and sophistication, eliciting favorable emotions (Silva et al., 2017).

Although the Netherlands remains predominantly a beer country, the popularity of prosecco and white wines is swiftly increasing (Kumar et al., 2023). There is a growing preference for lighter wines in general, characterized by less oak aging, reduced heaviness, diminished sweetness, and lower alcohol content. These lighter options are currently the top choice among consumers (Kumar et al., 2023). The younger generations have developed a growing fascination with wine, making it more popular and widely favored than ever before. Wine drinking has become more enjoyable and fashionable, as evidenced by the increasing number of wine bars and wine festivals that have emerged in recent years.

Another significant trend is the rise of organic wines and natural wines, which are produced with minimal human intervention (Bellavita Expo, n.d.).

According to Statista (n.d.-b), the domestic wine production in the Netherlands is inadequate to meet the demand, resulting in the country's openness towards "foreign" wines. The total import value of wine in 2021 surpassed 1.4 billion euros, significantly higher than the export value of Dutch wine. In 2021, French wines held the top spot in popularity among Dutch wine drinkers, with an import value exceeding 433 million euros. In addition to French wines, German and Italian wines were also favored by the Dutch.

Between 2010 and 2021, the value of wine exported from the Netherlands increased by five times, reaching an undisclosed amount in 2021. The main destinations for Dutch wine exports are in northern and western Europe, with a focus on Belgium, the UK, and Norway in particular (Sredl, 2023; Statista, n.d.-b).

The wine market offers various categories of wines, some of which are considered conventional and others that are less well-known including organic, biodynamic, and 'natural' wine. Conventional winemaking involves harvesting grapes by hand or machine, crushing and pressing to separate the juice from skins and seeds, adding yeast for fermentation, aging in oak barrels or stainless-steel tanks, clarifying to remove sediment or solids, stabilizing to prevent spoilage, bottling with sulfur dioxide. This process allows for high control and consistency but may include additives and processing aids not considered natural or organic (González et al., 2022).

Organic winemaking practices involve using only organic farming methods to grow grapes and avoiding the use of synthetic pesticides, herbicides, and fertilizers (González et al., 2022). Organic winemakers use natural alternatives to manage pests and diseases, such as beneficial insects, cover crops, and compost. In addition to using organic farming practices, organic winemakers also limit the use of additives and processing aids during winemaking. For example, they may use natural yeasts rather than commercial yeasts, and avoid adding artificial colorings or flavorings to the wine. According to Alonso González et al. (2022), while organic wines typically have lower levels of pesticides and contaminants compared to conventional wines, the study reveals that some organic wines may still contain minimal amounts of unauthorized residues, potentially due to cross-contamination or drift during production.

Organic winemakers are also committed to sustainability and minimizing environmental impact. They may use renewable energy sources, recycle water and waste materials, and prioritize conservation of natural resources (Döring et al., 2019). Organic certification programs vary by country, but in general, wineries must meet strict standards and undergo regular inspections to be certified as organic (Rauhut & Micheloni, 2010).

Biodynamic winemaking practices are a holistic approach to farming and winemaking that emphasizes the interconnectedness of the vineyard and the environment. Biodynamic farming practices focus on building and maintaining healthy soils and ecosystems, with the goal of producing wines that are a true expression of the terroir (Castellini et al., 2017). Biodynamic certification is rigorous and requires adherence to strict standards, including the use of biodynamic preparations, adherence to lunar cycles, and a commitment to environmental sustainability (Castellini et al., 2017; Döring et al., 2019). Although the production of biodynamic wine may involve a less scientific approach, the European market for this type of wine is witnessing growth. More and more wineries are adopting the concept of biodynamics in their wine-making practices (Scozzafava et al., 2021).

The classification of 'natural' wine has garnered significant traction and gained prominence within the market recently and is perceived as safer and with lower environmental impact than organic and biodynamic wines (Alonso González & Parga-Dans, 2020; Legeron, 2020). Natural winemaking is an approach to winemaking that prioritizes minimal intervention in the vineyard and the winery, with the goal of producing wines that express the unique character of the grapes and the terroir (Alonso González & Parga-Dans, 2020). While natural winemaking can be challenging and unpredictable, it has gained a passionate following among wine enthusiasts who value wines with a sense of place and a true expression of the grape variety and the terroir (Urdapilleta et al., 2021). Research has shown that the decision to buy natural wine is often influenced by a desire for a more authentic and unique product that reflects the terroir and winemaker's style (Galati et al., 2019; Viecelli, 2021). Consumers may also be attracted to the use of minimal intervention and a focus on sustainable and organic farming practices in natural winemaking.

However, natural wine has no agreed definition and is less clearly defined than wines made using organic or biodynamic practices (Legeron, 2020). Based on the

previous point, natural wine is regarded as a movement rather than a specific type of agricultural production since natural wine lacks the accreditation which is present in organic or biodynamic winemaking techniques (Sáenz-Navajas et al., 2023). A development occurred on March 25, 2020, when natural wine received official recognition in France under the designation "vin méthode nature," paving the way for similar initiatives to emerge globally (González et al., 2022).

These days, customers are becoming more informed about the products they buy and consume, including the individual characteristics of the goods and their effects on the environment and society (Migliore et al., 2020). The increasing demand for 'natural' or healthier food and beverages, viewed as safer and with lower environmental impact, is rising due to increased public awareness of the negative impacts of conventional agriculture on human health and the environment (Rodriguez-Sanchez & Sellers-Rubio, 2020; Viecegli, 2021).

Despite the growing emphasis on sustainability in the wine industry, the demand for environmentally conscious wine remains relatively modest.

In the Netherlands, many consumers have limited awareness of the specific characteristics and benefits of environmentally conscious wine, and some harbor doubts about the authenticity of organic certification claims (CBI, n.d.).

The existing body of research regarding consumer perceptions of environmentally conscious wines, such as organic, biodynamic, or natural wines, is notably limited. It is essential for farmers, producers, and buyers alike to acquire comprehensive insights into consumer preferences and decision-making factors across these distinct categories. Although consumers may perceive only slight distinctions among these categories, the implications of transitioning from organic to biodynamic or natural wines are substantial. One significant challenge linked to environmentally conscious wines is their elevated production costs, which can reach approximately 25-30% higher than the costs associated with conventionally produced wines (Sellers-Rubio & Nicolau-Gonzalbez, 2016). The burden of these production costs can be alleviated if consumers are willing to pay a premium for environmentally conscious wine. This premium can be justified by the potential advantages that sustainable production offers, including wines with fewer harmful ingredients and enhanced sustainability throughout the production process. Given that a positive willingness to buy eco-labeled wine can act as a signal to producers, motivating them to expand their

consumer base, it becomes paramount to assess the tangible benefits resulting from these transition efforts.

Therefore, the research question that arises is as follows: *Which aspects have an impact on consumers' choices when buying environmentally conscious wine (organic-, biodynamic-, natural wine) in the Netherlands?*

To answer this research question, the following sub-questions have been formulated:

SQ1: Are there demographic factors such as age, gender, or income level that influence consumers' preferences for environmentally conscious wines?

SQ2: What role is price playing in the decision of consumers to buy environmentally conscious wine?

SQ3: Does consumers' knowledge about wine affect consumers' choices in terms of environmentally conscious wine?

SQ4: How do consumers perceive the sensory attributes of the different wine categories?

This report aims to identify the key factors that impact consumers' choices when buying environmentally conscious wine. By examining these specific characteristics, the report aims to propose potential enhancements and strategies to meet consumer preferences, ultimately driving demand and improving market prospects in the wine industry.

Chapter 2 Material and Methods

For this part of the research, material and methods are used to retrieve valid data to draw a conclusion on which attributes have an impact on consumers' choices when buying environmentally conscious wine in the Netherlands.

2.1 Material

To address the research question "Which aspects have an impact on consumers' choices when buying environmentally conscious wine (organic-, biodynamic-, natural wine) in the Netherlands?", a combination of quantitative (questionnaire) and qualitative (blind wine tasting) research methods were used in this study. By integrating both quantitative and qualitative analyses, a holistic comprehension was achieved regarding the perceptions and preferences of the average consumer living in the Netherlands towards environmentally conscious wine.

2.1.1 Questionnaire

The decision to buy environmentally conscious wine may be influenced by factors such as taste preference, price, or personal knowledge (Migliore et al., 2020). By the utilization of an online questionnaire through google forms, a comprehensive dataset was gathered to assess the factors influencing consumers' choices of environmentally conscious wine, incorporating a substantial sample size of people living in the Netherlands.

According to the sample size calculator, a sample size of 273 respondents (based on the population of the Netherlands) was recommended to achieve optimal reliability. This calculation was based on a 90% confidence interval and a 5% margin of error (CheckMarket, n.d.).

All the questions in the questionnaire were close-ended questions ensuring a quantitative approach. A choice was given to not respond to sensitive questions. To ensure the participation of individuals from diverse nationalities residing in the Netherlands, this questionnaire was posted in two different languages, one in English and one in Dutch. Respondents who do not actively live in the Netherlands or are under the age of 18 and therefore prohibited to consume

wine, were rejected and not allowed to carry on with answering the questionnaire. Additionally, in the initial question of the questionnaire, respondents were asked whether they consume environmentally conscious wine. The available options for this question were either "yes" or "no". If respondents selected "no," they were not permitted to proceed with the rest of the questionnaire to avoid irrelevant responses and potential bias.

2.1.2 Wine tasting

Furthermore, by incorporating the qualitative research component through tasting, participants had the opportunity to assess the intrinsic characteristics of the different wine categories, including factors such as taste, smell, and finish. Through this approach, participants were able to assess their preferences and discern potential differences between the wine categories based on their unique qualities. The participants were engaged in a blind tasting, during which they were prevented from seeing the actual wine bottle until the tasting session concluded. The blind wine tasting allows individuals to evaluate wines without knowing their identities, enhancing focus, identifying differences, and helping consumers discover their preferences without label bias (San Francisco Wine School, 2021).

For this research, a sample size of 20 participants was selected for the tasting based on literature with a similar methodology that has been published recently (Haiyan et al., 2022; Pérez-Jiménez et al., 2022; Tian et al., 2021). Furthermore, during the participant selection process, special attention was given to ensuring diversity by including individuals from various demographic backgrounds. Additionally, it was a prerequisite for this study that the participants were residents of the Netherlands and above the age of 18.

The entire tasting event took place in the tasting room of the urban winery, Chateau Amsterdam. In this study, the same grape variety (Garnacha) from the same country (Spain) was utilized. For each category (conventional, organic, biodynamic, and natural), several bottles of Garnacha were provided. Every category was served at room temperature in a different wine decanter in order to present each wine in the exact same way. Each sample included around 90 mL. At least two silent tasting rounds were done for each category. To reset the sensory perceptions of the mouth and nose between the different categories, white bread and coffee beans were provided throughout the entire

tasting session (McClain, 2018). After sampling each wine, participants were required to fill out a tasting sheet (Appendix C). This sheet was established based on a previous study by Lesschaeve and Noble in 2022. To improve the structure and comprehensibility of the tasting procedure, the tasting sheet primarily includes closed-ended questions, predominantly in the Likert scale format. Furthermore, an additional tasting evaluation form was completed by Predrag Cadan, Cellar Manager at Chateau Amsterdam. Predrag possesses a background in "Agricultural Engineering for Fruit and Vine Growing" and has garnered approximately a decade of practical wine expertise in vineyard cultivation and cellar operations. Currently, he holds the position of Cellar Manager at Chateau Amsterdam. Predrag's tasting assessment sheet was intentionally designed to serve as the accurate benchmark for the remaining evaluation forms.

2.2 Method

2.2.1 Questionnaire

By including a questionnaire in this research, relevant data was gathered for the first three sub-questions. The questionnaire was accessible three weeks in total from the 11th of July to the first of August.

The optimal number for this questionnaire should have been 273 respondents to achieve optimal reliability. However, due to time constraints, the questionnaire had to be closed with 105 responses. The questionnaire was disseminated online through my personal social media accounts, specifically on platforms such as Instagram, LinkedIn, and WhatsApp. To ensure inclusivity across different generations and reach beyond the usual social media users, additional data was collected through face-to-face interactions with individuals on the street. Additionally, QR codes were made available at Chateau Amsterdam, where I am currently interning, allowing visitors to access and complete the questionnaire conveniently.

The questions of the questionnaire were designed to answer the initial three sub-questions of the research. The first phase of the questionnaire aimed to target the appropriate audience. In this stage, participants were asked the question, "Do you consume environmentally conscious wine (organic, biodynamic, or natural)," with the response options being "Yes" or "No." If the responder answered "No," the questionnaire was concluded. On the contrary, if the answer was "Yes," the questionnaire proceeded to the second phase. The second phase of the questionnaire began by asking about the frequency of consumption of environmentally conscious wine and was then followed by demographic questions including age, gender, employment status, residence, and income. Following that, questions about the price and willingness to pay for environmentally conscious wine were asked. Additionally, a quantitative assessment of knowledge was incorporated using Forbes et al. (2008) measure. By utilizing this objective measure of knowledge, the genuine knowledge held by individuals could be effectively assessed. The first five questions of this assessment were adapted from a similar study to test wine knowledge in general (Ellis et al., 2018). Furthermore, three additional statements were introduced to specifically evaluate respondents' knowledge regarding environmentally conscious wine. These statements were developed in

collaboration with Juan Ropero (Head of Winemaking at Chateau Amsterdam), Predrag Cadan (Cellar Manager at Chateau Amsterdam), and Charles Barbillon (Cellar Hand at Chateau Amsterdam). Lastly, questions were asked based on the likelihood to buy organic, biodynamic, or natural wine.

Table 1. Overview of sub-questions and the related questionnaire questions

Sub question	Questions no.
1. Are there demographic factors such as age, gender, or income level that influence consumers' preferences for eco-friendly wines?	Q – 3, 4, 7, 20, 21, 22
2. What role is price playing in the decision of consumers to buy environmentally conscious wine?	Q – 8, 9, 10, 11
3. Does consumers' knowledge about wine affect consumers' choices in terms of environmentally conscious wine?	Q – 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

Table 1 shows which questions from the questionnaire will contribute to answering the given sub-question, providing a clear overview. To address the first sub-question, data from demographic questions (Q.3, Q.4, and Q.7) and the average score of the respondents' likelihood to buy organic, biodynamic, and natural wine (Q.20 – Q.22) were collected. To address sub-question 2, the answers from question 8, 9, 10, and 11 were used. To address sub-question 3, data from questionnaire question 12 to 22 were analyzed. Questions 12 to 16 provided information on respondents' general wine knowledge, while questions 17 to 19 focused on their knowledge of environmentally conscious wine. The last three questions (question 20 to 22) collected data on respondents' likelihood to buy organic, biodynamic, and natural wine.

The goal was to assess respondents' quiz performance by calculating their total quiz points for the eight quiz questions that were included in the questionnaire. Pivot tables were used to summarize and compare the quiz scores with the data on respondents' likelihood to buy each wine category (questions 20 to 22). This analysis aimed to explore potential relationships between respondents' wine knowledge levels and their likelihood of buying these wine types. The full questionnaire is provided in both, English and Dutch in Appendix A and B.

By incorporating predominantly close-ended questions in the questionnaire, the research aimed to discern distinct customer preferences. In this quantitative research, the utilization of descriptive statistics served the purpose of summarizing and describing the primary characteristics of the dataset. The data underwent a thorough cleaning process, which involved addressing and resolving issues such as incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within the dataset. This precise approach ensured the accuracy and reliability of the data. The procedure yielded a concise and meaningful overview of the data, enabling a comprehensive understanding of its key features while refraining from making any inferences or drawing conclusions beyond the information contained within the dataset itself.

2.2.2 Wine tasting

To address the final sub-question, a blind wine tasting was conducted. The primary objective of the taste test was to determine whether consumers can differentiate between the different wine categories. In the subsequent sections, a conceptual framework aimed at assessing the impact of sensory perception on consumer choices through the utilization of a blind taste test.

Conventional, organic, biodynamic, and natural wine was tasted. All wines were from Spain and had the same grape variety (Garnacha). Subsequent to each tasting, participants were asked to fill out a designated tasting sheet corresponding to the respective category (Appendix C). The tasting sheet was first asking for general information about the participants (name, gender, age, and employment status). Additionally, for each category, the participants had to evaluate the smell, taste, and finish using a provided Likert scale. Afterward, the participants were asked to rank each wine based on their preference, guess the category (conventional, organic, biodynamic, or natural), and had to choose which of the sensory attributes helped them to distinguish between the categories and supported their choice (smell, taste, and/or finish). Furthermore, Predrag Cadan, the cellar manager, compiled a sheet to discern the appropriate sensory attributes for each category, while also considering the information provided on the label of each category. Additionally, Predrag's tasting sheet included the accurate answers for the categories. This sheet was utilized as the correct tasting reference. Finally, this approach aimed to create a dataset that

captures a broad range of perspectives and preferences in the wine tasting experiment.

To address sub-question 4, the aim was to assess how well participants completed the tasting sheet for the four distinct wine categories. This assessment involved comparing their tasting sheets with the reference sheet filled out by Predrag Cadan. Furthermore, the goal was to assess participants' precision in recognizing the correct category among the four options examined: conventional, organic, biodynamic, or natural, as well as to evaluate their overall perception of the quality of each category.

The utilization of descriptive statistics served the purpose of summarizing and describing the primary characteristics of the dataset provided by the tasting sheet that was filled out by the participants. The data underwent a thorough cleaning process, which involved addressing and resolving issues such as incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within the dataset. This precise approach ensured the accuracy and reliability of the data. The procedure yielded a concise and meaningful overview of the data, enabling a comprehensive understanding of its key features while refraining from making any inferences or drawing conclusions beyond the information contained within the dataset itself.

Chapter 3 Results

This chapter unveils the findings obtained from analyzing the data gathered through the questionnaire responses and the blind wine tasting. The first three sub-questions will be addressed using the questionnaire data, while the last sub-question incorporates the data from the blind wine tasting.

3.1 Questionnaire

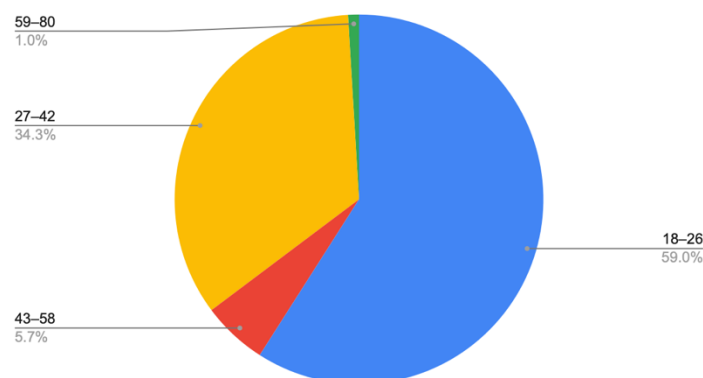
The questionnaire was accessible for three weeks, starting from July 11th to August 1st.

The first phase of the study focused on identifying a suitable audience. Participants were asked a yes-or-no question about their consumption of environmentally conscious wine (organic, biodynamic, or natural). If they answered "No," the questionnaire ended. However, if they responded "Yes," the questionnaire continued to the second phase, where they were asked more detailed questions about their environmentally conscious wine consumption and demographic information.

105 respondents were part of the questionnaire. All information is elaborated on per sub-question.

3.1.1 General Overview

Figure 1. Age group representation



Among the 105 respondents, 59% belonged to the age group of 18-26, 34.3% were between 27 and 42 years old, 5.7% fell in the 43-58 age range, and 1% were aged 59 to 80 as presented in figure 1.

Additionally, 61.9% of the respondents were female, while 38.1% were male. Examining their income, 34.3% reported an income of 1,000 to 3,000 euros, 21% had an income between 3,000 and 6,000 euros, 20% earned less than 1,000 euros, 11.4% earned between 6,000 and 9,000 euros, 5.7% earned between 9,000 and 12,000 euros, and finally, 3.8% had an income exceeding 12,000 euros. As for their residence, the majority of the participants (75.2%) lived in the city. Regarding their employment status, most respondents were working full-time (38.1%) or were students (34,29%).

3.1.2 Sub-question 1

SQ1: Are there demographic factors such as age, gender, or income level that influence consumers' preferences for environmentally conscious wines?

To address the first sub-question, data from demographic questions (Q.3, Q.4, and Q.7) and the average score of the respondents' likelihood to buy organic, biodynamic, and natural wine (Q.20 – Q.22) were collected.

Table 2. Consumers' likelihood to buy environmentally conscious wine across age groups

Age	Average of How likely is it that you will buy organic wine?	Biodynamic wine	Natural wine
18–26	4	3	4
27–42	4	4	4
43–58	4	2	2
59–80	4	4	3

Table 2 shows data including respondents' age groups and their average likelihood of buying organic, biodynamic, and natural wines. The age categories include "18–26," "27–42," "43–58," and "59–80." Utilizing a Likert scale ranging from 1 (low likelihood) to 5 (high likelihood), the table reveals that individuals aged 18–26 exhibited a high likelihood (4) for buying organic and natural wines, alongside a moderate likelihood (3) for biodynamic wine. Those in the age group 27–42 displayed a consistently high likelihood (4) across all three types of wines. Respondents aged 43–58 showed a high likelihood (4) of buying organic wine,

but a notably lower likelihood (2) for both biodynamic and natural wines. Lastly, participants aged 59–80 displayed a high likelihood (4) of buying organic and biodynamic wines, but a slightly lower likelihood (3) for natural wine.

Table 3. Consumers' likelihood to buy environmentally conscious wine across genders

Gender	Average of How likely is it that you will buy organic wine?	Biodynamic wine	Natural wine
Female	4	3	4
Male	3	3	4

Table 3 presents data related to respondents' gender and their average likelihood of buying organic, biodynamic, and natural wines. The categories include "Female" and "Male." The Likert scale, ranging from 1 (low likelihood) to 5 (high likelihood), was used to measure the buying likelihood. The table indicates that females, on average, exhibited a high likelihood (4) of buying organic and natural wines, and a moderate likelihood (3) of buying biodynamic wine. Males, on the other hand, showed a moderate likelihood (3) of buying organic and biodynamic wine and a high likelihood (4) of buying natural wine.

Table 4. Consumers' likelihood to buy environmentally conscious wine across income groups

Income per month	Average of How likely is it that you will buy organic wine?	Biodynamic wine	Natural wine
Less than €1,000	4	3	4
€1,000 - €3,000	4	3	4
€3,000 - €6,000	3	3	3
€6,000 - €9,000	4	3	3
€9,000 - €12,000	3	1	2
More than €12,000	4	4	4
Prefer not to answer	4	4	4

Table 4 presents data related to respondents' monthly income and their average likelihood of buying organic, biodynamic, and natural wine. The income ranges include "Less than €1,000," "€1,000 - €3,000," "€3,000 - €6,000," "€6,000 - €9,000," "€9,000 - €12,000," "More than €12,000," and "Prefer not to answer." The Likert scale was used to measure the buying likelihood, with values ranging from 1 (very unlikely) to 5 (very likely). The table indicates that individuals with incomes less than €1,000 and between €1,000 and €3,000 showed a high average likelihood (4) for buying organic and natural wines, and a moderately

high likelihood (3) for buying biodynamic wine. Those earning between €3,000 and €6,000 indicated a moderate likelihood (3) for all three types of wine. Individuals with monthly incomes between €6,000 and €9,000 exhibited a high likelihood (4) of buying organic wine and a moderate likelihood (3) for the other two types. Respondents with an income between €9,000 and €12,000 show a moderate likelihood (3) of organic wine, a very low likelihood (1) to buy biodynamic wine, and a low likelihood (2) of buying natural wine. Lastly, those who acquire more than €12,000 and those who preferred not to answer about their income showed consistently high likelihoods (4) for all three types of wines.

3.1.3 Sub-question 2

SQ2: What role is price playing in the decision of consumers to buy environmentally conscious wine?

To address sub-question 2, the answers from question 8, 9,10, and 11 were used. The results are shown in percent in the following tables.

Table 5. Price importance of environmentally conscious wine

Likert scale	Count of Does price play a role when buying environmentally conscious wine?
1 (very unimportant)	1,90%
2	10,48%
3	35,24%
4	33,33%
5 (very important)	19,05%
Grand Total	100,00%

Table 5 presents data related to respondents' answers concerning the role of price when buying environmentally conscious wine, using a Likert scale. The Likert scale includes options ranging from 1 (very unimportant) to 5 (very important). The responses are distributed as follows: 1 (very unimportant) account for 1.90%, 2 (unimportant) for 10.48%, 3 (neutral) for 35.24%, 4 (important) for 33.33%, and 5 (very important) for 19.05%.

For the following part, it will be illustrated how much the respondents are willing to pay for one bottle of organic wine, one bottle of biodynamic wine, and one bottle of natural wine. The outcomes are presented as percentages.

Table 6. Consumers' willingness to pay for organic wine

Price	Count of What is your willingness to pay for one bottle of organic wine?
1 to 5 euros	6,67%
6 to 10 euros	43,81%
11 to 15 euros	33,33%
16 to 20 euros	11,43%
more than 20 euros	4,76%
Grand Total	100,00%

Table 6 provides data regarding respondents' willingness to pay (WTP) for organic wine based on different price ranges. The price ranges are categorized as follows: 1 to 5 euros, 6 to 10 euros, 11 to 15 euros, 16 to 20 euros, and more than 20 euros. 6,67% is willing to pay 1 to 5 euros, 43,81% is willing to pay 6 to 10 euros, 33,33% is willing to pay 11 to 15 euros, 11,43% is willing to pay 16 to 20 euros, and 4,76% is willing to pay more than 20 euros.

Table 7. Consumers' willingness to pay for biodynamic wine

Price	Count of What is your willingness to pay for one bottle of biodynamic wine?
1 to 5 euros	8,57%
6 to 10 euros	44,76%
11 to 15 euros	28,57%
16 to 20 euros	4,76%
more than 20 euros	13,33%
Grand Total	100,00%

Table 7 presents data concerning participants' willingness to pay (WTP) for one bottle of biodynamic wine across different price ranges. Of all respondents, 8,57% are willing to pay 1 to 5 euros, 44,76% are willing to pay 6 to 10 euros, 28,57% are willing to pay 11 to 15 euros, 4,76% are willing to pay 16 to 20 euros, and lastly, 13,33% is willing to pay more than 20 euros for one bottle of biodynamic wine.

Table 8. Consumers' willingness to pay for natural wine

Price	Count of What is your willingness to pay for one bottle of natural wine?
1 to 5 euros	5,71%
6 to 10 euros	33,33%
11 to 15 euros	34,29%
16 to 20 euros	18,10%
more than 20 euros	8,57%
Grand Total	100,00%

Table 8 provides data on participants' willingness to pay (WTP) for one bottle of natural wine across different price ranges. Based on the 105 respondents, 5,71% are willing to pay 1 to 5 euros, 33,33% are willing to pay 6 to 10 euros, 34,29% are willing to pay 11 to 15 euros, 18,10% are willing to pay 16 to 20 euros, and 8,57% are willing to pay more than 20% for one bottle of natural wine.

3.1.4 Sub-question 3

SQ3: Does consumers' knowledge about wine affect consumers' choices in terms of environmentally conscious wine?

To address sub-question 3, data from questionnaire question 12 to 22 were analyzed. Questions 12 to 16 provided information on respondents' general wine knowledge, while questions 17 to 19 focused on their knowledge of environmentally conscious wine. The last three questions (question 20 to 22) collected data on respondents' likelihood to buy organic, biodynamic, and natural wine.

The goal was to assess respondents' quiz performance by calculating their total quiz points for the eight quiz questions that were included in the questionnaire. Pivot tables were used to summarize and compare the quiz scores with the data on respondents' likelihood to buy each wine category (questions 20 to 22). This analysis aimed to explore potential relationships between respondents' wine knowledge levels and their likelihood of buying these wine types.

Table 9. Respondents' wine quiz performance

Points	Count of Total score	%
1	9	8,57%
2	3	2,86%
3	16	15,24%
4	11	10,48%
5	12	11,43%
6	24	22,86%
7	8	7,62%
8	22	20,95%
Grand Total	105	100,00%

Table 9 presents data depicting the distribution of respondents' scores based on different point values. The point values range from 1 (lowest) to 8 (highest). The counts and percentages for each point value are as follows: 1 (9 counts, 8.57%), 2 (3 counts, 2.86%), 3 (16 counts, 15.24%), 4 (11 counts, 10.48%), 5 (12 counts, 11.43%), 6 (24 counts, 22.86%), 7 (8 counts, 7.62%), and 8 (22 counts, 20.95%). The total distribution encompasses 105 participants, summing up to 100.00%.

Table 10. Respondents' likelihood to buy organic wine compared with the performance of the wine assessment

Count of Total score	Point values								
Likelihood to buy Organic wine	1	2	3	4	5	6	7	8	Grand Total
1 (very unlikely)								4	4
2	2		2			6			10
3	1		4	3	5	6	1	2	22
4	6		6	3	6	12	4	12	49
5 (very likely)		3	4	5	1		3	4	20
Grand Total	9	3	16	11	12	24	8	22	105

Table 10 presents a cross-tabulation of respondents' likelihood to buy organic wine based on a Likert scale from 1 (very unlikely) to 5 (very likely) with their total scores achieved in the quiz of the questionnaire, categorized by point values from 1 (12,5 % correct) to 8 (100% correct).

Of all the respondents that achieved 1 out of 8 points on the quiz, the majority are likely to buy organic wine. Of the respondents that achieved 2 out of 8 points, all of them are very likely to buy organic wine. Looking at the respondents that achieved 3 out of 8 points, the majority are likely to buy organic wine. Of respondents who achieved 50% of the points, most of them are

very likely to buy organic wine. Based on the respondents who achieved 6 out of 8 points, the majority are likely to buy organic wine. Lastly based on the respondents who answered all questions correctly, the majority is likely to buy organic wine.

It does not matter if the respondents have a high or low knowledge about wine based on the given quiz in the questionnaire, the majority is likely to consume organic wine.

Table 11. Respondents' likelihood to buy biodynamic wine compared with the performance of the wine assessment

Count of Total score Likelihood to buy Biodynamic wine	Point values								Grand Total
	1	2	3	4	5	6	7	8	
1 (very unlikely)	2		4			4		4	14
2	1		6		1	6	1	4	19
3		3	6	5	9	8	1	6	38
4	6			4	1	6	2		19
5 (very likely)				2	1		4	8	15
Grand Total	9	3	16	11	12	24	8	22	105

Table 11 displays a cross-tabulation correlating respondents' inclination to buy biodynamic wine, as determined by a Likert scale ranging from 1 (very unlikely) to 5 (very likely), with their cumulative scores attained in the questionnaire's quiz. These scores are categorized according to point values spanning from 1 (12.5% correct) to 8 (100% correct).

The majority of the respondents who answered 1 out of 8 questions correctly are likely to buy biodynamic wine. All of the respondents who had 2 points showed a moderate likelihood to buy biodynamic wine. The same counts for the respondents who achieved 3, 4, 5, and 6 points. The respondents who answered 7 out of 8 questions correctly are very likely to buy biodynamic wine. Additionally, the same results can be seen for the respondents who answered all questions correctly, the majority is very likely to buy biodynamic wine.

Table 12. Respondents' likelihood to buy natural wine compared with the performance of the wine assessment

Count of Total score	Point values								
Likelihood to buy Natural wine	1	2	3	4	5	6	7	8	Grand Total
1 (very unlikely)			4			1		4	9
2			2			5		2	9
3	6		2	3	6	5	4	1	27
4	3		6	3	3	8	2	3	28
5 (very likely)		3	2	5	3	5	2	12	32
Grand Total	9	3	16	11	12	24	8	22	105

Table 12 shows a cross-tabulation of respondents' likelihood to buy natural wine based on a Likert scale from 1 (very unlikely) to 5 (very likely) with their total scores achieved in the quiz of the questionnaire, categorized by point values from 1 (12,5 % correct) to 8 (100% correct).

Of all the respondents that achieved 1 out of 8 points on the quiz, the majority has a moderate likelihood to buy natural wine. Based on the respondents that achieved 2 points, all of them are very likely to buy natural wine. Looking at the respondents that achieved 3 points, the majority are likely to buy natural wine. Of the respondents who achieved half of the points, the greater number is very likely to buy natural wine. Furthermore, of the respondents who got 5 questions correct, the majority has a neutral perspective on buying natural wine. For the respondents with 6 points, the majority are likely to buy natural wine. Based on the respondents with 7 points, the majority show a moderate likelihood to buy natural wine. Lastly, of the respondents who answered all the questions correctly, the majority are very likely to buy natural wine.

3.2 Blind wine tasting

The blind wine tasting event occurred on July 19th, 2023, within the tasting room at Chateau Amsterdam, situated in Amsterdam Noord. A group of 20 individuals were chosen to partake in this tasting experience.

Among the 20 participants, the largest segment (50%) fell within the age range of 27 to 42 years, 45% was 18 to 26 years old and 5% was between 43 to 58 years old. Furthermore, the gender distribution was 55% female and 45% male. The majority (45%) of the participants were engaged in full-time employment, 40% were students, 10% were engaged in part-time employment and 5% were seeking opportunities up to that point.

An additional tasting evaluation form was completed by Predrag Cadan, Cellar Manager at Chateau Amsterdam. Predrag's tasting assessment sheet was intentionally designed to serve as the accurate benchmark for the remaining evaluation forms.

3.2.1 Sub-question 4

SQ4: How do consumers perceive the sensory attributes of the different wine categories?

To address this specific sub-question, the aim was to assess how well participants completed the tasting sheet for the four distinct wine categories. This assessment involved comparing their tasting sheets with the reference sheet filled out by Predrag Cadan.

The results of the 20 tasting sheets have been summarized by calculating the average of each score that was given for the Likert scale of each sensory attribute.

The average score of the participants was then compared with the score given by Predrag by calculating the difference between those two scores.

From this, it becomes apparent how effectively the participants perceive the sensory attributes of the wines. Furthermore, the tasting data was utilized to determine whether the participants could successfully distinguish between the various categories, such as conventional, organic, biodynamic, and natural wines. The data also aimed to capture their perception of the quality of these diverse wines through sensory evaluations.

3.2.2 Natural Wine

Table 13. The sensory evaluation results of the natural wine sample (A)

Sensory attribute	Category	Likert scale	Participants (average score (rounded))	Predrag	Difference
Smell	Fruit	1 (extremley) - 5 (not at all)	3	5	2
	Floral	1 (extremley) - 5 (not at all)	3	5	2
	Herbal & Spicy	1 (extremley) - 5 (not at all)	3	3	0
	Earthy & Mineral	1 (extremley) - 5 (not at all)	3	5	2
	Oak & Aging	1 (extremley) - 5 (not at all)	2	5	3
Taste	Body	1 (very light) - 5 (heavy)	3	3	0
	Sweetness	1 (dry) - 5 (very sweet)	2	2	0
	Acidity	1 (tart) - 5 (soft)	3	5	3
	Tannins	1 (very soft) - 5 (hard)	3	1	-2
	Fruit	1 (extremley) - 5 (not at all)	4	5	1
	Spice	2 (extremley) - 5 (not at all)	3	3	0
	Herbal	3 (extremley) - 5 (not at all)	3	5	2
	Floral	4 (extremley) - 5 (not at all)	4	5	2
	Earthy notes	5 (extremley) - 5 (not at all)	2	5	3
	Finish	1 (short finish) - 3 (long finish)	2	1	-1
Difference (#0)					73%

Table 13 displays the sensory evaluation results of the natural wine sample (A). The assessment encompassed various aspects including smell, taste, and finish. The participants, along with Predrag Cadan, were asked to rank distinct categories within these sensory attributes based on a Likert scale. The table presents the average rankings assigned by the participants alongside Predrag Cadan's rankings. Lastly, the last column illustrates the variance between the participants' rankings and those of Predrag Cadan. Comparing the ranking results of the Participants with the results from Predrag, the participants were able to have a similar ranking in the herbal/spicy aroma, and a similar ranking for the body, the sweetness, and the spiciness in the wine's taste. While comparing the score of the participants with the score of Predrag, the participants achieved 27% similarity with Predrag's results.

Figure 2. The recognition accuracy of natural wine

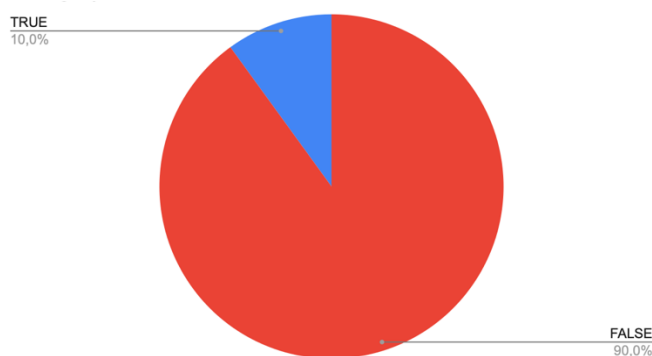


Figure 2 displays the extent to which people were able to correctly identify the natural wine (sample A).

Out of all the participants, 10% demonstrated the ability to correctly recognize the natural wine category. Conversely, 90% of the participants were unable to correctly identify the "natural wine" category during the blind tasting.

Figure 3. Rating of natural wine

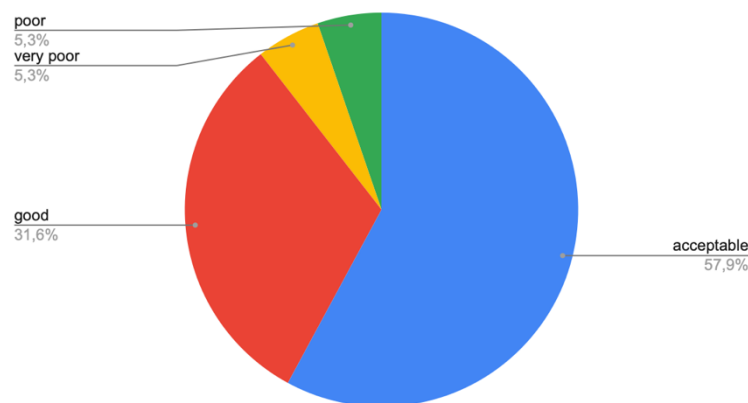


Figure 3 illustrates the evaluations provided by the 20 participants during the tasting session for the natural wine. The data reveals that 57.9% of participants deemed the natural wine acceptable, 31.6% considered it good, 5.3% rated it as poor, and an equal 5.3% perceived it as very poor.

3.2.3 Biodynamic Wine

Table 14. The sensory evaluation results of the biodynamic wine sample (B)

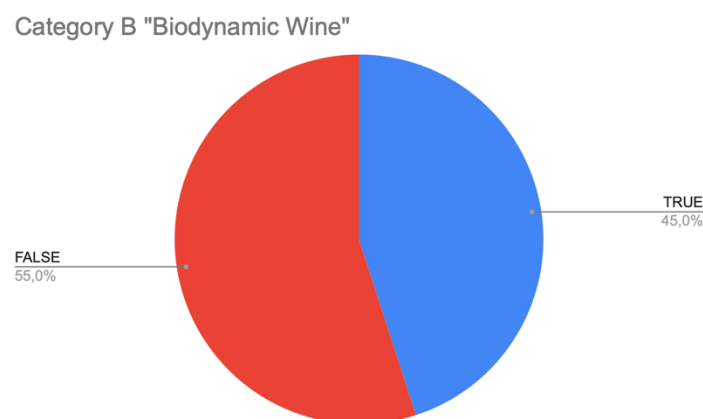
Sensory attribute	Category	Likert scale	Participants (average score (rounded))	Predrag	Difference
Smell	Fruit	1 (extremley) - 5 (not at all)	2	2	0
	Floral	1 (extremley) - 5 (not at all)	2	5	3
	Herbal & Spicy	1 (extremley) - 5 (not at all)	3	3	0
	Earthy & Mineral	1 (extremley) - 5 (not at all)	4	5	1
Taste	Oak & Aging	1 (extremley) - 5 (not at all)	4	5	1
	Body	1 (very light) - 5 (heavy)	2	3	1
	Sweetness	1 (dry) - 5 (very sweet)	3	1	-2
	Acidity	1 (tart) - 5 (soft)	3	3	0
	Tannins	1 (very soft) - 5 (hard)	2	2	0
	Fruit	1 (extremley) - 5 (not at all)	3	3	0
	Spice	2 (extremley) - 5 (not at all)	3	3	0
	Herbal	3 (extremley) - 5 (not at all)	3	5	2
Finish	Floral	4 (extremley) - 5 (not at all)	3	5	2
	Earthy notes	5 (extremley) - 5 (not at all)	4	5	1
	Finish	1 (short finish) - 3 (long finish)	2	2	0
Difference (#0)					53%

The sensory evaluation findings for the biodynamic wine sample (B) are shown in Table 14. The evaluation took into account a number of factors, including smell, taste, and finish. Predrag Cadan and the participants were asked to rank several categories within these sensory characteristics using a Likert scale. Predrag Cadan's rankings are shown in the table with the participant's average rankings. The final column shows the variation between the participants' rankings and Predrag Cadan's.

Both the participants and Predrag shared identical rankings for the fruit and herbal/spicy aromas, as well as for the acidity, tannins, fruit, and spiciness of the wine's taste. Furthermore, their ranking for the finish of the wine was also similar.

The outcome of the tasting shows a 47% similarity between the ranking of the participants and the ranking of Predrag.

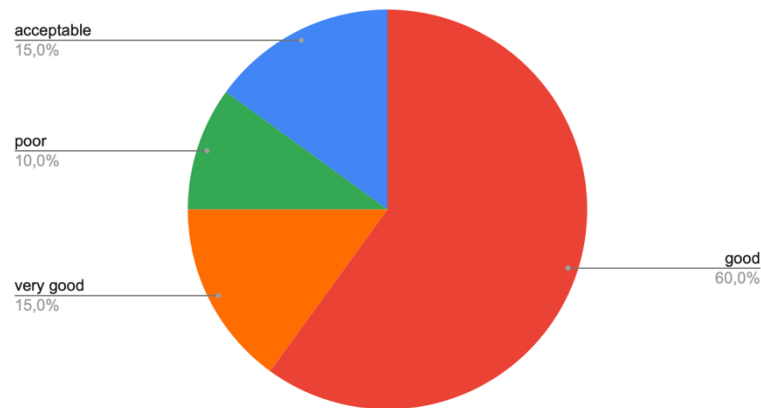
Figure 4. The recognition accuracy of biodynamic wine



In Figure 4, the chart displays the extent to which people were able to correctly identify the biodynamic wine (sample B).

Among all the participants, 45% showed the capability to accurately identify the biodynamic wine. Conversely, 55% of the participants were not able to correctly distinguish the biodynamic wine during the blind tasting.

Figure 5. Rating of biodynamic wine



In Figure 5, the assessment of the biodynamic wine is depicted. The data indicates that 60% of participants characterized the wine's quality as good, while 15% regarded it as very good. Conversely, 15% found the quality of the biodynamic wine acceptable, and the remaining 10% found it poor.

3.2.4 Organic Wine

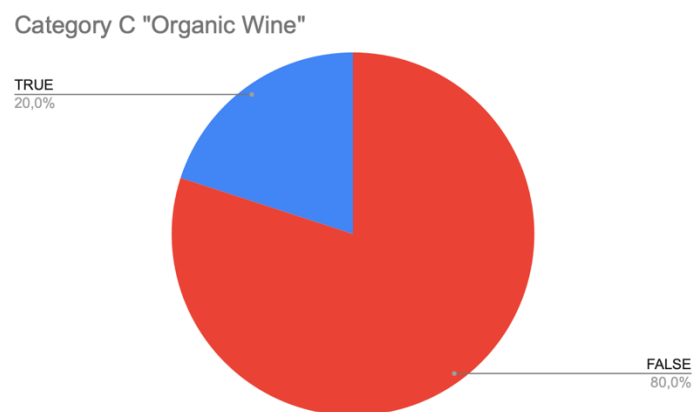
Table 15. The sensory evaluation results of the organic wine sample (C)

Sensory attribute	Category	Likert scale	Participants (average score (rounded))	Predrag	Difference
Smell	Fruit	1 (extremley) - 5 (not at all)	3	4	1
	Floral	1 (extremley) - 5 (not at all)	2	5	3
	Herbal & Spicy	1 (extremley) - 5 (not at all)	3	3	0
	Earthy & Mineral	1 (extremley) - 5 (not at all)	3	4	1
	Oak & Aging	1 (extremley) - 5 (not at all)	2	5	3
Taste	Body	1 (very light) - 5 (heavy)	3	3	0
	Sweetness	1 (dry) - 5 (very sweet)	3	1	-2
	Acidity	1 (tart) - 5 (soft)	3	2	-1
	Tannins	1 (very soft) - 5 (hard)	3	3	0
	Fruit	1 (extremley) - 5 (not at all)	3	3	0
	Spice	2 (extremley) - 5 (not at all)	3	3	0
	Herbal	3 (extremley) - 5 (not at all)	3	5	2
	Floral	4 (extremley) - 5 (not at all)	2	5	3
	Earthy notes	5 (extremley) - 5 (not at all)	3	5	2
Finish	Finish	1 (short finish) - 3 (long finish)	2	2	0
Difference (#0)					60%

Table 15 presents the outcomes of the sensory evaluation for the organic sample (C). The evaluation covered multiple elements, including smell, taste, and finish. The participants and Predrag Cadan were requested to rank specific categories within these sensory attributes using a Likert scale. The table showcases the mean rankings attributed by participants alongside Predrag Cadan's rankings. Finally, the last column delineates the disparity between the participants' rankings and those provided by Predrag Cadan. Derived from the

organic wine sample, the participants' rankings aligned with Predrag's rankings for the herbal and spicy aroma, the body, tannins, fruit, spiciness in the wine's taste, as well as the wine's finish. In total, the participants had 40% ranked correctly compared to Predrag's ranking.

Figure 6. The recognition accuracy of organic wine



In Figure 6, the graph illustrates the degree to which individuals accurately recognized the organic wine (sample C).

Out of all the participants, 20% demonstrated the ability to correctly identify the organic wine, while the remaining 80% were unable to accurately distinguish the organic wine during the blind tasting.

Figure 7. Rating of organic wine

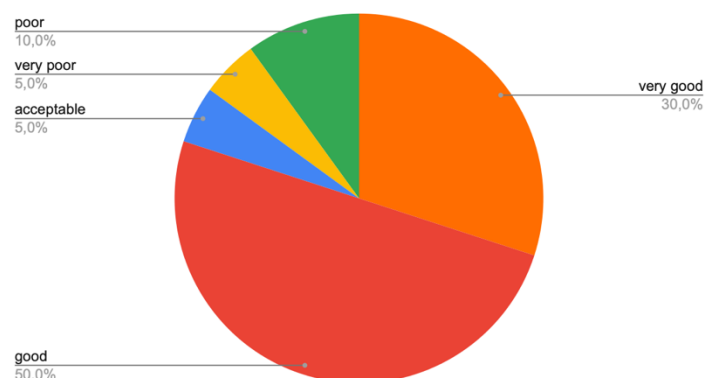


Figure 7 displays the evaluations assigned to the organic wine. According to the tasting assessments, 30% of participants rated the organic wine as very good, while 50% similarly rated it as very good. A smaller fraction, 5%, deemed the wine acceptable, while another 5% deemed it very poor. Lastly, 10% of participants rated the wine as poor based on their tasting experience.

3.2.5 Conventional Wine

Table 16. The sensory evaluation results of the conventional wine sample (D)

Sensory attribute	Category	Likert scale	Participants (average score (rounded))	Predrag	Difference
Smell	Fruit	1 (extremley) - 5 (not at all)	3	2	-1
	Floral	1 (extremley) - 5 (not at all)	3	5	2
	Herbal & Spicy	1 (extremley) - 5 (not at all)	3	3	0
	Earthy & Mineral	1 (extremley) - 5 (not at all)	3	5	2
	Oak & Aging	1 (extremley) - 5 (not at all)	3	2	-1
Taste	Body	1 (very light) - 5 (heavy)	4	4	0
	Sweetness	1 (dry) - 5 (very sweet)	3	1	-2
	Acidity	1 (tart) - 5 (soft)	2	3	1
	Tannins	1 (very soft) - 5 (hard)	4	3	-1
	Fruit	1 (extremley) - 5 (not at all)	3	2	-1
	Spice	2 (extremley) - 5 (not at all)	3	3	0
	Herbal	3 (extremley) - 5 (not at all)	3	5	2
Finish	Floral	4 (extremley) - 5 (not at all)	3	5	2
	Earthy notes	5 (extremley) - 5 (not at all)	3	4	1
	Finish	1 (short finish) - 3 (long finish)	3	3	0
Difference (≠0)					73%

Table 16 shows the sensory evaluation results of the conventional wine sample (D). The assessment encompassed various aspects including smell, taste, and finish. Both Predrag Cadan and the participants were tasked with ranking various aspects of these sensory characteristics using a Likert scale. The table presents Predrag Cadan's rankings alongside the average rankings of the participants. The final column showcases the disparities between the rankings of the participants and those provided by Predrag Cadan.

Examining the rankings of the conventional wine, it becomes evident that the participants shared identical rankings with Predrag for the herbal and spicy aroma of the conventional wine. In terms of the conventional wine's taste, the participants also shared the same rankings with Predrag for the body and spiciness, and also for the finish of the wine. The outcome of the tasting shows a 27% similarity between the ranking of the participants and the ranking of Predrag.

Figure 8. The recognition accuracy of conventional wine

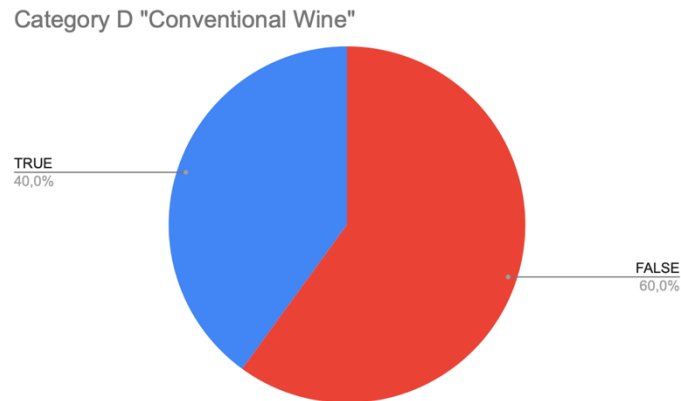


Figure 8 presents the degree to which individuals accurately recognized the conventional wine (sample D).

Out of all participants, 40% demonstrated the ability to correctly identify the conventional wine, while on the other hand, 60% of the participants were unable to accurately distinguish the conventional wine during the blind tasting.

Figure 9. Rating of conventional wine

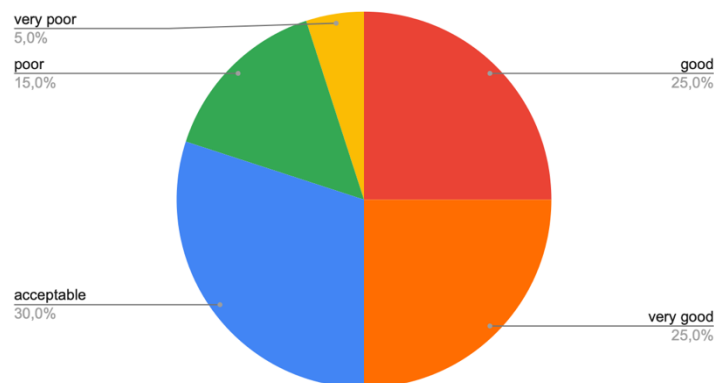


Figure 9 depicts the evaluations given to the conventional wine. The data reveals that 30%, regarded the conventional wine as acceptable. Following closely, 25% of participants rated it as very good, and an additional 25% considered it good. On the other hand, 15% of participants found the quality to be poor, while a smaller 5% deemed it very poor.

Chapter 4 Discussion of Results

In this chapter, the chosen methodology and the results of this research are discussed. This research aimed to identify the key factors that impact consumers' choices when buying environmentally conscious wine in the Netherlands. By examining these specific characteristics, the report aims to propose potential enhancements and strategies to meet consumer preferences, ultimately driving demand and improving market prospects in the wine industry. Data was gathered through a questionnaire involving 105 participants and a blind wine tasting session with 20 individuals. In both research methods, only individuals residing in the Netherlands, aged 18 or older, and consuming environmentally conscious wine were considered.

4.1 Relevance of the Results

4.1.1 Sub-question 1

The first sub-question aims to find out if there are demographic factors such as age, gender, or income level that influence consumers' preferences for environmentally conscious wine including organic, biodynamic, and natural wine. By comparing the demographic factors with the three different wine categories it becomes evident that organic wine garners popularity across all age groups, while the younger generation displays a notable preference for natural wine. In contrast, interest in buying biodynamic wine varies among age groups. Examining gender in conjunction with the three wine categories, it becomes evident that females exhibit a pronounced inclination towards both organic and natural wines. Conversely, males exhibit a heightened interest in natural wine compared to the other categories. Furthermore, income level analysis underscores intriguing insights. Individuals with lower incomes exhibit a heightened affinity for buying organic and natural wines. In contrast, those with higher incomes tend to display interest in all three wine categories.

By understanding that organic wine is popular across all age groups and that the younger generation prefers natural wine, wine producers can focus on producing and promoting these types of wines more prominently.

This information can guide product development and marketing strategies to cater to these specific preferences, potentially leading to increased sales. With the knowledge that females have a pronounced inclination towards organic and natural wines, and that males have a heightened interest in natural wine, wine marketers can create targeted marketing campaigns that resonate with these specific gender preferences. This approach could enhance the effectiveness of advertising efforts. Demographic insights, such as the correlation between income levels and wine preferences, allow the industry to segment their market and offer personalized experiences.

4.1.2 Sub-question 2

The sub-question 2 focuses on the role of the price when buying organic, biodynamic, and natural wine. Based on this study, the majority of the respondents indicate that the price of environmentally conscious wine is moderately important, with a notable number also considering the price of environmentally conscious wine to be important. Additionally, the study indicates that a significant number of the respondents are willing to pay 6 to 15 euros for one bottle of organic wine, biodynamic, and natural wine. However, the majority of the respondents are willing to pay between 6 and 10 euros for a bottle of organic and biodynamic wine, while for natural wine, they are willing to pay a slightly higher price of 11 to 15 euros.

The provided information about the role of price when buying environmentally conscious wines (organic, biodynamic, and natural wines) can offer several insights into the wine industry in the Netherlands. This data is essential for pricing strategies, marketing approaches, and product offerings.

The industry can adjust its pricing strategies based on the importance consumers place on the price of environmentally conscious wines.

Understanding that the majority of respondents consider price to be moderately important or important can guide the industry in setting competitive and attractive price points that resonate with consumer expectations.

The willingness of respondents to pay between 6 and 15 euros for a bottle of organic, biodynamic, and natural wine provides a clear pricing range that the industry can work within. This information can guide decisions about where to

position these wines in the market in terms of pricing tiers – such as budget, mid-range, or premium.

4.1.3 Sub-question 3

The aim of the third sub-question is to find out if consumers' knowledge about wine affects the choice of environmentally conscious wine.

Derived from the assessment embedded within the questionnaire to measure respondents' level of knowledge, it is observed that approximately 51,43% of the respondents attained a substantial score on the quiz (score between 75% and 100%) thus demonstrating a solid knowledge of wine. Conversely, 21,90% of the respondents exhibited moderate knowledge of wine (score between 50% and 62,5%), and lastly, 26,67% of the respondents presented low knowledge of wine (score below 37,5%).

Comparing the knowledge level of the respondents with the buying interest in organic, biodynamic, and natural wine, it becomes evident that the majority of the respondents with a high knowledge have a moderate interest in buying biodynamic wine, are likely to buy organic wine, and very likely to buy natural wine. Based on the majority that showed moderate knowledge, they are likely to buy organic wine and have a moderate interest in buying biodynamic and natural wine. Lastly, looking at the majority that shows low knowledge, they are likely to buy organic and natural wine and have a moderate interest in buying biodynamic wine.

In summary, all groups are likely to buy organic wine, have a moderate interest in buying biodynamic wine, and based on natural wine, those who have substantial knowledge about wine are very likely to buy natural wine, and individuals with moderate knowledge have a moderate interest in buying natural wine, and the ones with a low wine knowledge are likely to buy natural wine.

In summary, the data linking consumers' knowledge of wine with their preferences for environmentally conscious wines provides actionable insights for the wine industry to tailor their marketing, education, and product strategies. By understanding how knowledge influences buying behavior, the industry can effectively cater to a wide range of consumers and encourage informed buying decisions.

4.1.4 Sub-question 4

In conclusion, the results of the blind wine tasting reveal varying levels of accuracy among participants during sensory evaluations of different wine types. The biodynamic wine garnered the highest correctness rate at 47%, followed closely by the organic wine at 40%. Notably, both natural wine and conventional wine shared a similar accuracy rate of 27%. These findings suggest that participants demonstrated a relatively higher ability to discern attributes in biodynamic and organic wines compared to natural and conventional counterparts.

Additionally, to see if the participants were able to identify the categories throughout the tasting, the results of the 4th sub-question show that 10% of the participants were able to identify the natural wine throughout the blind wine tasting. Next to the natural wine, 45% were true about selecting the biodynamic wine for sample B while 20% were right about selecting organic wine for sample C. Lastly, 40% were able to recognize the conventional wine. In conclusion, among the cohort of 20 participants engaged in the tasting, a significant majority held favorable opinions regarding the organic and biodynamic wines. Conversely, the natural and conventional wines garnered perceptions of being satisfactory from the same group.

The provided information about the results of the blind wine tasting including participants' ability to identify wine categories, their distinctive characteristics, and their opinions about different wine types can provide actionable insights for the wine industry in the Netherlands. By leveraging this information, the industry can refine production processes, tailor marketing efforts, and enhance consumer education to better cater to consumer preferences and improve overall customer satisfaction.

4.2 Reflection on Methodology

Looking back on the questionnaire conducted to gather data for the first three sub-questions, it is unfortunate that time constraints hindered the achievement of the desired respondent count. To ensure the research's credibility, the objective was to reach a sample size of 273 respondents, but only 105 responses were collected within the given timeframe. It's important to take into account that this research only included individuals residing in the Netherlands who are over 18 years old and consume environmentally conscious wine. This method resulted in the exclusion of a considerable number of individuals from taking part in the questionnaire, rendering it even more challenging to achieve a substantial number of participants within the designated time frame.

Furthermore, the diminished response rate observed in the age group above 43 years old (5.7% for 43 to 58, 1% for 59 to 80, and 0% for respondents above 80) may pose a limitation to the research, as it has resulted in a reduced amount of data collected from these older age segments. Gathering a higher number of responses from this age group could have potentially contributed to a more comprehensive representation of the entire target demographic for this research.

Derived from the blind wine tasting, the study encompassed 20 participants. Regrettably, the age distribution was not sufficiently balanced, with a shortage of participants aged above 42. A more varied age spectrum would have enhanced the research's reliability. However, all participants displayed high levels of enthusiasm and curiosity as they embarked on the blind tasting journey across various wine categories including conventional, organic, biodynamic, and natural wine. Based on the feedback from my supervisor, the tasting sheet was redesigned by including only close-ended questions, mainly Likert scales, to make it more convenient for the participants and easier to analyze the data for this research.

Every participant was provided with clear instructions regarding the study's procedure, ensuring their understanding of expectations. The questions presented were uncomplicated, and there were no difficulties encountered in comprehending and responding to them.

Overall, this was my first time conducting quantitative research using a questionnaire, as well as qualitative research through a blind wine tasting. Throughout the research process, I gained a comprehensive learning experience, particularly during the data analysis phase.

Chapter 5 Conclusions and Recommendations

5.1 Conclusions

The wine market offers various categories of wines, some of which are considered conventional and others that are less well-known including organic, biodynamic, and 'natural' wine.

This study was conducted with the objective of thoroughly investigating the factors that play a role in shaping consumers' choices when they are buying wines that are environmentally conscious, including organic, biodynamic, and natural wine.

A comprehensive dataset was assembled for the study and subsequently analyzed to address the four sub-questions, ultimately providing answers to the primary research question of this thesis.

SQ1: Are there demographic factors such as age, gender or income level that influence consumers' preferences for environmentally conscious wine?

The analysis of the influence of demographic factors on consumers' preferences for environmentally conscious wines, encompassing organic, biodynamic, and natural varieties, has yielded significant insights for the wine industry. The analysis of age groups has revealed a widespread appreciation for organic wine across all generations, while the younger demographic notably favors natural wine. Biodynamic wine's popularity, however, experiences fluctuations among different age groups.

The examination of gender in relation to wine preferences underscores distinct patterns. Females demonstrate a strong inclination towards both organic and natural wines, highlighting their keen interest in environmentally conscious choices. In contrast, males exhibit a heightened attraction to natural wine compared to the other wine categories.

Moreover, the exploration of income levels reveals intriguing trends. Individuals with lower incomes exhibit a heightened affinity for buying organic and natural wines, possibly reflecting a deliberate decision to align with environmentally conscious options within their budget constraints. Conversely, individuals with higher incomes exhibit a broad interest in all three wine categories, indicating a willingness to explore and invest in a diverse range of environmentally conscious wine choices.

SQ2: What role is price playing in the decision of consumers to buy environmentally conscious wine?

The research reveals that the price of such wines holds a moderate level of importance for the majority of respondents.

Furthermore, when examining the willingness to pay for different types of wine, clear trends emerge. Most participants are willing to pay 6 to 10 euros for organic or biodynamic wine. Based on the willingness to pay for natural wine, respondents are prepared to allocate slightly more, 11 to 15 euros, for a bottle of natural wine.

SQ3: Does consumers' knowledge about wine affect consumers' choices in terms of environmentally conscious wine?

Analyzing the connection between respondents' knowledge levels and their buying interests in organic, biodynamic, and natural wine uncovers discernible trends. Among those with high knowledge, a notable majority displays a moderate interest in buying biodynamic wine, while showing a likelihood of buying organic and an even higher likelihood of buying natural wine.

Respondents with moderate knowledge are inclined to buy organic wine and exhibit moderate interest in biodynamic and natural wine. Meanwhile, individuals with low wine knowledge are likely to buy organic and natural wine, alongside a moderate interest in biodynamic wine. All knowledge groups are inclined to purchase organic wine and exhibit a moderate interest in biodynamic wine. In the context of natural wine, respondents with substantial wine knowledge are very likely to make a purchase, those with moderate knowledge express a moderate buying interest, and those with lower wine knowledge are also inclined to buy.

SQ4: How do consumers perceive the sensory attributes of the different wine categories?

The blind wine tasting exhibits varying levels of accuracy among participants when evaluating different wine types based on sensory attributes. The highest rate of correctness, at 47%, was observed for biodynamic wine, closely followed by organic wine at 40%. Both natural and conventional wines shared a similar accuracy rate of 27%. These findings imply that participants displayed a relatively better ability to discern attributes in biodynamic and organic wines compared to their natural and conventional counterparts.

Within the group of 20 participants engaged in the tasting, a significant majority held favorable opinions regarding the organic and biodynamic wines. In contrast, the natural and conventional wines received perceptions of being satisfactory from the same group of participants.

Q. "Which aspects have an impact on consumers' choices when buying environmentally conscious wines (organic-, biodynamic-, and natural-wine) in the Netherlands?"

The choices consumers make when buying environmentally conscious wines (organic, biodynamic, and natural wines) in the Netherlands are influenced by several key aspects. The analysis of the data gathered through quantitative and qualitative research has revealed significant insights into these preferences within the Dutch wine market.

1. Age Groups: Across all age groups, there is a widespread appreciation for organic wine. However, the younger generation shows a distinct preference for natural wine. Biodynamic wine's popularity experiences fluctuations among different age groups, indicating that it may not have a consistent appeal across all generations.
2. Gender: Females demonstrate a strong inclination towards both organic and natural wines, highlighting their keen interest in environmentally conscious choices. In contrast, males are more attracted to natural wine compared to the other wine categories.
3. Income Levels: Consumers with lower incomes tend to show a heightened affinity for buying organic and natural wines. This might suggest that these individuals deliberately choose environmentally conscious options that align with their budget constraints. On the other hand, individuals with higher incomes show a broad interest in all three wine categories, indicating a willingness to explore and invest in a diverse range of environmentally conscious wine choices.
4. Price Sensitivity: The research indicates that the price of environmentally conscious wines holds a moderate level of importance for the majority of

respondents. This suggests that while price plays a role, it's not the exclusive determinant in shaping their purchasing choices.

5. Willingness to Pay: Participants are willing to pay varying amounts for different types of environmentally conscious wines. They are prepared to pay 6 to 10 euros for organic or biodynamic wine, while they are willing to allocate slightly more (11 to 15 euros) for a bottle of natural wine. This suggests that respondents recognize and assign different values to these wine categories.

6. Knowledge Levels: Consumers' knowledge about these wine categories plays a significant role in their buying interests. Those with high knowledge levels show a notable interest in buying biodynamic wine and are likely to purchase organic and natural wines. Respondents with moderate knowledge are more inclined to buy organic wine and exhibit a moderate interest in biodynamic and natural wine. Individuals with lower wine knowledge are likely to buy organic and natural wine, alongside a moderate interest in biodynamic wine.

7. Perceived Attributes: Respondents appear to have a relatively better ability to discern attributes in biodynamic and organic wines compared to natural and conventional counterparts. This is evident from the higher correctness rates for biodynamic and organic wines compared to natural and conventional wines.

8. Tasting Opinions: Within the group of participants engaged in wine tasting, a significant majority held favorable opinions regarding organic and biodynamic wines. In contrast, natural and conventional wines received perceptions of being satisfactory from the same group of participants.

Overall, consumers' choices when buying environmentally conscious wines in the Netherlands are influenced by factors such as age, gender, income levels, price sensitivity, willingness to pay, knowledge levels, and perceived attributes of the wines.

5.2 Recommendations

The suggestions presented primarily stem from the findings and conclusions of this research, specifically tailored for the intended audience of this study.

To effectively promote environmentally conscious wines (organic, biodynamic, and natural) in the Netherlands, the wine industry should adopt targeted marketing strategies tailored to different demographic segments, highlighting aspects that resonate with each group's preferences. Additionally, implementing educational initiatives can enhance consumer understanding of sustainable production methods and benefits, facilitating more informed buying decisions. Offering time-limited price promotions within the 6 to 15 euros range can attract budget-conscious consumers and encourage exploration of these wines.

Collaborating with retailers to establish dedicated in-store displays and leveraging online platforms for engaging content sharing can further enhance visibility and drive impulse purchases, ultimately fostering a more sustainable and educated consumer base.

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Appendix A

Sub question	Questions asked in Questionnaire
<p>1. Are there demographic factors such as age, gender, or income level that influence consumers' preferences for eco-friendly wines?</p>	<ol style="list-style-type: none"> 1. Do you consume environmentally conscious wine (organic, biodynamic or natural) (yes; no: if the answer is no, the participant cannot continue the questionnaire) 2. How often do you consume environmentally conscious wine? (Daily; more than 4 times a week; 1-3 times a week; monthly or less) 3. How old are you? (18 – 26; 27 – 42; 43 – 58; 59 – 80; > 80) 4. What is your gender? (Male; female; diverse; prefer not to say) 5. What is your employment status? (full-time; part-time; seeking opportunities currently; retired; I am a student; prefer not to say) 6. Where do you live? (City; Village; Countryside) 7. What is your approximate monthly income before taxes? (Less than €1,000; €1,000 - €3,000; €3,000 - €6,000; €6,000 - €9,000; €9,000 - €12,000; More than €12,000; Prefer not to answer)
<p>2. What role is price playing in the decision of consumers to buy environmentally conscious wine?</p>	<ol style="list-style-type: none"> 8. Does price play a role when buying environmentally conscious wine? (likert scale from 1 (very unimportant) to 5 (very important)) 9. What is your willingness to pay for one bottle of organic wine? (1 to 5 euros; 6 to 10 euros; 11 to 15 euros; 16 to 20 euros; more than 20 euros)

	<p>10. What is your willingness to pay for one bottle of biodynamic wine? (1 to 5 euros; 6 to 10 euros; 11 to 15 euros; 16 to 20 euros; more than 20 euros)</p> <p>11. What is your willingness to pay for one bottle of natural wine? (1 to 5 euros; 6 to 10 euros; 11 to 15 euros; 16 to 20 euros; more than 20 euros)</p>
<p>3. Does consumers' knowledge about wine affect consumers' choices in terms of environmentally conscious wine?</p> <p>Answer choices (correct choice in italics)</p>	<p>12. Which option below corresponds to a red wine? (Riesling; Chardonnay; <i>Merlot</i>; Sauvignon Blanc)</p> <p>13. Which category of wine is primarily associated with a peppery flavor? (Merlot; <i>Shiraz/Syrah</i>; Semillion; Pinot Noir)</p> <p>14. Which grape varieties are excluded from the production of Champagne? (Chardonnay; <i>Riesling</i>; Pinot Noir; Pinot Meunier)</p> <p>15. Which of the following is not recognized as a renowned wine region in France? (Bordeaux; Champagne; <i>Rheingau</i>; Alsace)</p> <p>16. What is the name of the renowned region in New Zealand known for its Sauvignon Blanc? (Kapiti; Hawkes Bay; Waipara; <i>Marlborough</i>)</p> <p>17. What distinguishes organic wine from conventional wine? (Exclusive use of locally sourced Grapes; Exclusively utilizing wild yeast during fermentation; <i>Reduced pesticide usage</i>; requirement for handpicking grapes)</p> <p>18. Which practice is associated with biodynamic certification? (Permitted use of selected yeast during winemaking; <i>Bottling wine</i>)</p>

	<p><i>during specific lunar phases;</i> Integration of horses in vineyard Work; Exclusion of sulfites in biodynamic wine)</p> <p>19. Is the inclusion of sulfites permitted in Natural wine? (No, Natural wine is completely free of sulfites; Yes, just like in conventional wine production; <i>Yes, but only in limited and regulated amounts</i>)</p> <p>20. How likely is it that you will buy organic wine? likert scale from 1 (very unlikely) to 5 (very likely)</p> <p>21. How likely is it that you will buy biodynamic wine? likert scale from 1 (very unlikely) to 5 (very likely)</p> <p>22. How likely is it that you will buy natural wine? likert scale from 1 (very unlikely) to 5 (very likely)</p>
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Appendix B

Sub-question	Questions asked in Questionnaire
<p>1. Are there demographic factors such as age, gender, or income level that influence consumers' preferences for eco-friendly wines?</p>	<ol style="list-style-type: none"> 1. Drink je milieubewuste wijn (biologisch, biodynamisch of natuurlijk) (ja; nee: als het antwoord nee is, kan de deelnemer de enquête niet voortzetten) 2. Hoe vaak drink je milieubewuste wijn? (Dagelijks; meer dan 4 keer per week; 1-3 keer per week; maandelijks of minder) 3. Hoe oud ben je? (18 – 26; 27 – 42; 43 – 58; 59 – 80; > 80) 4. Wat is jouw geslacht? (Man; vrouw; diverse; liever niet zeggen) 5. Wat is jouw arbeidsstatus? (Fulltime; parttime; op zoek naar kansen op dit moment; gepensioneerd; ik ben een student; liever niet zeggen) 6. Waar woon je? (Stad; Dorp; Platteland) 7. Wat is jouw geschatte maandelijks inkomen vóór belastingen? (Minder dan €1.000; €1.000 - €3.000; €3.000 - €6.000; €6.000 - €9.000; €9.000 - €12.000; Meer dan €12.000; Liever niet zeggen)
<p>2. What role is price playing in the decision of consumers to buy environmentally conscious wine?</p>	<ol style="list-style-type: none"> 8. Speelt de prijs een rol bij het kopen van milieubewuste wijn? (Likertschaal van 1 (zeer onbelangrijk) tot 5 (zeer belangrijk)) 9. Wat is uw bereidheid om te betalen voor één fles van ...? ... biologische wijn ... biodynamische wijn

	<p>... natuurlijke wijn (1 tot 5 euro; 6 tot 10 euro; 11 tot 15 euro; 16 tot 20 euro; meer dan 20 euro)</p>
<p>3. Does consumers' knowledge about wine affect consumers' choices in terms of environmentally conscious wine?</p> <p>Answer choices (correct choice in italics)</p>	<p>10. Welke optie hieronder komt overeen met een rode wijn? (Riesling; Chardonnay; <i>Merlot</i>; Sauvignon Blanc)</p> <p>11. Met welk type wijn wordt voornamelijk een peperige smaak geassocieerd? (Merlot; <i>Shiraz/Syrah</i>; Semillion; Pinot Noir)</p> <p>12. Welke druivensoorten worden uitgesloten van de productie van Champagne? (Chardonnay; <i>Riesling</i>; Pinot Noir; Pinot Meunier)</p> <p>13. Welke van de volgende regio's wordt niet erkend als een gerenommeerde wijnregio in Frankrijk? (Bordeaux; Champagne; <i>Rheingau</i>; Alsace)</p> <p>14. Wat is de naam van de gerenommeerde regio in Nieuw-Zeeland die bekend staat om zijn Sauvignon Blanc? (Kapiti; Hawkes Bay; Waipara; <i>Marlborough</i>)</p> <p>15. Wat onderscheidt biologische wijn van conventionele wijn? (Exclusief gebruik van lokaal geteelde druiven; Uitsluitend gebruik van wilde gisten tijdens fermentatie; <i>Verminderd gebruik van pesticiden</i>; Vereiste van handmatige pluk van druiven)</p> <p>16. Welke praktijk wordt geassocieerd met biodynamische certificering? (Toegestaan gebruik van geselecteerde gist tijdens wijnbereiding; <i>Bottelen van wijn tijdens specifieke maanfasen</i>; Gebruik van paarden in wijngaardwerk; Uitsluiting van sulfieten in biodynamische wijn)</p> <p>17. Is het gebruik van sulfieten toegestaan in Natuurlijke wijn?</p>

	<p>(Nee, Natuurlijke wijn bevat volledig geen sulfieten; Ja, net zoals bij reguliere wijnproductie; Ja, maar alleen in beperkte en gereguleerde hoeveelheden)</p> <p>18. Hoe waarschijnlijk is het dat u ... koopt?</p> <p>... biologische wijn</p> <p>... biodynamische wijn</p> <p>... natuurlijke wijn</p> <p>Likertschaal van 1 (zeer onwaarschijnlijk) tot 5 (zeer waarschijnlijk)</p>
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Appendix C



Name:

Age:

Gender:

Employment status:

Blind Wine Tasting

During this tasting session, we will be sampling four different red wines (100% Garnacha), each falling under the categories of conventional, organic, biodynamic, and natural wine.

****Caution: The wines may contain sulfites, which can trigger allergic reactions in individuals sensitive to sulfite****

Throughout this tasting, we kindly ask you to complete the provided tasting sheet. For each sample, please evaluate its Smell, Taste, and Finish, using the provided Likert scale to indicate your sensory evaluation. Afterward, you will be asked to rank each wine based on your preference, guess the category (conventional, organic, biodynamic, or natural), and choose which of the sensory attributes helped you to distinguish between the categories and supported your choice (Smell, Taste, Finish, or all of them).

Sample A

Smell

****please select one number per likert scale****

	extremely	very	moderately	slightly	not at all
Fruit aroma	1	2	3	4	5
Floral aroma	1	2	3	4	5
Herbal & spicy aroma	1	2	3	4	5
Earthy & mineral aroma	1	2	3	4	5
Oak & aging aroma	1	2	3	4	5

Taste

*****please select one number per likert scale*****

	very light	light	medium	full-body	heavy
Body	1	2	3	4	5

	dry	off-dry	medium	sweet	very sweet
Sweetness	1	2	3	4	5

	tart	crisp	fresh	smooth	soft
Acidity	1	2	3	4	5

	very soft	soft	round	dry	hard
Tannins	1	2	3	4	5

Flavour profile

*****please select one number per likert scale*****

	extremely	very	moderately	slightly	not at all
Fruit	1	2	3	4	5
Spice	1	2	3	4	5
Herbal	1	2	3	4	5

Floral	1	2	3	4	5
Earthy notes	1	2	3	4	5

Finish

****please select one number per likert scale****

short finish (flavours dissipate quickly);

medium finish (flavours linger for a moderate duration);

long finish (lingering flavours that gradually fade away)

	short finish	medium finish	long finish
Finish	1	2	3

Personal rating

****please select one****

	very poor	poor	acceptable	good	very good
Personal rating					

Category:

****please select one****

	conventional	organic	biodynamic	natural
Category				

Please indicate which sensory attribute helped you to select the category:

****You can select more than one****

	smell	taste	finish
Sensory attribute			

Sample B

Smell

please select one number per likert scale

	extremely	very	moderately	slightly	not at all
Fruit aroma	1	2	3	4	5
Floral aroma	1	2	3	4	5
Herbal & spicy aroma	1	2	3	4	5
Earthy & mineral aroma	1	2	3	4	5
Oak & aging aroma	1	2	3	4	5

Taste

please select one number per likert scale

	very light	light	medium	full-body	heavy
Body	1	2	3	4	5

	dry	off-dry	medium	sweet	very sweet
Sweetness	1	2	3	4	5

	tart	crisp	fresh	smooth	soft
Acidity	1	2	3	4	5

	very soft	soft	round	dry	hard
Tannins	1	2	3	4	5

Flavour profile

****please select one number per likert scale****

	extremely	very	moderately	slightly	not at all
Fruit	1	2	3	4	5
Spice	1	2	3	4	5
Herbal	1	2	3	4	5
Floral	1	2	3	4	5
Earthy notes	1	2	3	4	5

Finish

****please select one number per likert scale****

short finish (flavours dissipate quickly);

medium finish (flavours linger for a moderate duration);

long finish (lingering flavours that gradually fade away)

	short finish	medium finish	long finish
Finish	1	2	3

Personal rating

****please select one****

	very poor	poor	acceptable	good	very good
Personal rating					

Category:

*****please select one*****

	conventional	organic	biodynamic	natural
Category				

Please indicate which sensory attribute helped you to select the category:

*****You can select more than one*****

	smell	taste	finish
Sensory attribute			

Sample C

Smell

please select one number per likert scale

	extremely	very	moderately	slightly	not at all
Fruit aroma	1	2	3	4	5
Floral aroma	1	2	3	4	5
Herbal & spicy aroma	1	2	3	4	5
Earthy & mineral aroma	1	2	3	4	5
Oak & aging aroma	1	2	3	4	5

Taste

please select one number per likert scale

	very light	light	medium	full-body	heavy
Body	1	2	3	4	5

	dry	off-dry	medium	sweet	very sweet
Sweetness	1	2	3	4	5

	tart	crisp	fresh	smooth	soft
Acidity	1	2	3	4	5

	very soft	soft	round	dry	hard
Tannins	1	2	3	4	5

Flavour profile

****please select one number per likert scale****

	extremely	very	moderately	slightly	not at all
Fruit	1	2	3	4	5
Spice	1	2	3	4	5
Herbal	1	2	3	4	5
Floral	1	2	3	4	5
Earthy notes	1	2	3	4	5

Finish

****please select one number per likert scale****

short finish (flavours dissipate quickly);

medium finish (flavours linger for a moderate duration);

long finish (lingering flavours that gradually fade away)

	short finish	medium finish	long finish
Finish	1	2	3

Personal rating

****please select one****

	very poor	poor	acceptable	good	very good
Personal rating					

Category:

*****please select one*****

	conventional	organic	biodynamic	natural
Category				

Please indicate which sensory attribute helped you to select the category:

*****You can select more than one*****

	smell	taste	finish
Sensory attribute			

Sample D

Smell

please select one number per likert scale

	extremely	very	moderately	slightly	not at all
Fruit aroma	1	2	3	4	5
Floral aroma	1	2	3	4	5
Herbal & spicy aroma	1	2	3	4	5
Earthy & mineral aroma	1	2	3	4	5
Oak & aging aroma	1	2	3	4	5

Taste

please select one number per likert scale

	very light	light	medium	full-body	heavy
Body	1	2	3	4	5

	dry	off-dry	medium	sweet	very sweet
Sweetness	1	2	3	4	5

	tart	crisp	fresh	smooth	soft
Acidity	1	2	3	4	5

	very soft	soft	round	dry	hard
Tannins	1	2	3	4	5

Flavour profile

****please select one number per likert scale****

	extremely	very	moderately	slightly	not at all
Fruit	1	2	3	4	5
Spice	1	2	3	4	5
Herbal	1	2	3	4	5
Floral	1	2	3	4	5
Earthy notes	1	2	3	4	5

Finish

****please select one number per likert scale****

short finish (flavours dissipate quickly);

medium finish (flavours linger for a moderate duration);

long finish (lingering flavours that gradually fade away)

	short finish	medium finish	long finish
Finish	1	2	3

Personal rating

****please select one****

	very poor	poor	acceptable	good	very good
Personal rating					

Category:

*****please select one*****

	conventional	organic	biodynamic	natural
Category				

Please indicate which sensory attribute helped you to select the category:

*****You can select more than one*****

	smell	taste	finish
Sensory attribute			

Appendix D

