



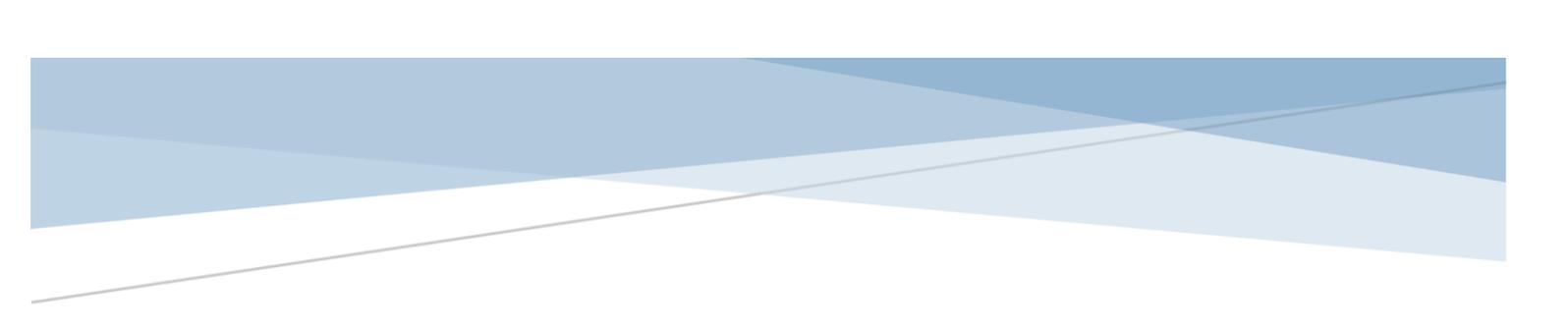
CONSUMER PREFERENCES FOR ECO-CERTIFIED WINES IN THE NETHERLANDS

NHL Stenden University of Applied Sciences, Leeuwarden

MA International Hospitality and Service Management

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Consumer preferences for eco-certified wines in the Netherlands

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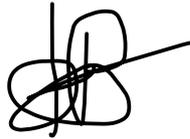
Master thesis submitted in partial fulfilment of the requirements of NHL Stenden
University of Applied Sciences for the Degree of Master of Arts in International
Hospitality & Service Management

August 2021

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A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Name: Inge Blaauwbroek

Date: 25th of August 2021

Place: Leeuwarden

Preface

Before you is my thesis on “Consumer preferences for eco-certified wines in the Netherlands” This thesis has been written to fulfill the graduation requirements of the Master International Hospitality and Service Management at NHL Stenden University of Applied Sciences.

The subject of this thesis was decided in consultation with Dr. Radu Mihailescu and based on previous studies that had been done in other countries. Moreover, this topic has my personal interest and connects well with my previous experiences working at an organic winery.

During the past year, I have done a lot of research, got valuable insights on eco-certified wines and discovered lots of interesting perspectives. This has made my enthusiasm on this topic even higher.

I would like to thank everyone in my network that helped me by spreading the survey and asking others in their surroundings to fill in the survey. Moreover, I would like to thank wineries such as the Frysling in the Netherlands and Conti di San Bonifacio and Guerrieri in Italy, for being a source of inspiration to me and many others to dive into the subject of sustainable agriculture, to learn about this and of course to enjoy their organic wines.

Finally, I would like to thank my thesis supervisor, Dr. Radu Mihailescu, for the guidance and for the availability throughout this process.

I hope you enjoy your reading!

Inge Blaauwbroek

Leeuwarden, 25th of August 2021

Abstract

Sustainability has grown to be an important topic in wine-making in the past years and is now more relevant than ever, as the wine industry is experiencing a shift to a more environmental-friendly production of wine. The goal of this research was to identify the consumers' preferences for the different types of eco-certified wines in the Netherlands. Literature suggests that the preferences for eco-certified wines are affected by factors such as demographics, knowledge and attitudes. These affect the willingness to pay and the likeliness to buy eco-certified wines. Results of a survey among Dutch wine consumers indicate higher likeliness to buy in case the wine is labelled with a visible eco-certification. Second, consumers are familiar with most of the certifications. Additionally, consumers seem to be more likely to buy eco-certified wines if they also buy other eco-certified products on a regular basis. Factors such as gender and age influence the consumer preferences as well. Finally, the occasion for which the wine is bought, mainly for regular consumption and special occasions, also affects the consumer preference and willingness to pay. Recommendations for the industry are therefore to focus on these factors such as gender, age and knowledge to achieve market growth.

Keywords

Wine Consumption, Eco-certifications, Sustainable Winegrowing, Consumer Preferences

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Chapter 1: Introduction

1.1 Introduction and background of the topic

“Chi ama, deve anche rispettare” – Who loves, needs to respect.

These are the words of Natalino and Amadio Fasoli, fourth generation of wine-makers in Verona, Italy. After their father experienced an allergy, due to the pesticides used in the vineyard, he decided to change course and start with organic wine-making. In 1979, this was a courageous and difficult choice for these times. No other wineries were doing this and they did not know how the consumers would react on this and if their products would change because of this shift to organic wine-making. However, he pushed through as his vision was to create a path toward futuristic agriculture. To him, it did not seem right to love the earth and the vineyard and to destroy it with pesticides (Van Dijk, 2008). This story of the Fasoli family and the shift to organic wine-making started over 70 years ago and is now more relevant than ever, as the wine industry is experiencing a shift to a more environmental-friendly production of wine. Because of the changing environment and the environmental impact of wine-making, the production of eco-certified wines such as organic and biodynamic wines has increased (Castellini et al., 2017). Next to the changing environment, wine companies have started to realize that being sustainable can differentiate them from the competition, increasing competitiveness in the current market. It is no longer possible to hide how sustainability has become a driving and dynamic aspect and is seen as a significant opportunity for the wine industry (Fraboni, 2019). As such, sustainability has become a key topic in the wine supply chain (Forbes et al., 2009). Even though sustainability has grown to be an important topic in wine-making, it is a complex matter to define the concept of sustainability in agriculture, as it involves everything a company does (Ohmart, 2008).

From a consumer point of view, eco-certified wines have also gotten more attention lately. This is due to the grown awareness of environmental issues and healthy food (Hashem et al., 2018). However, as there are many different types of eco-certified wines, it is difficult for the consumer to identify what they are buying. This is also one of the reasons that the market share of eco-certified wines is low (Willer, 2000). Therefore, this research will focus on identifying consumer preferences, to get a better understanding of the market potential for eco-certified wines.

1.2 Academic and professional relevance

The professional relevance to this topic is in the fact that the outcomes of this study are useful to identify customer knowledge and motivation to buy eco-certified wines. Next to this, the market potential for eco-certified wines will be identified. Moreover, this topic is relevant to the wine industry as the results can contribute to the development of marketing for eco-certified wines. Additionally, the information gathered with this study may help wine-importers and wineries designing their bottles and labels in a way that they are attractive and informative for the consumer. Finally, the study will identify the willingness to pay for eco-certified wines. This may help with pricing strategies for the wine industry. All in all, this study will identify whether there is a preference for eco-certified wines in the Dutch wine market and what is the willingness to pay for these kind of wines.

1.3 Purpose

The purpose of the study is presented by analyzing the internal- and external goal of this study. The internal goal for this research was to get more knowledge in the different kinds of eco-certifications in the Dutch wine market and the current demand for eco-certified wines. In this way, a more complete overview of the market for these wines is achieved.

The external goal of this study was to get a view of the customer's knowledge on eco-certified wines, as there are many different eco-certifications. Another goal was to identify the motivation for customers to buy eco-certified wines instead of conventional wines. By identifying these purchasing motives, there is a more clearer view of what customers are looking for. With this information, wine producers, wine importers and wine stores can adapt their selling strategies accordingly and push the market shares for these eco-certified wines.

Moreover, it is to be mentioned that this type of study has been done before, by Moscovici et al., on consumer preferences for eco-certified wines in the United States (2020). The purpose of this study was therefore also to compare the results of this study with the study that has been done in the United States and to be able identify possible similarities and differences after this research is finished.

1.4 Research context

This research consists of a literature review with explanation on the different eco-certifications known in the Netherlands. Next to this, a survey was issued among wine drinkers in the Netherlands to identify their knowledge and preference for eco-certified wines. In the literature, different concepts of eco-certifications are explained, such as organic and biodynamic wines. In addition to the eco-certifications, current literature on consumer preferences and willingness to pay are assessed to form a good base for the second part of the research; the survey. The research on existing literature in the field of eco-certifications and the market for eco-certified wines, combined with research in the form of a survey among Dutch wine drinkers, gives a good overview of the current status of eco-certified wines in the Dutch wine market.

1.5 Overview of the thesis

In the first part of the thesis, described in the chapter above, an introduction is given and the background of the topic is explained. Additionally, the relevance, purpose and context of this thesis are explained.

The following chapter consists of literature found on the topic of eco-certified wines, accompanied by an explanation on these different types of wines and market information. Moreover, the concepts of consumer preferences and willingness to pay are evaluated.

These concepts mentioned in literature are then visualized into the conceptual model, which can be found in the third chapter. In this chapter, the problem statement and research questions are presented, as well as the hypothesis. Both are derived from the information found in literature and evaluating the existing gaps that need to be researched.

In the fourth chapter, a description of the chosen research method is given, as well as information on the chosen instrument, sample and data collection. Additionally, a research matrix can be found with the different concepts and the corresponding hypothesis and survey items.

The fifth chapter gives an overview of the results of the survey, including a descriptive analysis and an analysis to address the hypothesis that were made in chapter three. Finally, Kruskal-Wallis H-tests have been done and are analyzed in the last part of this chapter.

Chapter six consists of a discussion on the research questions and a review of the conceptual model. Besides, the limitations of the findings from the survey are described here. The final chapter of this thesis gives an overview of the findings in the form of conclusions and recommendations for as well practice as further research on this topic.

Chapter 2: Literature review

2.1 Different kinds of eco-certifications

There is currently a global trend towards more awareness on the importance of healthy and healthy products. This is manifested by a growing preference for eco-certified products. Eco-certifications, or labels, are widely used to inform consumers about the environmental attributes of (food) products (Delmas & Gergaud, 2021). The goal of these eco-labels is to provide the consumer with trustworthy and transparent information on the reduced environmental impact of the product, thereby generating an increased demand for these kind of environmentally favorable products (Heyes et al., 2020). This also goes for wines, the third most-consumed alcoholic beverage in Europe (Sturza, 2021). The European wine market is responsible for a the largest production of wines in the world (CBI, 2016). In Europe, sustainable wine is associated mostly with organically-certified wine (CBI Market Intelligence, 2016). Next to organic wines, there are more eco-certifications that can be applied to wines or wineries. The most widely-known and -used certifications in Europe, will be described in the literature below.

In the Netherlands, wine importers also import wines with an eco-certificate, which are checked on their certification and then sold in the Netherlands. As an example, Verbunt Verlinden focuses on CSR by buying wines at wineries that often focus on organic or biodynamic viticulture and / or following (regional) rules, obtaining certificates with regard to sustainability and Fair Trade (Verbunt Verlinden, 2020). Additionally, Coenecoop Wine Traders is one of the largest importers of biological wine in the Netherlands. It is a sub-company of Delta wines holding, belonging to the wine traders with the biggest market share in the Netherlands. The company sees a growing interest in organic and sustainably produced wines and predict eco-certified wines becoming the future norm rather than an exception. Also, they believe that giving information and making these wines affordable will increase the demand for eco-certified wines. Coenecoop mainly sells biological, biodynamic and Fair Trade certified wines (Coenecoop Wine Traders, 2020).

2.1.1 Organic wines

The production of organic wines is done following the practice of organic agriculture. One of the reasons to implement organic agriculture is to maintain biodiversity and the fertility of the soil. The practice involves the elimination of synthetical products such as pesticides, genetically modified organisms (GMO's), and fertilizers (Food and Agriculture Organization, 1999). Even though organic wine making has existed for quite a long time and the standard for organic grapes existed since 1991, European standards for organic wine have only been introduced since 2012. Before the introduction of these European standards, third-party certifiers issued organic certificates. This has resulted in three categories of organic wine; wine that is produced organically without certification, wines certified by a third-party certifier (not labeled organic) and wine certified and labeled organic (Abraben et al., 2017).

Organic wines are an emerging trend in the current global wine market. Over the last couple of years, organic wineries have started to present themselves more. Using sustainability as a marketing tool and promoting environmental consciousness in winemaking have become more important in the world wine market, especially in the New World (Carbone & Moatti, 2008). In Europe, the production of sustainable wine is mainly from Italy, Spain and France. They make up 84% of the total market share for sustainable wines in Europe. In France, most sustainable wines produced and consumed in the country, with prices being average. On the contrary, organic wines produced in Spain are mostly exported to Northern European countries (Casini et al., 2011). Italy is the biggest producer of organic

agriculture in the European Union. Between 2004 and 2008, there has been an increase of over 29% in the amount of organic vines (Willer, 2008). In the Dutch wineries, the concept of Organic wines has also been adapted. Due to the emerge of mildew-resistant grape varieties that ripe early, organic wine production is growing in the Netherlands (Meijer et al., 2009). Even though the number of organic wineries is rising, the market of organic wines still represented only 2% of the worldwide wine production in 2011 (Casini et al., 2011). The market is expected to grow significantly in the coming years. An estimation has been done by IWSR that the market for organic wines is expected to grow with 9.2% yearly between 2017 and 2022. Much of that growth is driven by Europe, which is expected to have a share of 78% of the global organic wine market by 2022 (IWSR, 2019).

2.1.2 Biodynamic wines

The concept of biodynamic wine production involves that everything happening in the universe is interconnected. Biodynamic wineries follow the principles of philosopher Rudolf Steiner, also seen as an holistic approach to agriculture (Demeter-International, 2019). Next to an economic activity, biodynamic agriculture is also considered a cultural and creative action, which occurs in the vineyard mainly before winemaking happens (Castellini et al., 2017).

According to Alvaro Espinoza, biodynamic wine-maker in Chile, it is difficult to convince people to choose for biodynamic wines. Potential buyers should be guided towards biodynamic wines with examples and good product to convince them. Alvaro also mentions that people are motivated to research and investigate by nature, hence the increasing interest in biodynamic agriculture and biodynamic wines (Van Dijk, 2008). As a result of greater interest in environmental dynamics by wine producers who want to strengthen their vines without compromising on environmental balance in the vineyard more wineries are implementing a biodynamic approach to winemaking. Due to consumers that are looking for qualitative food respecting the environment and their health, the market for biodynamic wine in Europe is growing (Bigolin, 2017).

2.1.3 Natural wines

In the 1980's, a small movement of winemakers in France decided to make natural wines (Gordon, 2016). Natural wines are made according to the standard of original farming techniques and producers follow the concept of minimal chemical and technological intervention. This involves using native vines and indigenous yeasts instead of added yeasts, which leads to spontaneous fermentation. Moreover, no additives such as sulphites are used (Associazione VinNatur, 2019). Natural wines are therefore wines that are described as lively, healthier and full of naturally occurring microbiology (Migliore et al., 2020).

Even though there are standards to the production of natural wine, there is no legal definition of natural wine in Europe (CBI Market Intelligence, 2016). This makes it difficult to describe natural wines and the concept remains a bit vague. Last year however, the French government decided to recognize "Vin méthode nature" as a wine category, which was seen as a major step forward in the recognition of natural wines (Gray, 2020).

2.1.4 Sustainable wines

In recent years, wineries have enhanced the relationship between the winery and the environment and consumers. This has been one of the pillars of growth in the market for Italian wines. The evolution of the industry focuses on the importance of implementing sustainability throughout the whole production chain and the whole ecosystem, so not only the vineyards. In short, making a winery (more) sustainable requires actions on social, economic and environmental level (Anzivino et al., 2021).

When looking at the wine production, sustainable wine-making mainly entails the reduction of chemical inputs. To get a certificate of sustainable production, wineries rely on IPM techniques and scientific evidence of the reduction of chemicals. Critics may say that the measurements do not go far enough, however the low barrier for the certification and implementation of sustainable winegrowing leads a larger take-up. Next to that, it gets wineries to think about the subject of sustainability and how to further implement it in their business (Goode, 2005). Based on following the practice of sustainable winegrowing, wineries in New Zealand have reduced the use of insecticides by 72% in the past decade (Dodds et al., 2013).

2.1.5 Fair Trade wines

Fair Trade wines involve wines that have been certified by Fairtrade International, focusing on fair prices and improving social conditions for wine producers and communities (CBI Market Intelligence, 2016). Fair Trade wine standards call for a combination of ownership for the worker, minimum wage and distinction in the global wine market. On the other hand, not all wineries that follow these standards are certified as Fair Trade, as the costs of becoming Fair Trade certified are prohibitive for many wineries (Moseley, 2008). As a result, there are not many wines on the shelves with a Fair Trade certification. Additionally, since 2019, the awareness of alternative wine types such as sustainable, and biological wines has increased significantly in the part years. However, this does not go for Fair Trade wine, indicating it does not get the attention and presence in the market that is needed to increase the awareness of this type of wine (Wine Intelligence, 2021).

2.2 Consumer preferences and consumption

The average consumption of wine in the Netherlands is 24 bottles per capita in 2019 (NationMaster, 2020) The market for organic wines has been taking serious shape for several years now. No exact figures are kept, however around 5 to 8 percent of the 460 million bottles of wine sold last year was certified organic. The production and trade of organic wine in Europe is growing at about 10 to 15 percent per year (RTL Nieuws, 2019). This growing demand is linked to the enlarged awareness of health and environmental issues, as well as the increased amount of information available on this topic (Hashem et al., 2018). Consumers are looking for ways to reduce their impact on the environment on a small scale. This could be done by consuming less meats, reducing travels by air and consuming natural resources in a more responsible way. (IWSR, 2019). In general, the wine market in Northern Europe has more place for wines with an organic certificate on the label because the environment is a priority to the consumers, more than in any other part of Europe (Anzivino et al., 2021). Moreover, consumers that frequently buy organic wine, show a strong pro-environmental attitude and have a preference for sustainable products (Migliore et al., 2020). Nowadays, it seems that organic and biodynamic wines are especially of interest to millennials that grew up in a period where there is more attention to environmental problems (Bigolin, 2017). Next to age, the demographic factor of income seems to play a role in the likeliness to purchase organic products. Consumers with a higher income show to be more likely to buying organic wines. Moreover, attitude towards organic products becomes more relevant as the income grows (Aschemann-Witzel & Zielke, 2017). Next to financial resources, social status and literacy play a role in private-sphere environmentalism and can influence consumer purchase behavior (Stern, 2000).

Purchasing eco-certified goods is referred to as “Green consumerism” (Stern, 2000). This involves purchasing products that consider the environmental impact of the production process, such as organic wines. This kind of consuming behavior can be identified mostly in private spheres and is a purchase decision that is made by an individual. The impact of this purchase decision on the environment is therefore quite small, unless many people make the same decision. The purchase intention for eco-friendly goods is influenced by personal norms, information and income levels

(Aschemann-Witzel & Zielke, 2017; Stern, 2000). However, when the product is much more expensive, the attitudinal factors become weaker. Therefore, a higher price for an organic product may become a barrier for consumers to purchase. On the other hand, it may become a superior product for others (Stern, 2000).

The choice for natural wines is, next to demographics and norms, also affected by information on the label of the wine. Mainly the production method and ingredient content that are included on the wine label influence the purchase decision of natural wine (Galati et al., 2019). This is supported by a Swiss study where respondents were asked to identify the most important attributes when choosing their wine. The most important feature was the country of origin, followed by the price. Third came the method of production. Eco-certifications are also considered as part of the production method. Finally, the color of the wine was identified to be the least important aspects of these four attributes. The study also suggested that female- and urban consumers are most likely to buy organic wines (Mann et al., 2012). The attitude that consumers have towards organic wine production and organic wines is generally positive. However, with regards to the quality and sensorial attributes of organic wines, there are still image problems (Stolz and Schmid, 2008). There is a perception that an eco-label on a wine has an effect on the quality. This is especially applicable to wines that carry an eco-label that is not certified by a third party. Wines that do have a declared eco-label from a third-party, for example certified organic, usually have higher quality ratings by experts (Delmas & Gergaud, 2021). Besides, wines that have an official certification are more trustworthy in terms of sustainability than wines without an official certification (Wine Intelligence, 2021). Finally, results from a research on consumer preferences on eco-certified wines in the United States suggest that more than half of the respondents is more likely to buy a certified wine if there is also a label of this specific certification on the bottle (Moscovici et al., 2020).

On the other side of the coin, the presence of all these different eco-certifications could lead to information overload and confusion among consumers, making them skeptical towards eco-labels. Moreover, consumers cannot fully assess the environmental quality of each of the labels and only perceive these eco-labels as a variety of a similar product, in this case, of the wine (Brécard, 2014). The lack of clarity about these certifications leads to uncertainty and is affecting the choice of the wine consumer (Castellini et al., 2017). The many varieties of eco-certifications make it difficult for the consumer to identify what they are buying. Even experts are often overwhelmed by the many different certifications and have trouble explaining the differences between them. This jungle of different certifications has effect on the consumer, because it is not transparent. It cements the status of organic wine and makes it very difficult to increase market share (Willer, 2000).

According to Harold Hamersma, a Dutch wine journalist, eco-certified wines were a marketing tool at first. Now, it has become more normal and is seen as a necessity for wineries to express their DNA and vision on wine-making. "In the ideal world, it would all be like this" says Hamersma when he is being asked about his perception on ecological wines. Not only in production, but also in marketing, export and selling, wineries should adopt an ecological principle (Van Dijk, 2008). Sustainable practices can therefore not only save costs or taxes, they also provide opportunities for promotion based on sustainable practices to consumers. Moreover, these practices are progressively required in the current markets (CBI, 2016). This is also supported by the fact that consumers that are living more sustainably and buying more ecological certified goods expect producers to hold similar standards throughout the whole chain of production (IWSR, 2019). That ecological principles should play a role in the distribution and export of the wine, is supported by Wine importer Verbunt Verlinden. Having an organic or biological certificate is a great sales tool, as it radiates reliability and solidity of the company. (Skal NL, 2018).

2.3 Willingness to pay

It is mentioned in literature that “Sustainability attributes positively affect the consumer’s choice and consumers are willing to pay more for a wine with sustainable attributes” (Schäufele & Hamm, 2017). The increasing number of customers that are willing to pay more for eco-certified products indicates the growth of ecologically favorable consumer behavior (Laroche et al., 2001). For natural wines, it can be mentioned that willingness to pay is higher. More specifically, millennials are more likely to pay a price premium for natural and organic wines (Galati et al., 2019). Young adults in the age of 18 to 35 years old are more likely to repeat the purchase these types of wines and make the switch to organic instead of conventional wines (Gassler, 2014). This is due to the fact that consumers in this age group are willing to live more sustainably, and therefore pay more for wines to which nothing, or hardly anything extra, has been added (KNVW, 2020). This statement is also supported by the Dutch Association of Wine Traders. As mentioned in an article on their website; “The older generation has generally an expectation of how wine is supposed to taste. In this respect, young people have a broader interest and are more likely to try something new. They are willing to live more sustainably, and therefore pay more for wines to which nothing, or hardly anything extra, has been added” (KNVW, 2020). Moreover, females have the tendency to bid higher on a sustainable wine. As an example, in Germany, organic wine is particularly purchased by women, consumers over age 50, and people with high income (IWSR, 2019). Even though some consumers have higher willingness to pay for an eco-certified wine, they will only do so if the product is certified. Therefore, labels are important to distinguish between conventional and eco-certified products.

Next to this, a study on willingness to pay for sustainable wines with different eco-certifications suggested that knowledge of the different types of certifications and labels had an impact on the willingness to pay (Vecchio, 2013). This shows that the more the customer knows about the certifications and labels, the more they are likely to pay a price premium. Additionally, the knowledge on the way the wine is produced, the sustainable production method, also influences the willingness to pay. A study performed in Sicily showed that knowledge on sustainable production influenced the consumer to pay a premium price for the product (Lanfranchi et al., 2019). However, other studies also show that the price premium for eco-certified wines depends on the quality rating of the wines. The lower-quality wines made by following organic standards are perceived as better quality and have a price premium. As the quality of the wines becomes higher, the positive effects of a price premium decrease and wines with certifications are associated with lower prices compared to conventional wines (Abraben et al., 2017). To increase the perception of quality and consumers’ willingness to pay, the concept storytelling can be used to describe the product of organic wines better and to trigger the “halo effect”. This effect reached by a positive approach to organic wines and expressing the quality of these wines. Respondents of the study rated the wines described as organic higher than conventional wines (Wiedmann et al., 2014). Storytelling can be done in person, when the consumer is buying the wine, or by putting information on the wine bottle. Furthermore, information about quality and awards or other quality-related information such as a distinction on the bottle generate higher willingness to pay than information on the heritage of the wine (Eustice et al., 2019). In recent years, wine platforms such as Mundus vini, an international competition for wine awards, also started with an international competition with organic wines from all over the world. The aim, of the competition is to promote the quality of organic wine and hereby boost its sales (meininger.de, 2020).

Finally, findings of an Italian study reveal that another factor that is influencing the willingness to pay for eco-certified wines, especially natural wines, is consumption frequency. A preference towards products with a higher quality has led to a reduction of the total consumption of these products (Marone et al., 2017).

The occasional consumer, who only consumes wine at the restaurant or other special occasions such as events, tend to be willing to pay more for sustainably produced wine than consumers that drink more often. Moreover, the amount of wines bought and the occasion are positively associated with a higher willingness to pay for natural wines. The choice for biological wine, as an example, is often linked to an occasion. Moreover, biological wine has a strong symbolic value and influence on emotions, culture and the environment (Lanfranchi et al., 2019). The willingness to pay for natural wines also seems higher when the wine is being drunk during a special occasion (Migliore et al., 2020).

Chapter 3: Problem definition

3.1 Conceptual model

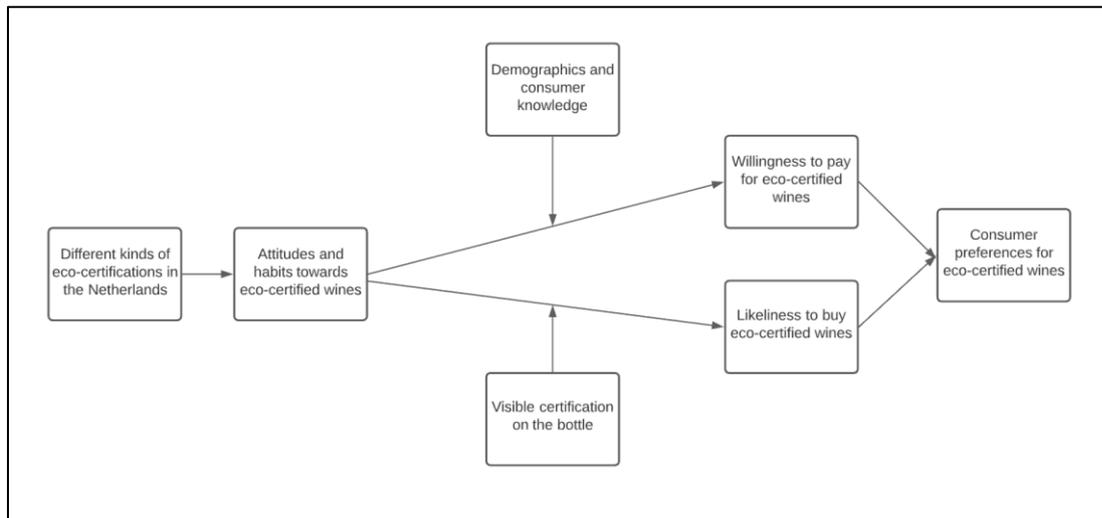


Figure 1: Conceptual model

The primary purpose of a conceptual model is to illustrate the fundamental principles and functionality of the research. A conceptual model should be developed in such a way that it is clear to the reader what is the system and the course of the research.

The first factor in the conceptual model stated above is related to *RQ1. What are the most popular eco-certified wines in the Netherlands according to wine consumers?* The different kinds of eco-certifications are explained and reviewed in the literature review. Second, the influence of attitudes and habits towards eco-certified wines is likely to affect the willingness to pay for eco-certified wines and the likeliness to buy eco-certified wines instead of conventional wines. This is a mediating factor, influencing the dependent variables willingness to pay and likeliness to buy. Moreover, moderating values are identified in literature. Certain demographics, such as gender, income and age, are likely to influence the willingness to pay for eco-certified wines. Therefore, these factors are also reflected in the hypothesis. Another moderating factor identified in literature the knowledge of the consumer on the different eco-certifications. Consumer knowledge affects the willingness to pay for an eco-certified wine, as stated in literature. This factor is also mentioned in the hypothesis for further study. A moderating factor for the likeliness to buy eco-certified wines is a visible certification on the bottle, as research suggests that consumers are more likely to buy wines if they have a visible certification. Finally, likeliness to buy and willingness to pay are factors that are part of the consumer preferences on eco-certified wines, which is the main topic of this research. The two factors, willingness to pay and likeliness to buy, are mostly researched separately in literature. Therefore, a distinction between these two is made in the conceptual model as well.

3.2 Problem Statement and Research Questions

The problem statement of this research is stated as follows:

What factors determine consumer preferences for eco-certified wines in the Netherlands?

This problem statement is derived from the findings in literature, which suggest that there are several factors influencing the consumer's choice on eco-certified wines. It is, however, not clear yet which of these factors are applicable for the Dutch market. Therefore, this problem statement has been designed.

Moreover, research questions were developed to get more information on specific areas, mentioned in the conceptual model. These research questions will help identifying the factors that determine consumer preferences for eco-certified wines in the Netherlands and thus help answering the problem statement of this research.

RQ1. What are the most popular eco-certified wines in the Netherlands according to wine consumers?

To understand the different types of eco-certified wine, a literature study has been done to identify the most-known and -used certifications. This research question is designed to understand which of these eco-certifications is the most known and most popular in the Netherlands.

RQ2. How can consumer knowledge of these certifications be quantified? This research question is designed to understand the consumer and the knowledge they have concerning eco-certified wines, as well as their motivation to buy these kind of wines.

RQ3. To what extent do these certifications influence the buying behavior of consumers? In other words, are consumers more likely to purchase wines with an eco-certification instead of conventional wines? This research question is designed with reference to the literature on consumer preferences and consumption, mentioning certifications may influence the likeliness to buy eco-certified wines over conventional wines.

RQ4. What are consumers' willingness to pay for five different environmental wine certifications (organic, biodynamic, natural, fair trade, and sustainable)? This research question was developed to get an understanding of the consumers' willingness to pay for these eco-certified wines, giving the industry guidelines for marketing product positioning of eco-certified wines.

3.3 Hypothesis

After doing the literature review, there is more clarity about the different eco-certifications for wines sold in the Netherlands and how they are defined in literature. Based on the information that has been found by doing literature research, some hypothesis were made.

The existing literature finds that demographics such as age, gender and income may affect willingness to pay and likeliness to buy eco-certified wines.

First of all, several studies have shown that the age group of millennials have more interest in organic and biodynamic wines, as they grew up in a period of time where there is more attention to environmental problems (Bigolin, 2017). Additionally, younger people, especially those in the age of 18 to 35 are willing to live more sustainable and pay more for eco-certified wines (KNVW, 2020; Galati et al., 2019; Gassler, 2014). Therefore, it is hypothesized that: *H1. Millennials have higher willingness to pay for eco-certified wines.*

In addition to age, gender may also influence the willingness to pay for eco-certified wines. Females have the tendency to pay more for a sustainable wines (IWSR, 2019) and are most likely to purchase these types of wines (Mann et al., 2012). It is therefore hypothesized that: *H2. Women have higher willingness to pay for eco-certified wines.*

The final demographical factor to be analyzed is income. A German study found that organic wine is particularly purchased by women and people with high income (IWSR, 2019). Moreover, attitude towards organic products becomes more relevant as the income grows (Aschemann-Witzel & Zielke, 2017). Finally, purchase behavior is influenced by personal capabilities such as financial resources (Stern, 2000). Therefore, it is hypothesized that: *H3. Consumers with high incomes have higher willingness to pay for eco-certified wines.*

Other factors, next to demographics, that influence the consumers' perception and willingness to pay are the way the certifications are presented, attitudes and preferences of eco-certified wines and habits. First, knowledge may affect the likeliness to buy eco-certified wines. Studies suggest that the knowledge of the different eco-certifications has an impact on the purchasing decision and willingness to pay (Vecchio, 2013). Next to that, the more consumers know about the product and the sustainable production method, the more likely they are to pay a price premium (Abraben et al., 2017; Lanfranchi et al., 2019). On the other hand, the image of eco-certified wines faces some difficulties when it comes to the assessment of quality and sensorial attributes (Stolz and Schmid, 2008). Therefore, it can be hypothesized that: *H4. Knowledgeable wine consumers have higher willingness to pay for eco-certified wines.*

Moreover, the occasion for which the wines are bought is positively associated with a higher willingness to pay. This goes for consumers that drink wines for a special occasion such as events or a visit to a restaurant. Besides, the choice for eco-certified wines, more specific, biological, is often linked to an occasion. (Lanfranchi et al., 2019; Migliore et al., 2020). Therefore, it is hypothesized that: *H5. Consumers have higher willingness to pay for eco-certified wines if these are bought for a special occasion.*

Second, certifications seem to play a role in the likeliness to buy eco-certified wines. There are many types of certifications, leading to confusion of the consumer (Castellini et al., 2017). However, certifications do seem to be important. Having an certification is a good sales tool, as it expresses the reliability and solidity of the (production) company (Skal NL, 2018). Besides, giving information, such as a certification on the bottle, will increase the demand for eco-certified wines (Coenecoop, 2020). Information, including the production method – eco-certifications are part of this- influence the purchase decision of natural and organic wines (Galati et al., 2019; Mann et al., 2021). Therefore, it can be hypothesized that: *H6. Consumers are more likely to buy eco-certified wines instead of conventional wines if these have a certification.*

Finally, attitudes and habits influence the likeliness to purchase wines with an eco-certification, according to the literature found. Consumers that are living sustainably and buying ecologically certified foods expect producers to have the same standards and generally also buy eco-certified wines (IWST, 2019). The attitude that consumers have towards organic wine is generally positive (Stolz and Schmid, 2008). It is therefore to be hypothesized that: *H7. Consumers that generally buy eco-certified products are more likely to buy eco-certified wines instead of conventional wines.*

Chapter 4: Method

4.1 Design

This research has a cross-sectional research design, as surveys on a sample were issued at one point in time. Moreover, it studies the influence of variables on a topic. In this case, the influence of, for instance, demographics on the willingness to pay have been studied. The goal for this survey was to detect patterns and relations between certain variables in order to get an overview of consumer preferences for eco-certified wines. This was done in a similar way as in the research of Moscovici et al., on consumer preferences for eco-certified wines in the U.S. (2020). Reason being that the results of both studies can be compared in the future. Besides, an additional aspect of cross-sectional research design that is applicable on this research is that the variables were not manipulated and were gathered at one moment in time instead of multiple moments (Bryman & Bell, 2015).

4.2 Instrument

The chosen instrument for this study was a survey. The survey was issued by means of a self-completion questionnaire on the internet, more specifically on the Social Media platform of LinkedIn. The goal of the study was to gather information from a large population of wine drinkers in the Netherlands. An online survey seemed to be the best tool to reach a diverse group of respondents with a range of demographical differences such as different ages and incomes. This diversity, the demographical differences between respondents, was needed to make conclusions about the target group for these wines and how best to approach them. The survey questions and contents were similar to the study that has been done in the U.S (Moscovici et al., 2020).

4.3 Population, Sample, Sampling method

This research was carried out on the level of individuals. The population consisted of wine consumers in the Netherlands. The goal of the survey was to get information from a broad sample of wine drinkers, preferably different ages, genders and incomes.

In order to have a sample that is trustworthy and represents the population, at least 200 surveys needed to be filled in. The sample should give a representation on wine consumers in the Netherlands. Any pre-selection based on demographics such as gender and income level is considered irrelevant, as the aim was to identify if these variables influence the consumers' perception of eco-certified wines. Moreover, professionals such as academics or researchers on the topic of wine were specifically targeted. The chosen sampling method for this research was non-probability sampling, more specifically convenience sampling. Respondents were not targeted directly by means of email or direct messaging. Another characteristic of convenience sampling is that the distribution of the survey is uncontrolled (Emerson, 2015). The survey was spread online and the researcher did not have any influence on who would fill in the survey as the respondents were not targeted directly. Finally, convenience sampling is applicable since the researchers focused on the accessibility (Bryman & Bell, 2015). In this case, this meant that the survey was shared on social media such as LinkedIn and filled in by a population that had access to these platforms.

4.5 Data Collection

As mentioned previously, the survey was issued as a self-completion questionnaire on the internet. The survey was made using the online platform Microsoft Forms so the surveys could easily be shared and filled in at any given moment that suited the respondent. Besides, the survey was accessible via phone or tablet as well, which made filling in the survey less time-consuming and easier. Additionally, the survey could only be filled in once on the device, to prevent duplications. The survey was spread online in certain groups and on different social media platforms to gather a broad range of respondents. When the targeted number of surveys was reached, namely over 200, the survey was hidden from Microsoft Forms. The survey was therefore only online for a period of about three weeks.

4.6 Research Matrix

Concept	Hypothesis	Defenition of the concept	Survey items
<i>Attitudes and habits towards eco-certified wines</i>	H7	How often the respondent buys eco-certified product and where these products are bought.	Part 2 (Q12 + Q16)
<i>Consumer knowledge</i>	H4	Knowledge of the respondent on wines in general	Part 1 (Q2- Q10)
<i>Demographics</i>	H1, H2, H3, H4	Province, Gender, Income, Age, Marital status	Q1 + part 3 (Q22- Q27)
<i>Certification on the bottle</i>	H6	Knowledge of the respondent on the different certifications	Part 2 (Q11 + Q19 + Q21)
<i>Willingness To Pay (WTP)</i>	H1, H2, H3, H4, H5	Indicating if the respondent is willing to pay more for eco-certified wines and how much more.	Part 2 (Q14 + Q18)
<i>Likeliness to buy</i>	H6, H7	Indicating if the respondent is likely to buy eco-certified wines	Part 2 (Q17 + Q21)

Figure 2: Research matrix

The research matrix above describes the concepts that were covered in the instrument, including the hypothesis belonging to this concept, as well as the survey items and questions.

After gathering the data from the survey, an analysis of the data was made using SPSS. The results are presented below the form of univariate, bivariate and multivariate statistics to get an overview of the results. Additionally, the hypothesis will be tested per concept, as described in the research matrix above. Moreover, multivariate analysis can be performed in the end of the result section to check for patterns and differences between demographical groups.

4.7 Ethical issues

Multiple steps were taken to safeguard the anonymity and confidentiality of the participants. First of all, survey had an introductory text with information on the purpose and safeguarding of the data. The survey and this introductory text can be found in appendix 1 of this document. Second, the survey was carried out anonymously, no personal details were needed to be filled in. Factors such as gender, age and income were asked, however, it is not possible to link the answers of the survey to a specific respondent. Moreover, the participation in this survey was voluntary and the participant was able to withdraw at any moment. Finally, contact details from the author were provided at the beginning and end of the survey in case the respondent would like to have more information about the research and use of the surveys (Gregory, 2003).

All these steps described above made sure that the respondents felt at ease filling in the survey and that they were assured that their data was handled in a confidential way.

4.8 Limitations of the design

There are a couple of limitations to putting the survey out on Social media and gathering results only online. First of all, one limitation to this way of issuing surveys was that potential respondents with no internet connection or social media accounts did not have access to the survey. This might especially have limited the number of responses in the age group above 70 years old. On the other hand, the age groups that are of highest interest to this research are the millennials and the ages above. Therefore, having limited responses in the age group of 70 and above is already taken into account and is not necessarily a very big problem for analyzing the results and coming up with trustworthy data. Another limitation is that possible respondents with no access to social media such as LinkedIn, were not included in the sample of respondents. This might have lead to less surveys being filled in than in the case of gathering results in another way or approaching (possible) respondents face-to-face. On the other hand, the data was gathered in diverse social media and therefore the author had access to diverse groups with different demographical characteristics. This limitation is therefore not seen as an issue in this research, as a diverse group is reached by this method of data collection as well.

Chapter 5: Results

The survey, also presented in appendix 1 of this document, has been spread among a wide group of potential respondents through Social Media. The survey was shared on Social Media such as LinkedIn and Facebook to reach as many respondents as possible. A total of 210 surveys have been filled in by wine drinkers in from all provinces the Netherlands and with different demographical backgrounds. Descriptive analysis on these backgrounds can be found in the paragraph below. The results of the survey have been analyzed using the software SPSS. All surveys have been inserted into the program in order to be able to analyze the results with tables and graphs and to test relations and the hypothesis derived from the literature study.

5.1 Descriptive analysis

Demographics

The distribution of respondents from the different provinces in the Netherlands can be found in Figure 3 below. The majority of the respondents are from the province of Friesland, however all provinces are represented in this study. From 210 respondents, the majority was female (61%) in the age group between 25-39 years old, which is the millennial age group. Moreover, the majority of the respondents (96%) is educated, having finished an MBO education or higher. Most respondents are married (42%) or living together (31%). The average income per person is between 2500 to 5000 euro's per month (34%).

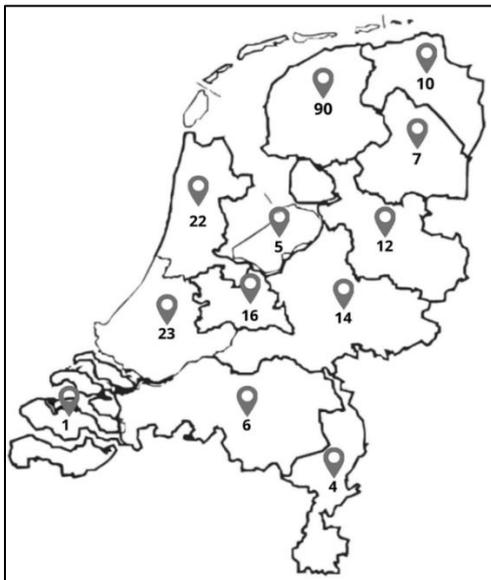


Figure 3: Division of respondents per province

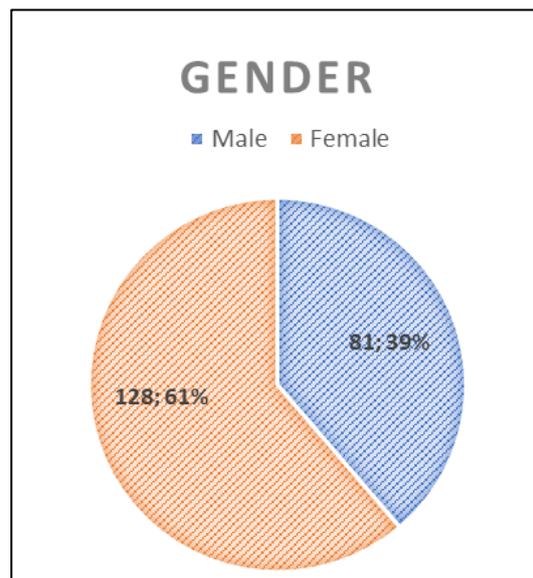


Figure 4: Respondent's gender

Attitudes and habits

Respondents indicated that the primary reason they drink wine is mainly because they like the taste (55%). The most-frequent secondary reason to drink wine is to socialize with friends (28%).

The questions about knowledge and familiarity with the certifications are related to RQ2: "How can consumer knowledge of these certifications be quantified?". When looking at knowledge, most of the wine consumers (33%) that filled in the survey know the basics of wine, such as the differences between red and white and some important varieties. This is followed by wine consumers being able to combine wine and food and knowing something about the culture of wine (25%). When it comes to knowledge on eco-certifications, most respondents seem to be familiar with at least one of the certifications. Only a very small part of the respondents (3.3%) indicates that they have not heard

from any of the eco-certifications mentioned. The most known certification is biological (93.3%). The least known eco-certification is that for sustainable wines (27.1%).

In terms of buying behavior of wines, the respondents indicate that they buy 7,49 bottles of wine averagely per month (SD= 8,386). The average amount of money spent on these wines is 7,43 euro's per bottle with a maximum of 20 euro's (SD= 3,140). Respondents indicated that they usually buy their wines in other retail (38%) such as supermarkets or in wine stores (24%). Additionally, certified wines have already been bought before by most of the respondents. Only a small part of the respondents (13%) have never purchased an eco-certified wine before. Biological wine seems to be the most commonly purchased wine among the respondents, as no less than 75% of the respondents indicated that they have purchased a biological wine before. Moreover, respondents that indicate to have bought a biological wine or another eco-certified wine before, usually buy these wines mostly for regular consumption (37.1%) or for a special occasion (16.7%).

Willingness to pay

Finally, for willingness to pay, the respondents were asked to fill in an amount that they would be willing to pay additionally to the current price of a bottle for each of the certifications. These questions are directly related to RQ4: *"What are consumer's willingness to pay for the five different environmental wine certifications?"*. To make sure the respondents knew about the different certifications, information on each one was added in the survey. Results show that the willingness to pay is highest for the Fair Trade wines (M=2,47 ,SD= 1,14), followed by biological (M=2,44 , SD=1,12). The results are, however, not far apart as sustainable wines (M=2,40 , SD=1,21) and natural wines (M=2,16 , SD=1,26) are very close to this. Biodynamic wines have the lowest average willingness to pay (M=2,01 , SD=1,18). As shown above, all wines fall under the same category in euro's for the amount that respondents are willing to pay extra. All answers indicate an additional 2 to 3 euro's to the current price of the bottle. This means that the respondents are willing to pay an additional 27% to 40% of the average buying price of the wines.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as biodynamic	210	1	6	2,01	1,174
In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as Fair Trade	210	1	6	2,47	1,141
In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as biological	210	1	6	2,44	1,119
In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as natural	210	1	6	2,16	1,258
In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as sustainable	210	1	6	2,40	1,215
Valid N (listwise)	210				

Table 1: Descriptive statistics willingness to pay

Likelihood to buy

The questions related to willingness to buy, are asked to get information to answer RQ1: “What are the most popular eco-certifications in the Netherlands according to wine consumers?”. Regarding the purchase of eco-certified wines in general, respondents were asked how willing they were to buy a wine with an eco-certification. This was measured for all eco-certifications independently. As mentioned above, respondents received information on the different types of eco-certifications to make sure that the knowledge of all respondents is more or less equal and no answers have been given because the respondent did not know the type of certification. When looking at the results of these questions, it is to be found that most respondents have a neutral attitude when asked if they are willing to buy a wine that is certified with one of the eco-certifications. Both the Fair Trade (M=3,91 , SD= ,73) and biological (M=3,90 , SD= ,81) eco-certifications had the highest scores on this question. Most of the respondents (53,3%) indicated that they are willing to buy a wine certified as Fair Trade. For biological, this number was even higher (56,2%). For the other eco-certifications, most respondents replied to be neutral to the statement. For biodynamic, the average score was the lowest (M=3,30 , SD= ,99) and a the majority of the respondents (40%) indicated neutral to this question.

Moreover, a question was included in the survey to rate the importance of each of the certifications. Results show that the respondents find the biodynamic eco-certification least important (M=2,53 , SD= ,96). The Fair Trade (M=3,17 , SD= ,86) and biological (M=3,19 , SD= ,86) are more important. Yet, when looking at the average of all the eco-certifications, respondents are neutral towards the importance of these certifications.

Finally, a question was added if the respondent would be more likely to buy a wine when the eco-certification is clearly displayed on the bottle, thus, visible. This question is related to RQ3: *“To what extent do these certifications influence the buying behavior of consumers?”*. Most of the respondents (57,1%) indicated that it would be more likely for them to buy a wine if the certification is visible on the bottle ($M=3,65$, $SD= ,72$).

An overview of all the descriptive statistics, as well as frequency tables of the related questions on the topics of demographics, attitudes and habits, willingness to pay and likeliness to buy, can be found in appendix 2 of this document.

5.2 Analysis to address hypothesis

H1. Millennials have higher willingness to pay for eco-certified wines.

To test whether there is a relationship between the age of the respondent and their willingness to pay, the Spearman’s rho correlation coefficient is used. This statistic is used because the data analyzed for this question is ordinal and interval, or ranked, data. As the above-mentioned hypothesis is directional, the test is one-tailed.

The willingness to pay has been measured for all the types of eco-certifications separately. The certification with the highest willingness to pay is Fair Trade. Therefore, this was initially the eco-certification that was analyzed with the age groups to see whether there is a relationship between the factors age and willingness to pay. The Spearman’s rho correlation coefficient does not show a significant relation between age and willingness to pay for a Fair Trade wine ($r= -.11$, $p>.05$).

Other eco-certifications were also tested for relations between age and willingness to pay. All other eco-certifications had the same result as the Fair Trade certification, having no significant relationship between age and willingness to pay. There was one exception, namely for the biodynamic certification. In this case, there is a significant relation between the willingness to pay for biodynamic wines and the age of the respondent ($r=.12$, $p<.05$). The results of the test can be found in the table below.

		Select your age range		In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as biodynamic
Spearman's rho	Select your age range	Correlation Coefficient	1,000	,116*
		Sig. (1-tailed)	.	,047
		N	210	210
	In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as biodynamic	Correlation Coefficient	,116*	1,000
		Sig. (1-tailed)	,047	.
		N	210	210

*. Correlation is significant at the 0.05 level (1-tailed).

Table 2: Correlations between age and willingness to pay for Biodynamic wines.

Additionally, a crosstabulation was made to identify whether the group of millennials indeed had the highest average willingness to pay. When looking at the youngest 80% of the respondents, those aged below 59, it is indeed the case that millennials have the highest willingness to pay for biodynamic wines ($M=2.06$). When looking at the two highest age groups, which are 60-69 years old and above 70, it is to be mentioned that these groups have a higher willingness to pay for biodynamic wine ($M=2.24$).

H2. Women have higher willingness to pay for eco-certified wines.

The above-mentioned hypothesis is a one-tailed hypothesis, as it states the direction of the effect, namely the willingness to pay is higher when the gender of the respondent is female. Therefore, the Spearman's rho correlation coefficient is measured with a one-tailed test.

As already mentioned above, the willingness to pay is measured for all the types of eco-certifications. Again, in this case the certification with the highest willingness to pay is assessed first, which is the Fair Trade certification.

		In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as Fair Trade		What is your gender?
Spearman's rho	In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as Fair Trade	Correlation Coefficient	1,000	,134*
		Sig. (1-tailed)	.	,027
		N	210	210
	What is your gender?	Correlation Coefficient	,134*	1,000
		Sig. (1-tailed)	,027	.
		N	210	210

*. Correlation is significant at the 0.05 level (1-tailed).

Table 3: Correlations between willingness to pay and gender

As can be seen in Table 3 above, there is a significant correlation between the willingness to pay for Fair Trade wines and the gender of the respondent ($r=.13$, $p<.05$). The test was done for all the other eco-certifications as well and results show that there is also a significant relationship between all other eco-certifications and the gender of the respondent.

Moreover, when looking at the crosstabulation below, it is to be seen that women, on average, are willing to pay more to the additional price of a Fair Trade wine than men. For both groups, the average willingness to pay additionally to the current price is between two to three euro's. However, the mean is higher for women ($M=2.36$) than it is for men ($M=2.28$).

In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as Fair Trade * What is your gender? Crosstabulation				
Count		What is your gender?		Total
		Male	Female	
In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as Fair Trade	Less than 1 euro	20	14	34
	1-2 euro	33	59	92
	2-3 euro	19	36	55
	3-4 euro	7	9	16
	4-5 euro	2	4	6
	More than 5 euro	1	6	7
Total		82	128	210

Table 4: Crosstabulation willingness to pay for Fair Trade and gender

H3. Consumers with high incomes have higher willingness to pay for eco-certified wines.

The hypothesis mentioned above is related to the income range of the respondents and their willingness to pay for eco-certified wines. Again, in this case, the certification with the highest willingness to pay is assessed. A Spearman's rho correlation coefficient test is done to assess whether there is a significant relationship between income and willingness to pay. As the hypothesis is directional, the test is one-tailed. The Spearman's rho correlation coefficient does not show a significant relation between income and willingness to pay for Fair Trade wines ($r = -.06$, $p > .05$). Also the eco-certification with the lowest willingness to pay was tested and again, there is no significant relation between income and willingness to pay for, in this case, biodynamic wines ($r = .01$, $p > .05$). To check, all other eco-certifications were tested as well and for none of the other eco-certifications, there was a significant relationship between the willingness to pay for any of the eco-certifications and the income of the respondent. Therefore, it is to be mentioned that a higher income of the respondent does not lead to higher willingness to pay and that there is no significant relationship between these variables.

H4. Knowledgeable wine consumers have higher willingness to pay for eco-certified wines.

To above-mentioned hypothesis is related to the level of knowledge regarding wines and their willingness to pay for eco-certified wines. As this hypothesis is directional, the Spearman's rho correlation coefficient is calculated using a one-tailed test. The outcomes of this test show that there is no significant correlation between these two variables. All the different certifications were tested, from Fair Trade ($r = .01$, $p > .05$) to biodynamic ($r = .10$, $p > .05$). Yet, there is no significant correlation between any of the variables and the knowledge about wine of the respondent.

Another aspect that can be attributed to the term "knowledgeable" is the level of education of the respondent. Therefore, another test is done on this question to see whether there is a correlation between the level of education of the respondent and their willingness to pay for eco-certified wines. To start, the variables of willingness to pay for Fair Trade wines were assessed together with the level of education. The outcome of this Spearman's rho correlation coefficient did not show a significant correlation between the variables ($r = .05$, $p > .05$). The same goes for the eco-certification with the lowest willingness to pay, namely biodynamic ($r = .05$, $p > .05$). Furthermore, all other eco-certifications were tested as well and also here, there were no significant relationships between the level of education and the willingness to pay for any of the eco-certified wines, except for one exception.

There seems to be a significant relationship between the willingness to pay for sustainable wines and the level of education of the respondent ($r=.12$, $p<.05$). The results of the Spearman's rho correlation coefficient can be found in Table 5 below.

	Select your highest level of education		Select your highest level of education	In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as sustainable
Spearman's rho	Select your highest level of education	Correlation Coefficient	1,000	,117*
		Sig. (1-tailed)	.	,045
		N	210	210
	In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as sustainable	Correlation Coefficient	,117*	1,000
		Sig. (1-tailed)	,045	.
		N	210	210

*. Correlation is significant at the 0.05 level (1-tailed).

Table 5: Correlations between level of education and willingness to pay for sustainable wine.

H5. Consumers have higher willingness to pay for eco-certified wines if these are bought for a special occasion.

The hypothesis mentioned above is related to the occasion for which the respondent buys the wine and their willingness to pay for eco-certified wines.

First of all, a crosstabulation has been made to check whether the willingness to pay for a Fair Trade wine, the wine with the highest average willingness to pay, is indeed higher for the respondents that indicate that they buy eco-certified wines for a special occasion. This has been done by calculating the mean for each of the answers possible to the question where the when the respondent buys these type of wines. For a regular or other occasion ($M=2.33$) and for restaurants ($M=2.31$), the average willingness to pay is lower than it is for wines bought for a special occasion ($M= 2.80$). This indicates that these respondents are indeed willing to pay more for eco-certified wines if these are bought for a special occasion.

To test if there is a significant relationship between the willingness to pay and the occasion for which eco-certified wines are bought, a one-tailed test is done, using the Spearman's rho correlation coefficient. The result of this test can be found in Table 6 below. As can be identified in the table, there is a significant correlation between the willingness to pay for Fair Trade wines and the occasion for which the wines are bought ($r=-.12$, $p<.05$).

Correlations between occasion and willingness to pay				
			If yes to previous question: When do you buy these wines?	In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as Fair Trade
Spearman's rho	If yes to previous question: When do you buy these wines?	Correlation Coefficient	1,000	-,118 [*]
		Sig. (1-tailed)	.	,044
		N	210	210
	In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as Fair Trade	Correlation Coefficient	-,118 [*]	1,000
		Sig. (1-tailed)	,044	.
		N	210	210

*. Correlation is significant at the 0.05 level (1-tailed).

Table 6: Correlations between occasion and willingness to pay

This test has been repeated for other eco-certifications as well and there is a significant relationship between willingness to pay and occasion for all the other eco-certifications except for sustainable wine ($r=-.06$, $p>.05$).

H6. Consumers are more likely to buy eco-certified wines instead of conventional wines if these have a certification.

This hypothesis can be answered with the simple descriptive statistics on the question: "How likely are you to buy a certified wine if it has a visible certificate?". Most of the respondents (57,1%) indicated that it would be more likely for them to buy a wine if the certification is visible on the bottle ($M=3,65$, $SD=,72$).

Moreover, when looking at the descriptive statistics of likeliness to buy the wines with the different eco-certifications, it is to be mentioned that most respondents take a neutral stance when asked if they are willing to buy a wine with an eco-certification. Both the Fair Trade ($M=3,91$, $SD=,73$) and the biological ($M=3,90$, $SD=,81$) certification are the wines that the respondents indicate they are willing to buy. For both of these certifications, over 50% of the respondents indicated that they are willing to buy these certified wines. The lowest score on this question was for the biodynamic wine, where 40% of the respondents indicated to have a neutral attitude to buying a biodynamic wine.

H7. Consumers that generally buy eco-certified products are more likely to buy eco-certified wines instead of conventional wines.

To test whether there is a relationship between frequently buying eco-certified wines and buying eco-certified wines, we look at the likeliness-to-buy on each of the certifications by using a crosstab.

Do you ever buy food products that have sustainable certification? * How likely would it be to purchase a wine if it would be labelled with the certification? Crosstabulation							
Count		How likely would it be to purchase a wine if it would be labelled with the certification?					Total
		Much less likely	Less likely	No change	More likely	Much more likely	
Do you ever buy food products that have sustainable certification?	Yes	2	4	59	119	14	198
	No	2	0	9	1	0	12
Total		4	4	68	120	14	210

Table 7: Crosstabulation buying sustainable food vs likeliness to purchase a certified wine.

As can be seen in the crosstabulation above, most respondents indicated that they sometimes buy products with a sustainable certification. Besides, the majority of the respondents indicated that they would be more likely to purchase a wine if the bottle would be labelled with a certification.

Additionally, a Chi-square test has been performed to test whether the observed values in the data are as expected and if there is a relationship between the two variables. The results of this Chi-square test tell us if the data of respondents that every buy foods with a sustainable certification is independent to the likeliness to buy a wine with a certification, or if these two variables can be associated with one another.

H0; "There is no significant association between the variable 'buying foods with a sustainable certification' and the variable 'likeliness to buy a wine with a certification'". H1; "There is a significant association between the variable 'buying foods with a sustainable certification' and the variable 'likeliness to buy a wine with a certification'".

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	28,097 ^a	4	,000
Likelihood Ratio	21,728	4	,000
Linear-by-Linear Association	19,859	1	,000
N of Valid Cases	210		

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,23.

Table 8: Chi-Square test Buying Sustainable products vs Likeliness to buy certified wines.

As shown in Table 8, the corresponding p-value of the Chi-square test is $p < .01$. This means that H0 is to be rejected and that there is a significant association between the two variables.

Moreover, Spearman's correlation coefficient is used for the question about visibility of eco-certifications on the bottle and the respondent's frequency of buying other eco-certified products. This test is performed in order to understand whether there is a relationship between more frequently buying eco-certified products and being (more) likely to buy a wine with an eco-certification on the label of the bottle.

Correlations between buying frequency of eco-certified products and likeliness to buy eco-certified wines.				
			If yes above, how often?	How likely would it be to purchase a wine if it would be labelled with the certification?
Spearman's rho	If yes above, how often?	Correlation Coefficient	1,000	,354**
		Sig. (2-tailed)	.	,000
		N	210	210
	How likely would it be to purchase a wine if it would be labelled with the certification?	Correlation Coefficient	,354**	1,000
		Sig. (2-tailed)	,000	.
		N	210	210

** . Correlation is significant at the 0.01 level (2-tailed).

Table 8: Correlation between frequently buying eco-certified products and likeliness to buy eco-certified wine.

As can be seen above, there is a significant correlation between the buying frequency of eco-certified products and likeliness to buy a wine that is labelled with a certification ($r=.35$, $p<.01$). This indicates that respondents that buy eco-certified products on a frequent basis, are more likely to buy a wine that has a label with an eco-certification.

5.3 Kruskal-Wallis H-tests

The respondents of the survey belong to multiple groups, which have independent scores. These groups are for example the different demographical groups, as well as the knowledge of the respondent and their buying habits to certified products. A Kruskal-Wallis H test can identify differences between groups and specifically, which groups differ from each other. Not all groups may have differences in their responses, however some groups might (Field, 2009). A Kruskal-Wallis H test has been performed for the different groups, related to the different hypothesis that were derived from literature and that have also been analyzed in the results section in the sub-chapter above. The results from the tests can be found in the table below.

Null Hypothesis	Total N	Test Statistic	Degree Of Freedom	Asymptotic Sig. (2-sided test)	Decision
The distribution of WTP sustainable is the same across categories of age	210	11,323	5	0,045	Reject Null Hypothesis
The distribution of WTP biological is the same across categories of gender	210	8,219	1	0,004	Reject Null Hypothesis
The distribution of WTP natural is the same across categories of gender	210	7,721	1	0,005	Reject Null Hypothesis
The distribution of WTP natural is the same across categories of income	210	10,546	4	0,032	Reject Null Hypothesis
The distribution of WTP natural is the same across categories of occasion	210	9,936	3	0,019	Reject Null Hypothesis
The distribution of WTP biodynamic is the same across categories of occasion	210	8,102	3	0,044	Reject Null Hypothesis
The distribution of WTP biological is the same across categories of occasion	210	8,521	3	0,036	Reject Null Hypothesis
The distribution of LTB biodynamic is the same across categories of buying frequency	210	12,641	5	0,027	Reject Null Hypothesis
The distribution of LTB Fair Trade is the same across categories of buying frequency	210	15,249	5	0,009	Reject Null Hypothesis
The distribution of LTB biological is the same across categories of buying frequency	210	21,749	5	0,001	Reject Null Hypothesis

Table 9: Kruskal-Wallis H Tests results

First of all, a test has been done for the different age groups and their willingness to pay for the different eco-certified wines. This test is related to “H1. Millennials have higher willingness to pay for eco-certified wines”. Results of the test show that the distribution of willingness to pay for all the eco-certifications is the same across the different age groups, except for the eco-certification of sustainable wines.

When looking further into the results, it is to be mentioned that there are significant differences between a couple of age groups, as shown in the table below. The pairwise comparison of the different age groups indicates that there is a significant difference between the two sample groups of 40-49 years old and 25-39 years old, as well as the sample groups of 50-59 years old and 25-39 years old. The table with the results of pairwise comparison of the different age groups can be found in appendix 3 of this document.

A Kruskal-Wallis H test related to the second hypothesis “H2. Women have higher willingness to pay for eco-certified wines”, shows that the distribution for willingness to pay for biological and natural wines is not the same across the categories of men and women. For the other eco-certifications, the distribution is the same across both categories. As shown in the figure below, the mean for men and

women is quite equal, however the distribution for the willingness to pay for biological wine is larger for men. For women, the distribution is smaller, and there is less variation in the willingness to pay for biological wine.

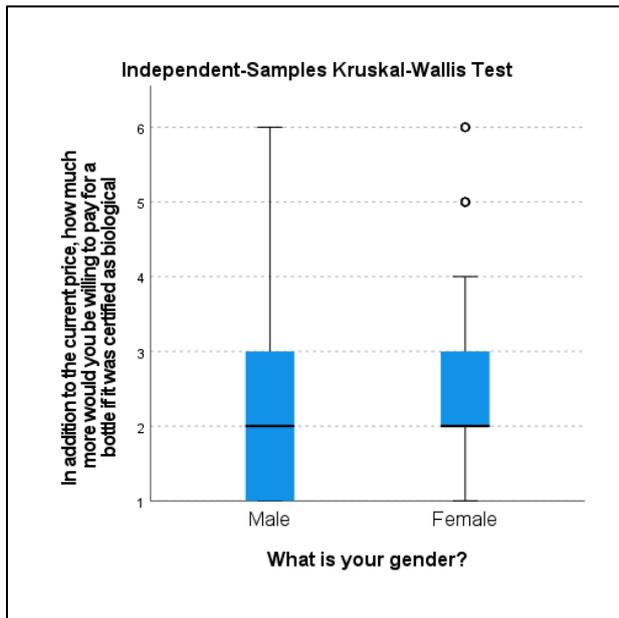


Figure 4: Boxplot Kruskal-Wallis H Test for Gender and WTP for biological wine.

The third grouping variable is the level of income of the respondent. This is related to “H3. Consumers with high incomes have higher willingness to pay for eco-certified wines”. When looking at the results of the Kruskal-Wallis H test, the distribution the results for willingness to pay is the same across all the different ranges of income. This goes for all the different eco-certifications, except for the one of natural wines. The result of the test can be found in the table below.

When diving into the results of this test and looking at the different groups, it is noticeable that there is a significant difference between the group with an income of 2500-5000 euro per month and the group with an income of less than 1000 euro per month. When looking at the boxplot figure below, it is to be seen that the mean of these groups are the same but the interquartile range that the responses are in are varying and that the range for the group with an income less than 100 euro per month is higher than for the group with an income of 2500-5000 euro per month. This group does have a higher maximum, though. Moreover, the compare level, or median, is higher for the group of respondents that prefers not to indicate their range of income, as can be seen in the figure below. The pairwise comparisons between the different income ranges can be found in appendix 3 of this document.

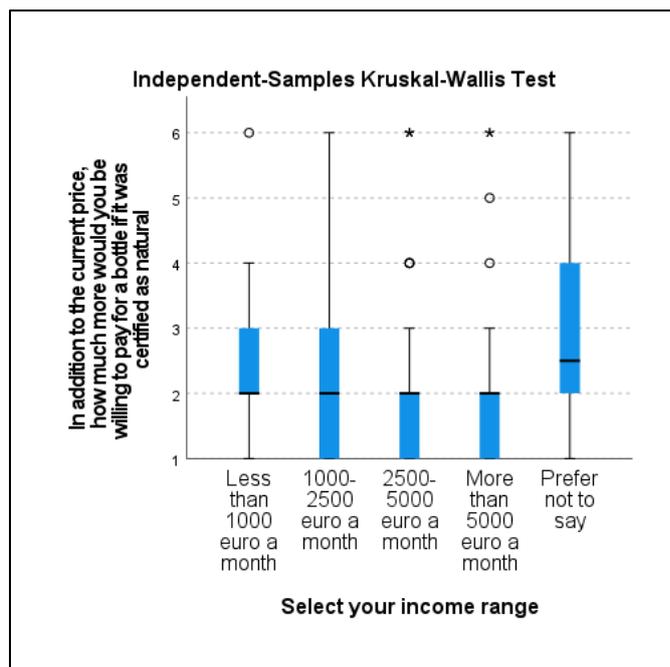


Figure 5: Boxplot Kruskal-Wallis H Test for Income and WTP for sustainable wines

Another Kruskal-Wallis H test has been performed for the grouping variable of knowledge. This is related to “H4. Knowledgeable wine consumers have higher willingness to pay for eco-certified wines”. In this case, there are two different grouping variables and two tests that are done. The first grouping variable related to knowledge is the wine knowledge of the respondent, ranging from very little knowledge to wine expert. Results of the tests show that the distribution of willingness to pay is the same across all levels of wine knowledge. This is applicable for all the different eco-certifications. The second grouping variable related to knowledge is the level of education of the respondent. Therefore, a test has been done for this grouping variable as well. Results show the same as for the grouping variable related to wine knowledge. The distribution is the same across all categories, thus, for all levels of education.

Additionally, a test has been done which is related to “H5. Consumers have higher willingness to pay for eco-certified wines if these are bought for a special occasion”. The grouping variables for this test are the different occasions for which respondents indicate to buy eco-certified wines, versus their willingness to pay for these different eco-certified wines. Results show that the distribution of willingness to pay is the same across the different occasions for the eco-certifications of Fair Trade and sustainable wines. For biodynamic, biological and natural wines, the distribution is not the same across the different categories or occasions. When looking at the pairwise comparisons between the different categories, it is noticeable that there are mainly differences in the distribution between the category of “other reason” and regular consumption and special occasions. This is applicable for all three eco-certifications. The results of the pairwise comparisons can be found in appendix 3 of this document.

Looking at the boxplot in the figure below, the compare level, also called median, for biodynamic wines is higher in the categories of regular consumption and special occasion.

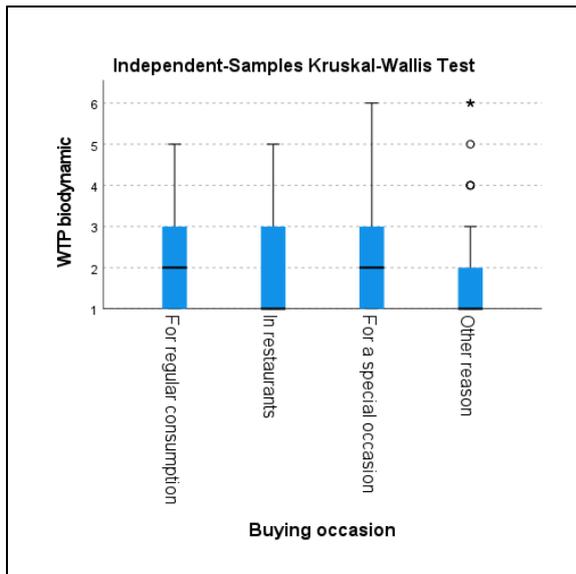


Figure 6: Boxplot Kruskal-Wallis H Test for WTP for biodynamic wines and occasion

For biological, the median is higher for restaurants and the interquartile range is larger for the category “other reason”, as can be seen in the figure below. The maximum of willingness to pay is, however, higher when the respondent indicates to buy biological wines for other reasons.

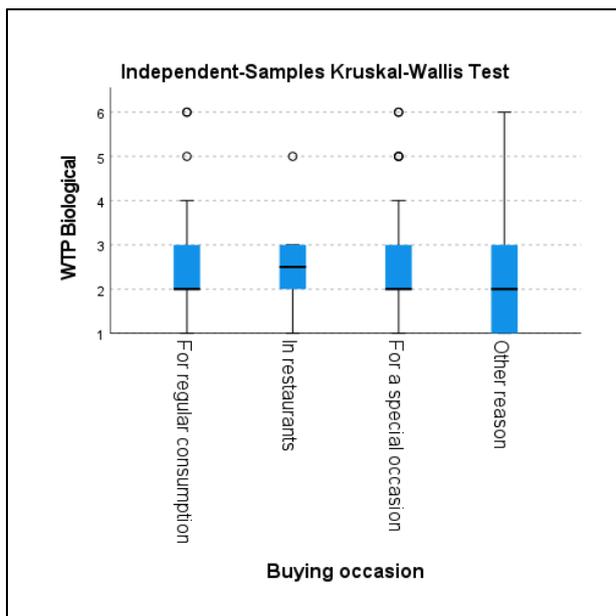


Figure 7: Boxplot Kruskal-Wallis H Test for WTP for biological wines and occasion

For the wines with a natural eco-certification, the medians are all the same and the interquartile range and maximum willingness to pay is larger when wines are bought for regular consumption or for a special occasion. This can be seen in the figure below.

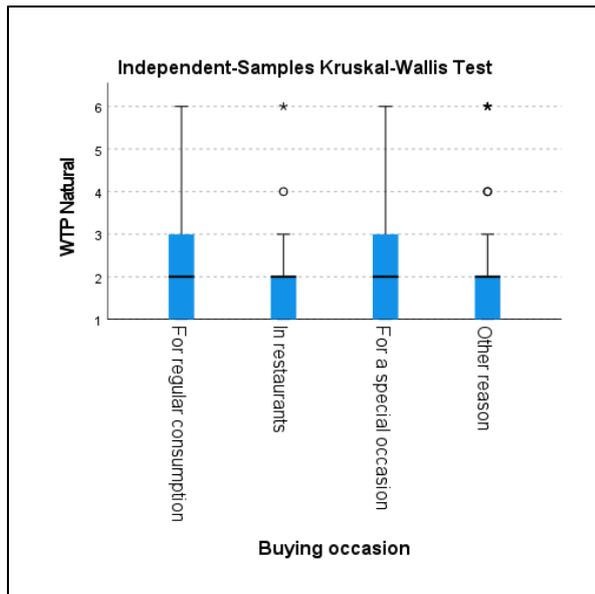


Figure 8: Boxplot Kruskal-Wallis H Test for occasion and WTP for natural wines

From willingness to pay, we move to likeliness to buy. The final test is related to “H7. Consumers that generally buy eco-certified products are more likely to buy eco-certified wines instead of conventional wines”. The grouping variables for this test are buying frequency and likeliness to buy a wine if labelled with an eco-certification. Results show that the distribution of likeliness to buy is not the same across all categories of buying frequency. This is applicable for the biodynamic, Fair Trade and biological certifications. For the natural and sustainable eco-certification, the distribution is the same across the different categories of buying frequency.

When looking at the pairwise comparisons for biodynamic wines, there is mainly a significant differences between “Very often” and other buying frequencies. For Fair Trade, this is the case for wines bought “Very often” and “Often”. The same goes for the biological certification. The pairwise comparison tables of the variables mentioned above can be found in appendix 3 of this document. Moreover, when looking at the boxplot from the Kruskal-Wallis H test on biodynamic wines, it is to be mentioned that the median is not the same across all categories and that the likeliness to buy is higher when the respondent buys eco-certified wines very often. Moreover, the maximum for the categories “Often” and “Sometimes” are higher and the interquartile ranges are larger. This can also be seen in the figure below.

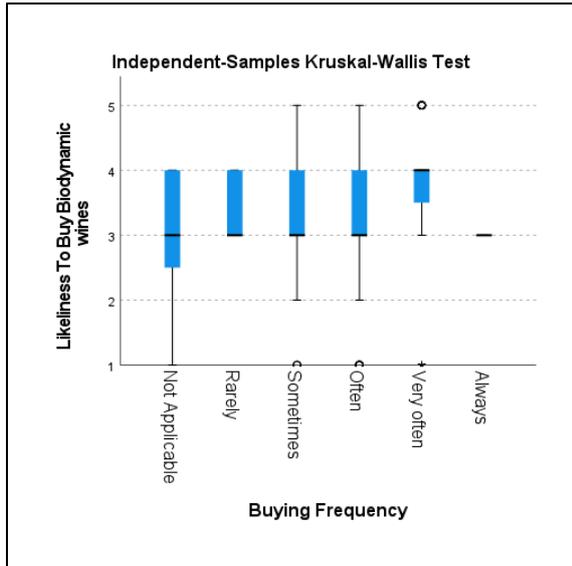


Figure 9: Boxplot Kruskal-Wallis H Test for LTB biodynamic wines and buying frequency

For the Fair Trade eco-certification, the medians are also different for the different categories. As seen in the figure below, the medians are higher for the more frequent buyers. Indicating that they are more likely to buy a wine certified as Fair Trade.

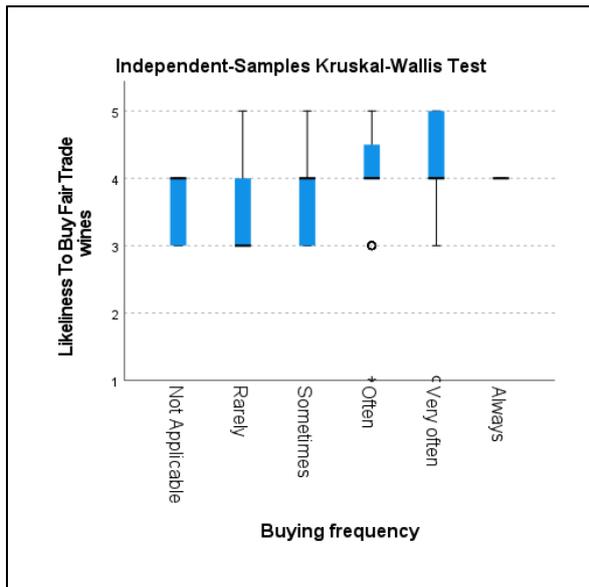


Figure 10: Boxplot Kruskal-Wallis H Test for LTB Fair Trade wines and buying frequency

Finally, for the biological certification, results are similar to the results of the Fair Trade certification. However, the interquartile ranges are larger and higher for the more frequent buyers of eco-certified products. This indicates that these groups are to be more likely to purchase a wine certified as biological. The results are shown in the figure below.

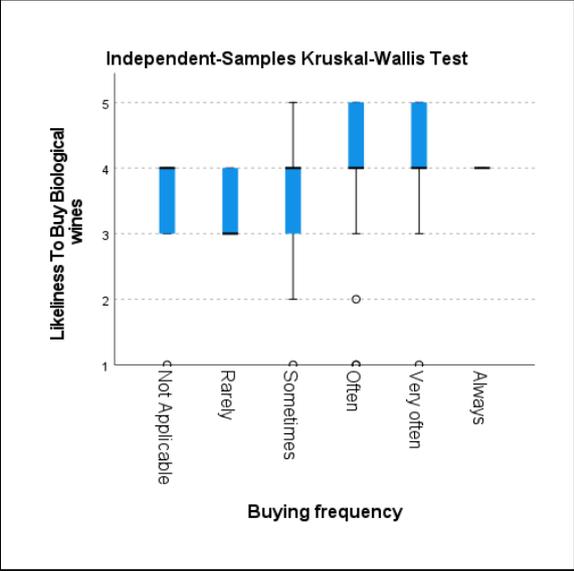


Figure 11: Boxplot Kruskal-Wallis H Test for LTB biological wines and buying frequency

Chapter 6: Discussion

6.1 Research questions

For this research, several research questions were designed to identify the specific objectives for this study. These research were based on the literature found in chapter two and are answered below.

6.1.1 Most popular eco-certifications in the Netherlands

When looking at *RQ1: "What are the most popular eco-certifications in the Netherlands according to wine consumers?"* it is to be mentioned that the most known eco-certification seem to be biological, as most of the respondents (93%) indicated they know this eco-certification. The Fair Trade certification is also quite well-known (69.5%). Next to this, one in seven respondents (14%) was already familiar with all the eco-certifications. The least known certifications are natural wine (38.1%), biodynamic (33.8%) and sustainable (27.1%). When looking at buying intentions and – behavior, most respondents (56.2%) are willing to buy a wine that is certified as biological.

When looking at the literature found, it makes sense that biological wines is the most commonly known among the respondents. Biological products, additional to biological wines, are also commonly displayed in supermarkets nowadays. Moreover, the biological certificate radiates liability and is therefore a great sales tool (Skal NL, 2018).

6.1.2 The extent of awareness of eco-certifications by Dutch consumers

The second research question "*RQ2: How can consumer knowledge of these certifications be quantified?"* was designed to understand the consumer and the knowledge they have concerning eco-certified wines, as well as their motivation to buy these kind of wines.

As mentioned in literature, the production and trade of organic wine is growing with more than 10 percent per year (RLT Nieuws, 2019). This growing demand is linked to the growing awareness of health and environmental issues and the increasing amount of information that is available on this topic (Hashem et al., 2018). This large amount of different information and different certifications can also lead to uncertainty, affecting the choice of the consumer. Consumers are often overwhelmed by the amount of information and this jungle of certifications is not transparent (Willer, 2000).

When looking at the results of the survey, it is to be mentioned that most of the respondents are familiar with at least one of the five eco-certifications. Only a small part of the respondents have not heard of any of the certifications before (3.3%). Biological wines are the most commonly known certification, 93.3% of the respondents indicated that they know this certification. This does make sense when looking at the literature, since the market for these wines is growing the fastest of all eco-certifications. The expected yearly market growth is 9.2%, with Europe having the largest share of in the global market for these wines. These wines continue to have more presence in wine stores and even in supermarkets (IWSR, 2019). Therefore, chances are high that the respondent that buys wine in any of these stores is already familiar to this kind of eco-certification.

The least-known eco-certification is that of sustainable wines, 27.1% of the respondents indicated to know this kind of wine. This may be due to the fact that there is no clear sustainable certification, like there is for Fair Trade or organic wines. The subject of sustainable wine making remains open to interpretation of the wine-maker and is mainly related to the reduction of chemical inputs (Goode, 2005). This makes it difficult for the consumer to distinguish these types of wine from the conventional wines and because there is no declared eco-label from a third-party, the perceived quality is lower (Delmas & Gergaud, 2021). Additionally, wines with an official certification are considered more trustworthy (Wine Intelligence, 2021).

6.1.3 The influence of certifications on consumers' buying behavior

The third research question *"To what extent do these certifications influence the buying behavior of consumers?"* was designed with reference to the literature on consumer preferences and consumption. Literature suggests that, due to more focus on healthy living and reducing the impact on the environment, there is more place in the market for wines with eco-certifications (Anzivino et al., 2021; IWSR, 2019). Moreover, it is suggested that consumers perceive the quality of eco-certified wines as higher. This is especially the case for wines that have a declared eco-label. These wines tend to have a higher quality rating by experts (Delmas & Gergaud, 2021). This might therefore be of influence on the buying behavior of consumers.

On the other hand, the variety of eco-certifications may lead to an overload of information and confusion among consumers. The many varieties make it difficult for the consumer to identify what they are buying and this cements the status of eco-certified wines (Brécard, 2014; Castellini et al., 2017; Willer, 2000). Consumers may therefore choose to buy conventional wines over eco-certified wines to prevent misunderstandings or play it safe.

The findings of the survey indicate that a majority of the respondents specify that they are willing to buy a wine if there is a visible certification on the bottle. This is in line with the findings in literature that wines with a declared eco-label may influence the buying behavior of the consumer. When looking at the willingness to buy these wines with eco-certifications, not all wines come out as positive. Most respondents take a neutral stance towards purchasing eco-certified wines. There is, however, a higher willingness to buy for Fair Trade and biological wines, as more than half of the respondents indicate they are willing to purchase these certified wines. The reason for this may be that the biological certificate is familiar to almost all of the respondents. Moreover, three quarters of the respondents indicate that they have purchased a biological wine before. Both the biological and Fair Trade certification are also ranked highest in importance, where biodynamic is found to be the least important certification to the respondents.

Additionally, buying behavior of eco-certified wines is influenced by the respondents' general buying behavior of other eco-certified products. Results of the survey show that consumers that have indicated to buy sustainable foods, have a higher likeliness to buy eco-certified wines instead of conventional wines. Moreover, the results of the Kruskal-Wallis H Test shows that respondents that buy eco-certified products often or very often, are more likely to buy Fair Trade, biological and biodynamical wines. Therefore, it can also be identified that eco-certifications in general do have an effect on the consumers' buying behavior of eco-certified wines and other products.

6.1.4 Consumer's willingness to pay for eco-certifications

The final research question *"What are consumer's willingness to pay for the five different environmental wine certifications?"* was designed to get insight in how much extra consumers are willing to pay for wines with an eco-certification.

As shown in the descriptive statistics in table 1, the willingness to pay is measured for all eco-certifications. Moreover, the respondent is asked how much they are willing to pay additionally to the current price. For all eco-certifications, respondents are willing to pay an additional two to three euro's to the current price. The willingness to pay is highest for the biological certification.

According to the findings derived from literature, millennials are more likely to pay a higher price for natural and organic wines (Galati et al., 2019). Younger people have a broader interest, are willing to live more sustainable and therefore pay more for wines with hardly any additives or without additives (KNVW, 2020).

Next to this, it is mentioned that gender plays a role as well and that females have a tendency to bid higher on sustainable wine (IWSR, 2019). Additional to demographics, consumption- and buying frequency may influence the willingness to pay for eco-certified wines, according to an Italian study. Moreover, the occasion for which the wines are bought is positively associated with a higher willingness to pay. This goes for wines bought for a special occasion (Migliore et al., 2020).

When looking at the results of the survey, there are a couple of similarities to literature, but also a couple of differences to the findings in literature. First off, the demographic factor of age has been assessed. There did not seem to be a significant relation between age and willingness to pay for eco-certified wines. However, there was one exception. There is a significant positive relationship between willingness to pay for biodynamic wine and the age of the respondent. Moreover, when looking at the different age groups, the highest willingness to pay is identified in the age groups of 60-69 years old and over 70 years old. It is to be noted however, that this group only makes up 20% of the total respondents. When looking at all age groups below 59 years old, the millennials do have the highest willingness to pay. Additionally, the results of the Kruskal-Wallis H Tests indicate that there is a significant difference between millennials and respondents aged between 40 and 59 years old for all eco-certifications, except for sustainable wines.

Besides, the results of the survey show that there is a significant relationship between the willingness to pay for all different eco-certifications and the gender of the respondent. Moreover, it is to be seen that women are willing to pay a higher average additional price and therefore have higher willingness to pay than men.

Finally, when looking at the occasion, it can be identified in the results of the survey that there is a significant relationship between the occasion that eco-certified wines are bought for and the willingness to pay for wines with an eco-certification. There is one exception, as there does not seem to be a significant correlation between the willingness to pay for sustainable wine and the occasion for which the wine is bought. Besides, the results of the Kruskal-Wallis H Tests show a higher willingness to pay for biodynamic and natural wines that are bought for special occasions and for regular consumption.

6.2 Review of the Conceptual model

The conceptual model, presented in Figure 1, to be found in Chapter 3, gives a visual representation of this study. The conceptual model is used as a framework to outline the possible courses of action, presenting the line of research and thereby providing a rigor to the research process.

The first indicator in the conceptual model is on the different kinds of eco-certifications in the Netherlands. These are researched by means of a literature study and related to *“RQ1. What are the most popular eco-certified wines in the Netherlands according to wine consumers?”*. This research question has been answered by means of the survey issued among 210 Dutch wine-consumers. Literature has been supportive to understanding the different kinds of certifications and their presence in the Dutch market. There is now a clear overview of the different kinds of eco-certifications that are present in the Dutch market and if consumers actually know about these.

Second, the attitudes and habits that consumers have, are likely to affect the willingness to pay for eco-certified wines and the likeliness to buy these wines. This also includes the knowledge that the consumers have with regard to these certifications. Therefore, *“RQ2. How can consumer knowledge of these certifications be quantified?”* has been designed. The attitude towards these wines and the habits such as the buying frequency of other certified products do indeed affect the willingness to pay and likeliness to buy eco-certified wines.

The two factors; willingness to pay and likeliness to buy are influenced by other factors. Literature suggests that demographic factors such as age, gender and income affect the willingness to pay for eco-certified wines. Moreover, a visible certification on the bottle makes it more likely that the wine is bought, opposed to a conventional wine or a certified wine without a certification presented on the bottle. The third research question; *“RQ3. To what extent do these certifications influence the buying behavior of consumers?”* was designed to get insight in the moderating factor of visible certifications on the wine bottle. Results show that these influencing factors are indeed as presented in the conceptual model. Demographic factors such as age and gender do affect willingness to pay for (some of) the eco-certifications. Not all demographic factors have an effect on the willingness to pay, as income does not show to have a relationship to a higher willingness to pay. Additionally, consumer knowledge does not seem to affect willingness to pay, except for the level of education and its influence on the willingness to pay for sustainable wines. A visible certification on the bottle does indeed affect the likeliness to buy these wines. Not all eco-certifications are equally popular, so the likeliness to buy varies a bit.

In the end, having knowledge about the willingness to pay and the likeliness to buy of these wines, together with the influencing factors, will lead to more insight in the consumer preferences for eco-certified wines in the Netherlands. Therefore, the final research question; *“RQ4. What are consumers’ willingness to pay for five different environmental wine certifications (organic, biodynamic, natural, fair trade, and sustainable)?”* is important to help identify the preferences of consumers for certified wines in the Netherlands. All the research questions were answered in the discussion section above and did lead to more insight in the preferences of consumers to eco-certified wines.

The conceptual model would not need a lot of revision, except for the consumer knowledge, which can be left out as it is only applicable to one of the eco-certifications. Moreover, the conceptual model is still relevant, also after the results of the study.

6.3 Limitations of Findings

During this research, the writer faced several limitations. First of all, the division of respondents per province was not equal. By far most of the respondents came from the province of Friesland. The Frisian culture and attitude towards eco-certified products might differ from the other provinces, for instance from the Randstad area. Moreover, the largest group of respondents were belonging to the age group of 25-39 years old. The other age groups were also represented quite well. However, the amount of respondents in the age group of >70 years old is rather small in comparison to the other age groups. This might give an incomplete view when talking about the Dutch wine consumer, since this age group is also part of the wine-consuming group but is not represented equally in the sample. This has also been mentioned already in the limitations of the design and is something that was expected beforehand.

As for limitations in the findings of literature, it is to be mentioned that little to no information was found on the current market share for the different eco-certified wines. This made it difficult to get a good overview of the current status of eco-certified wines in the Dutch wine market and additionally makes it difficult to conclude about the market potential and -growth, as well as selling potential of these wines.

6.4 Summary of findings

A summary of the findings belonging to the different Research Questions and Hypothesis can be found in the table below.

Hypothesis or Research Question	Summary of Hypothesis or Research Question	Summary of findings
RQ1	<i>What are the most popular eco-certifications in NL according to wine consumers?</i>	The biological certification is the most known. Also, the majority of the respondents is willing to buy a wine that is certified biological.
RQ2	<i>How can consumer knowledge of these certifications be quantified?</i>	Most respondents are familiar with at least one of the certifications. Biological is the most-known certificate.
RQ3	<i>To what extent do these certifications influence the buying behavior of consumers?</i>	Majority of respondents are willing to buy a wine with a visible certificate on the label. Most respondents have a neutral stance to purchasing eco-certified wines. There is a higher likeliness to buy for Fair Trade and biological wines.
RQ4	<i>What are consumer's willingness to pay for the five different environmental wine certifications?</i>	Results can be found in the descriptive statistics of Table 1 in Chapter 5
H1	<i>Millennials have higher willingness to pay for eco-certified wines</i>	Only for biodynamic wines, there is a significant correlation between age and WTP. There is a significant difference between millennials and older age groups, except for sustainable wines
H2	<i>Women have higher willingness to pay for eco-certified wines.</i>	Significant correlation between WTP and gender. No equal distribution of the results for biological and natural wines. Women are, on average, willing to pay a higher additional price.
H3	<i>Consumers with high incomes have higher willingness to pay for eco-certified wines.</i>	There is no significant relationship between a higher income and higher WTP. Kruskal-Wallis H Test distribution shows same willingness to pay across all income ranges, except for natural wines.
H4	<i>Knowledgeable wine consumers have higher willingness to pay for eco-certified wines.</i>	There is no significant relationship between wine knowledge and WTP or between level of education and WTP. One exception for sustainable wines and level of education, as there is a significant correlation here.
H5	<i>Consumers have higher willingness to pay for eco-certified wines if these are bought for a special occasion.</i>	There is a significant correlation between occasion and WTP for all eco-certifications, except sustainable wines. Kruskal-Wallis H Test results show a higher WTP for biodynamic and natural wines for special occasion and regular consumption.
H6	<i>Consumers are more likely to buy eco-certified wines instead of conventional wines if these have a certification</i>	Consumers are indeed more likely to buy when there is a visible certification on the bottle.
H7	<i>Consumers that generally buy eco-certified products are more likely to buy eco-certified wines instead of conventional wines.</i>	Consumers that have indicated to buy sustainable foods have higher likeliness to buy a certified wine. There is also a significant correlation between the buying frequency and likeliness to buy. Kruskal-Wallis H Tests show higher LTB for buying frequencies often + very often for Fair Trade, biodynamic and biological.

Table 10: Summary of Research Questions, Hypothesis and Findings

Chapter 7: Conclusions & Recommendations

7.1 Conclusions

The problem statement that was designed for this research is “*What factors determine consumer preferences for eco-certified wines in the Netherlands?*”. After conducting the literature review, a couple of the factors that might influence consumer preferences were already presented. These factors, such as demographics and consumer knowledge, as well as a visible certification and the attitudes and habits of the consumer, were included in the hypothesis and research questions. These hypothesis were studied with the analysis of the data that were derived from the survey. A total of four research questions were included in this research. Additionally, this study tested seven hypothesis. A summary of the research questions, hypothesis and findings can also be found in table 10.

The main factors that influence consumer preferences for eco-certified wines in the Netherlands are the availability of eco-certified wines, the familiarity with eco-certifications in general, demographical factors and the occasion for which the wine is bought. First of all, respondents have indicated to be more likely to buy an eco-certified wine in case it is labelled with a visible eco-certification. Second, consumers indicate to be familiar with most of the certifications and have previously bought mostly biological wines. The results of this study show that consumers are more likely to buy eco-certified wines if they also buy other eco-certified products on a regular base. Furthermore, factors such as gender and age are influencing the consumer preferences as well. Finally, eco-certified wines are mostly bought for regular consumption and special occasions. The occasion for which the wine is bought also seems to influence the consumer preference and willingness to pay for eco-certified wines.

7.2 Recommendations for the Industry

The results of this study can be useful to wineries and marketers and should be interpreted as a signal to producers to commit to developing and growing the market for eco-certified wines. Therefore, are a couple of recommendations for practice were developed and are explained below.

The first recommendation is a recommendation for as well the organizations shaping the rules for eco-certifications, as for the wineries itself. It would be recommended to make the labels of eco-certified wines more clear by adding a clear logo of the eco-certification on the bottle. This is not yet done for all eco-certifications. It would make the visibility of these wines between regular wines larger and therefore easier to distinguish. Moreover, wineries could add more information on the label about the production method of the wine and about what makes the wine a natural wine, or a biodynamic wine. In this way, consumers will get more knowledge on these different types of eco-certified wines and it will be easier for the consumer to choose a (similar) eco-certified wine in the future.

Next to making the labels more clear, these type of wines should have a place in the spotlight in wine stores, retail and restaurants. Consumers do know most of the certifications and also indicate to being more likely to buy these wines when they know the certification. This is especially the case for the Fair Trade and biological label. If consumers indicate that they are willing to purchase these wines, the next step for marketeers and retailers, as well as for the other outlets where these wines are sold, is to put these wines in the spotlights and inform consumers on the options to purchase these different eco-certified wines.

Finally, another recommendation for the industry, especially for marketers, is to focus on women when marketing these wines. This is especially the case for biological and natural wines. Women are willing to pay, on average, a higher additional price. Moreover, the focusing on women in a certain age group could also lead to benefits for the industry, as results show that there is a significant difference between the millennial – and older age groups in terms of willingness to pay for biodynamic, biological, Fair Trade and natural wines. Possibly, there are also benefits to the industry by focusing on this.

7.3 Recommendations for Further research

There are a couple of recommendations for further research on the topic of eco-certified wines, as well for the Dutch market as for international research. First of all, it would be recommended to also research the side of the wine producer and their opinion on the different eco-certifications. This should be done to investigate the implications of eco-certifications on the wine production and the value of these certifications for wine producers themselves. It would be valuable to know whether these eco-certifications are worth investing in and what the additional costs are for the winery. This will help understand the growth of this market and the difficulties that wineries have to enter the market for eco-certified wines. Moreover, developing a research from the production side would be important to see whether the preferences from consumers and producers are aligned or if there are large differences between these two groups. Knowing the preferences for both the producer and the consumer would make it easier to decide what needs to be done to make the market for eco-certified wines more attractive and to grow the market share of these types of wines.

Additionally, more research can be done on the size of the market share of eco-certifications in the Netherlands. When reviewing current literature on this topic, little to no numbers and figures were found on the market share of these wines in the Dutch wine market. Moreover, companies that were directly targeted and asked about these numbers, were not willing to share such data for the purpose of this research. Doing additional research on this topic would make the information on the market potential and – growth more clear. Additionally, it would be easier for retailers, wine importers and other stakeholders to get an overview of the existing market and together shape and grow the market for eco-certified wines. In the end, having this data and doing additional research will help capturing a place in the market for eco-certified wines and will benefit multiple stakeholders. It is important that also companies get to see this point and are willing to help in this process of making these wines more known.

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Appendix

1. Survey

Bedankt dat u de tijd heeft genomen om aan dit onderzoek deel te nemen. Het doel van deze studie is om meer te weten te komen over de verschillende certificeringen voor wijn en uw mening hierover. Resultaten van deze studie kunnen worden gedeeld met producenten en onderzoekers om consumenten te helpen informeren over dit belangrijke onderwerp in de wijnwereld. Uw antwoorden zijn volledig anoniem én helpen mij om af te studeren.

Als je nog vragen hebt over deze enquête, of benieuwd bent naar het onderzoek als het eenmaal klaar is, stuur dan gerust een e-mail naar: inge.blaauwbroek@student.nhlistenden.com

1. In welke provincie woont u?

- Drenthe
- Flevoland
- Friesland
- Gelderland
- Groningen
- Limburg
- Overijssel
- Noord-Brabant
- Noord-Holland
- Utrecht
- Zeeland
- Zuid-Holland

De volgende reeks vragen wordt gesteld om inzicht te krijgen in uw achtergrond en gewoonten met betrekking tot wijn.

2. Aantal gekochte flessen wijn per maand (gemiddeld).
3. Gemiddelde prijs betaald voor één fles wijn
4. Voornaamste reden om wijn te drinken (keuzelijst; Ik hou van de smaak; het helpt me om te ontspannen; om te socializen met vrienden; match goed bij het diner; om te socializen met familie; voor romantiek; om gezondheidsredenen; om me te helpen slapen; om de wijn te analyseren en te vergelijken met vrienden)
5. Secundaire reden om wijn te drinken (keuzelijst; Ik hou van de smaak; het helpt me om te ontspannen; om te socializen met vrienden; match goed bij het diner; om te socializen met familie; voor romantiek; om gezondheidsredenen; om me te helpen slapen; om de wijn te analyseren en te vergelijken met vrienden; geen)

6. Waar koopt u het vaakst wijn? (kies er een) (Alfabetische keuzelijst: Drankenhandel; Internet; Restaurant; Wijnhuizen; Wijnspeciaalzaak; andere detailhandel)

7. Hoeveel weet u over wijn?

- a. Ik heb heel weinig kennis
- b. Ik ken de basis tussen rode en witte wijn en enkele belangrijke soorten
- c. Ik kan navigeren op de wijnkaart van een restaurant
- d. Ik kan wijn en eten combineren en weet het een en ander van de cultuur en geschiedenis van wijn.
- e. Ik kan zonder hulp wijn kiezen en vrienden vragen mij om aanbevelingen
- f. Ik beschouw mezelf als een expert

8. Wat zijn uw belangrijkste overwegingen bij het kopen van wijn? Rangschik onderstaande in volgorde van belangrijkheid, waarbij 1 het belangrijkste voor u is en 6 het minst belangrijk.

- Leeftijd van de wijn
- Herkomst of plaats van herkomst
- Prijs
- Eco-certificering
- Expertbeoordeling
- Smaak

9. Welke van de volgende zaken houdt u in overweging bij het kopen / drinken van wijn? (Kies alles wat van toepassing is)

- Milieu-impact van wijn
- Sociale impact van wijn (arbeiders, gemeenschap, enz ...)
- Economische impact van wijn
- Geen van bovenstaande

De tweede reeks vragen wordt gesteld om perspectieven en meningen te verzamelen over meerdere wijncertificeringen.

10. Koopt u wel eens voedselproducten die duurzaam zijn gecertificeerd? (inclusief biodynamisch, fairtrade, biologisch, natuurlijk, duurzaam of anders)

- Ja
- Nee

11. Zo ja op het bovenstaande antwoord: hoe vaak?

- Nooit
- Zelden
- Soms
- Vaak
- Heel vaak
- Altijd

12. Van welke van de volgende wijncertificeringen heeft u al eens gehoord? (Kies alles wat van toepassing is)?

- Biodynamisch
- Fair Trade
- Biologisch
- Natural wine
- Duurzaam/ Sustainable
- Geen van bovenstaande

13. Heeft u een wijn gekocht die als een van deze is gecertificeerd? (Kies alles dat van toepassing is.)

- Biodynamisch
- Fair Trade
- Biologisch
- Natural wine
- Duurzaam/ Sustainable
- Geen van bovenstaande

14. Zo ja op de vorige vraag: wanneer koopt u deze wijnen?

- Voor regelmatig gebruik
- In restaurants
- Voor een speciale gebeurtenis of gelegenheid
- Andere _____

15. In hoeverre bent u het eens met de volgende uitspraken? Ik zou bereid zijn een wijn te kopen die is gecertificeerd als ... (kies er een voor elke rij). *** dynamische links naar elk in het diagram waarop ze kunnen klikken - die voor elk onder aan de pagina met een korte beschrijving zouden verschijnen

	Helemaal mee oneens	Oneens	Neutraal	Eens	Helemaal mee eens
Biodynamisch					
Fair Trade					
Biologisch					
Natural wine					
Duurzaam/ Sustainable					

16. Hoeveel meer zou u, naast de huidige prijs, bereid zijn te betalen voor een fles als deze gecertificeerd is als (kies slechts 1 antwoord per rij)? *** dynamische links met korte beschrijving van elk onderaan de pagina waarop u kunt klikken voor meer informatie

	Minder dan €1,-	€1 - 2	€2-3	€3-4	€4-5	Meer dan €5,-
Biodynamisch						
Fair Trade						
Biologisch						

Natural wine						
Duurzaam/ Sustainable						

17. Op een schaal van 1 tot 5, waarbij 1 het belangrijkste is en 5 het minst belangrijk, hoe belangrijk zijn de volgende wijncertificeringen? *** dynamische links met korte beschrijving van elk onderaan de pagina waarop u kunt klikken voor meer informatie

- Biodynamisch _____
- Fair Trade _____
- Biologisch _____
- Natural wine _____
- Duurzaam/ Sustainable _____

18. Hoe waarschijnlijk is het dat u een gecertificeerde wijn koopt als deze een zichtbaar certificaat heeft?

- Veel minder waarschijnlijk
- Minder waarschijnlijk
- Geen verandering
- Meer waarschijnlijk
- Veel waarschijnlijker

De laatste reeks vragen wordt gesteld om ervoor te zorgen dat we de meningen van verschillende mensen in onze enquête opnemen.

19. Man/ Vrouw / Zeg ik liever niet

20. Selecteer uw leeftijdscategorie;

- 18-24
- 25-39
- 40-49
- 50-59
- 60-69
- 70 jaar of ouder

21. Hoogst genoten opleiding (keuzelijst);

- Middelbare School
- MBO
- HBO Bachelor
- HBO Master
- WO Bachelor
- WO Master
- Universitair gespecialiseerd diploma (Doctoraal, Juridisch)

22. Wat is uw inkomen (bruto) ?

- minder dan €1000 per maand
- €1000 - €2500 per maand
- €2500 - €5000 per maand

- €5000 of meer per maand
- Zeg ik liever niet

23. Wat is uw huidige burgerlijke staat?

- a. Vrijgezel
- b. Samenwonend
- c. Gescheiden
- d. Getrouwd
- e. Weduenaar

Biodynamisch - is een holistische, ecologische en ethische benadering van landbouw, tuinieren, voedsel en voeding. Boeren streven naar een gediversifieerd, uitgebalanceerd boerderijecosysteem dat zoveel mogelijk gezondheid en vruchtbaarheid genereert vanuit de boerderij zelf. Preparaten gemaakt van gefermenteerde mest, mineralen en kruiden worden gebruikt om de vitale levenskrachten van de boerderij te helpen herstellen en harmoniseren en om de voeding, kwaliteit en smaak van het geteelde voedsel te verbeteren. Biodynamische beoefenaars erkennen ook en streven ernaar om samen te werken met de subtiele invloeden van de ruimere kosmos op de gezondheid van bodem, planten en dieren.

Fair Trade - is een model van duurzame, ethische handel waarbij mens en planeet op de eerste plaats komen. Vanuit het simpele idee dat de producten die we kopen en verkopen verbonden zijn met het levensonderhoud van anderen, is Fair Trade een manier om een bewuste keuze te maken voor een betere wereld. FairTrade ondersteunt verantwoordelijke bedrijven, geeft boeren, arbeiders en vissers meer mogelijkheden en beschermt het milieu.

Biologisch - is gemaakt zonder verboden stoffen of genetische manipulatie te gebruiken. zowel de teelt van de druiven als hun omzetting in wijn moet worden gecertificeerd. Dit omvat onder meer ervoor zorgen dat druiven worden verbouwd zonder synthetische mest en op een manier die het milieu beschermt en de bodem behoudt. Andere agrarische ingrediënten die in de wijn terechtkomen, zoals gist, moeten ook biologisch gecertificeerd zijn. Hoewel wijn van nature wat zwaveldioxide (sulfiten) produceert, kunnen ze niet aan biologische wijn worden toegevoegd.

Natuurlijk - totaal natuurlijke methoden en ingrediënten. Geen extra toevoegingen of processen aan het wijnbereidingsproces, waaronder gisten, sulfiten, vitamines, enzymen, chemicaliën, omgekeerde osmose, cryo-extractie of poedervormige tannines. Over het algemeen is het een weergave van een stuk land in een bepaald jaar.

Duurzaam - overstijgt conventionele bedrijfspraktijken en vindt een drievoudige balans. Duurzame wijn wordt gemaakt met drie hoofddoelen: zorg voor het milieu, economische winstgevendheid en sociale en economische rechtvaardigheid. Duurzame wijnmakers doen dit door gezonde en productieve wijnstokken na te streven voor de huidige en toekomstige generaties, door te zorgen voor degenen die het land bewerken en iets terug te geven aan de gemeenschap - en dat alles terwijl ze zakelijke doelen nastreven. Het omvat ontwikkeling die voldoet aan de behoeften van het heden zonder het vermogen van toekomstige generaties om in hun eigen behoeften te voorzien in gevaar te brengen.

2. Descriptive statistics and frequency tables

Descriptive Statistics Demographics					
	N	Minimum	Maximum	Mean	Std. Deviation
Select your age range	210	1	6	3,10	1,424
Select your highest level of education	210	1	7	3,60	1,500
What is your current marital status?	210	1	5	2,74	1,230
Select your income range	210	1	5	2,86	1,093
Frequency table age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24 years	29	13,8	13,8	13,8
	25-39 years	62	29,5	29,5	43,3
	40-49 years	26	12,4	12,4	55,7
	50-59 years	53	25,2	25,2	81,0
	60-69 years	33	15,7	15,7	96,7
	70 years and older	7	3,3	3,3	100,0
	Total	210	100,0	100,0	
Frequency table level of education					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school	9	4,3	4,3	4,3
	MBO	29	13,8	13,8	18,1
	HBO Bachelor	93	44,3	44,3	62,4
	HBO Master	34	16,2	16,2	78,6
	WO Bachelor	4	1,9	1,9	80,5
	WO Master	32	15,2	15,2	95,7
	Doctoral/ PHd	9	4,3	4,3	100,0
	Total	210	100,0	100,0	
Frequency table marital status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	41	19,5	19,5	19,5
	Living together	66	31,4	31,4	51,0
	Divorced	12	5,7	5,7	56,7

	Married	88	41,9	41,9	98,6
	Widow	3	1,4	1,4	100,0
	Total	210	100,0	100,0	
Frequency table income					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1000 euro a month	21	10,0	10,0	10,0
	1000-2500 euro a month	61	29,0	29,0	39,0
	2500-5000 euro a month	73	34,8	34,8	73,8
	More than 5000 euro a month	37	17,6	17,6	91,4
	Prefer not to say	18	8,6	8,6	100,0
	Total	210	100,0	100,0	

Descriptive Statistics Attitudes and Habits					
	N	Minimum	Maximum	Mean	Std. Deviation
Primary reason to drink wine	210	1	9	2,26	1,695
Secondary reason to drink wine	210	1	9	3,20	1,990
How much do you know about wine?	210	1	6	3,08	1,252
Which of the following wine certifications have you previously heard of?	210	2	19	10,01	4,513
How much wine do you buy per month?	210	0	90	7,49	8,386
How much do you pay per bottle?	210	0,00	20,00	7,4338	3,13992
Where do you most often buy your wine?	210	1	5	3,47	1,590
Have you purchased a wine that was certified as any of these?	210	2	20	8,44	5,401
Frequency table primary reason to drink wine					

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ik like the taste	115	54,8	54,8	54,8
	It helps me to relax	11	5,2	5,2	60,0
	To socialize with friends	37	17,6	17,6	77,6
	It matches well with dinner	27	12,9	12,9	90,5
	To socialize with family	14	6,7	6,7	97,1
	For romance	2	1,0	1,0	98,1
	To analyse and compare with friends	4	1,9	1,9	100,0
	Total	210	100,0	100,0	
Frequency table secondary reason to drink wine					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ik like the taste	51	24,3	24,3	24,3
	It helps me to relax	24	11,4	11,4	35,7
	To socialize with friends	59	28,1	28,1	63,8
	It matches well with dinner	39	18,6	18,6	82,4
	To socialize with family	19	9,0	9,0	91,4
	For romance	5	2,4	2,4	93,8
	For health reasons	1	0,5	0,5	94,3
	To analyse and compare with friends	12	5,7	5,7	100,0
Total	210	100,0	100,0		
Frequency table knowledge					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I have very little knowledge	15	7,1	7,1	7,1
	I know the basics; the differences between red and white wines and some important variables	70	33,3	33,3	40,5

	I can navigate on the restaurant's wine list	43	20,5	20,5	61,0
	I can combine wine and food and know something about the culture of wine	53	25,2	25,2	86,2
	I can choose a wine without help and friends ask me for recommendations	23	11,0	11,0	97,1
	I consider myself an expert	6	2,9	2,9	100,0
	Total	210	100,0	100,0	
Frequency table known certifications					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair Trade	6	2,9	2,9	2,9
	Biological	28	13,3	13,3	16,2
	None of the above	7	3,3	3,3	19,5
	All of the above	30	14,3	14,3	33,8
	Biodynamic + Fair Trade	1	0,5	0,5	34,3
	Biodynamic + FT + Bio	15	7,1	7,1	41,4
	Biodyn + FT + Bio + Nature	9	4,3	4,3	45,7
	FT + Bio	49	23,3	23,3	69,0
	FT + Bio + Nature	13	6,2	6,2	75,2
	FT + Bio + Nature + Sust	7	3,3	3,3	78,6
	Bio + Nature	12	5,7	5,7	84,3
	Bio + Nature + Sust	1	0,5	0,5	84,8
	Biodynamic + Bio	5	2,4	2,4	87,1
	FT + Bio + Sust	16	7,6	7,6	94,8
	Biodynamisch + Nature + Bio	8	3,8	3,8	98,6
	Biodynamisch + Bio + Sust	3	1,4	1,4	100,0
	Total	210	100,0	100,0	
Frequency table buying place					

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Liquor store	47	22,4	22,4	22,4
	Internet	17	8,1	8,1	30,5
	Winery	16	7,6	7,6	38,1
	Wine store	50	23,8	23,8	61,9
	Other retail	80	38,1	38,1	100,0
	Total	210	100,0	100,0	
Frequency table purchased certified wines					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair Trade	15	7,1	7,1	7,1
	Biological	56	26,7	26,7	33,8
	Natural	1	0,5	0,5	34,3
	Sustainable	1	0,5	0,5	34,8
	None of the above	28	13,3	13,3	48,1
	All of the above	12	5,7	5,7	53,8
	Biodynamic + FT + Bio	6	2,9	2,9	56,7
	Biodyn + FT + Bio + Nature	4	1,9	1,9	58,6
	FT + Bio	37	17,6	17,6	76,2
	FT + Bio + Nature	5	2,4	2,4	78,6
	FT + Bio + Nature + Sust	2	1,0	1,0	79,5
	Bio + Nature	7	3,3	3,3	82,9
	Bio + Nature + Sust	1	0,5	0,5	83,3
	Biodynamic + Bio	12	5,7	5,7	89,0
	FT + Bio + Sust	7	3,3	3,3	92,4
	Biodynamisch + Nature + Bio	7	3,3	3,3	95,7
	Biodynamisch + Bio + Sust	3	1,4	1,4	97,1
	Bio + Sust	6	2,9	2,9	100,0
	Total	210	100,0	100,0	

Descriptive Statistics Willingness To Pay					
	N	Minimum	Maximum	Mean	Std. Deviation
In addition to the current price, how much more would you be willing to pay	210	1	6	2,01	1,174

for a bottle if it was certified as biodynamic					
In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as Fair Trade	210	1	6	2,47	1,141
In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as biological	210	1	6	2,44	1,119
In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as natural	210	1	6	2,16	1,258
In addition to the current price, how much more would you be willing to pay for a bottle if it was certified as sustainable	210	1	6	2,40	1,215
Frequency table WTP Biodynamic					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 euro	86	41,0	41,0	41,0
	1-2 euro	72	34,3	34,3	75,2
	2-3 euro	32	15,2	15,2	90,5
	3-4 euro	9	4,3	4,3	94,8
	4-5 euro	6	2,9	2,9	97,6
	More than 5 euro	5	2,4	2,4	100,0
	Total	210	100,0	100,0	
Frequency table WTP Fair Trade					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 euro	34	16,2	16,2	16,2

	1-2 euro	92	43,8	43,8	60,0
	2-3 euro	55	26,2	26,2	86,2
	3-4 euro	16	7,6	7,6	93,8
	4-5 euro	6	2,9	2,9	96,7
	More than 5 euro	7	3,3	3,3	100,0
	Total	210	100,0	100,0	
Frequency table WTP Biological					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 euro	34	16,2	16,2	16,2
	1-2 euro	94	44,8	44,8	61,0
	2-3 euro	58	27,6	27,6	88,6
	3-4 euro	11	5,2	5,2	93,8
	4-5 euro	6	2,9	2,9	96,7
	More than 5 euro	7	3,3	3,3	100,0
	Total	210	100,0	100,0	
Frequency table WTP Natural					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 euro	73	34,8	34,8	34,8
	1-2 euro	76	36,2	36,2	71,0
	2-3 euro	37	17,6	17,6	88,6
	3-4 euro	12	5,7	5,7	94,3
	4-5 euro	2	1,0	1,0	95,2
	More than 5 euro	10	4,8	4,8	100,0
	Total	210	100,0	100,0	

Frequency table WTP Sustainable					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 euro	47	22,4	22,4	22,4
	1-2 euro	82	39,0	39,0	61,4
	2-3 euro	54	25,7	25,7	87,1
	3-4 euro	13	6,2	6,2	93,3
	4-5 euro	5	2,4	2,4	95,7
	More than 5 euro	9	4,3	4,3	100,0
	Total	210	100,0	100,0	

Descriptive Statistics Likeliness to Buy					
	N	Minimum	Maximum	Mean	Std. Deviation
I would be willing to purchase a wine that was certified as biodynamic	210	1	5	3,30	0,993
I would be willing to purchase a wine that was certified as Fair Trade	210	1	5	3,91	0,734
I would be willing to purchase a wine that was certified as biological	210	1	5	3,90	0,806
I would be willing to purchase a wine that was certified as natural	210	1	5	3,46	0,853
I would be willing to purchase a wine that was certified as sustainable	210	1	5	3,74	0,842
How important are the following certificates when buying wine? Biodynamic	208	1	5	2,53	0,957
How important are the following certificates when buying wine? FairTrade	208	1	5	3,17	0,860
How important are the following certificates when buying wine? Biological	208	1	5	3,19	0,862

How important are the following certificates when buying wine? Natural	208	1	5	2,69	0,885
How important are the following certificates when buying wine? Sustainable	208	1	6	3,06	0,901
How likely would it be to purchase a wine if it would be labelled with the certification?	210	1	5	3,65	0,719
Frequency table likeliness to buy Biodynamic					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	11	5,2	5,2	5,2
	Disagree	26	12,4	12,4	17,6
	Neutral	84	40,0	40,0	57,6
	Agree	67	31,9	31,9	89,5
	Totally agree	22	10,5	10,5	100,0
	Total	210	100,0	100,0	
Frequency table likeliness to buy Fair Trade					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	2	1,0	1,0	1,0
	Neutral	54	25,7	25,7	26,7
	Agree	112	53,3	53,3	80,0
	Totally agree	42	20,0	20,0	100,0
	Total	210	100,0	100,0	
Frequency table likeliness to buy Biological					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	5	2,4	2,4	2,4
	Disagree	2	1,0	1,0	3,3
	Neutral	44	21,0	21,0	24,3
	Agree	118	56,2	56,2	80,5
	Totally agree	41	19,5	19,5	100,0
	Total	210	100,0	100,0	
Frequency table likeliness to buy Natural					
		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Totally disagree	4	1,9	1,9	1,9
	Disagree	16	7,6	7,6	9,5
	Neutral	92	43,8	43,8	53,3
	Agree	76	36,2	36,2	89,5
	Totally agree	22	10,5	10,5	100,0
	Total	210	100,0	100,0	
Frequency table likeliness to buy Sustainable					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	4	1,9	1,9	1,9
	Disagree	4	1,9	1,9	3,8
	Neutral	72	34,3	34,3	38,1
	Agree	92	43,8	43,8	81,9
	Totally agree	38	18,1	18,1	100,0
	Total	210	100,0	100,0	
Importance of certificate for Biodynamic					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very unimportant	38	18,1	18,3	18,3
	Unimportant	50	23,8	24,0	42,3
	Neutral	93	44,3	44,7	87,0
	Important	25	11,9	12,0	99,0
	Very important	2	1,0	1,0	100,0
	Total	208	99,0	100,0	
Missing	System	2	1,0		
Total		210	100,0		
Importance of certificate for FairTrade					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very unimportant	10	4,8	4,8	4,8
	Unimportant	27	12,9	13,0	17,8
	Neutral	94	44,8	45,2	63,0
	Important	72	34,3	34,6	97,6
	Very important	5	2,4	2,4	100,0
	Total	208	99,0	100,0	

Missing	System	2	1,0		
Total		210	100,0		
Importance of certificate for Biological					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very unimportant	11	5,2	5,3	5,3
	Unimportant	22	10,5	10,6	15,9
	Neutral	98	46,7	47,1	63,0
	Important	71	33,8	34,1	97,1
	Very important	6	2,9	2,9	100,0
	Total	208	99,0	100,0	
Missing	System	2	1,0		
Total		210	100,0		
Importance of certificate for Natural					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very unimportant	23	11,0	11,1	11,1
	Unimportant	53	25,2	25,5	36,5
	Neutral	98	46,7	47,1	83,7
	Important	33	15,7	15,9	99,5
	Very important	1	0,5	0,5	100,0
	Total	208	99,0	100,0	
Missing	System	2	1,0		
Total		210	100,0		
Importance of certificate for Sustainable					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very unimportant	15	7,1	7,2	7,2
	Unimportant	28	13,3	13,5	20,7
	Neutral	98	46,7	47,1	67,8
	Important	64	30,5	30,8	98,6
	Very important	2	1,0	1,0	100,0
	Total	208	99,0	100,0	100,0
Missing	System	2	1,0		
Total		210	100,0		

Likeliness to buy certified vs uncertified					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Much less likely	4	1,9	1,9	1,9
	Less likely	4	1,9	1,9	3,8
	No change	68	32,4	32,4	36,2
	More likely	120	57,1	57,1	93,3
	Much more likely	14	6,7	6,7	100,0
	Total	210	100,0	100,0	

3. Kruskal-Wallis H test results

Pairwise Comparisons of Select your age range					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
40-49 years-50-59 years	-2,298	13,894	-,165	,869	1,000
40-49 years-60-69 years	-23,626	15,217	-1,553	,121	1,000
40-49 years-18-24 years	24,325	15,673	1,552	,121	1,000
40-49 years-25-39 years	32,058	13,558	2,364	,018	,271
40-49 years-70 years and older	-35,736	24,710	-1,446	,148	1,000
50-59 years-60-69 years	-21,328	12,868	-1,657	,097	1,000
50-59 years-18-24 years	22,027	13,403	1,643	,100	1,000
50-59 years-25-39 years	29,759	10,856	2,741	,006	,092
50-59 years-70 years and older	-33,438	23,336	-1,433	,152	1,000
60-69 years-18-24 years	,699	14,770	,047	,962	1,000
60-69 years-25-39 years	8,432	12,504	,674	,500	1,000
60-69 years-70 years and older	-12,110	24,147	-,502	,616	1,000
18-24 years-25-39 years	-7,733	13,055	-,592	,554	1,000
18-24 years-70 years and older	-11,411	24,437	-,467	,641	1,000
25-39 years-70 years and older	-3,679	23,138	-,159	,874	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Pairwise Comparisons of Select your income range					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
2500-5000 euro a month- More than 5000 euro a month	-15,395	11,665	-1,320	,187	1,000
2500-5000 euro a month- 1000-2500 euro a month	16,465	10,027	1,642	,101	1,000
2500-5000 euro a month- Less than 1000 euro a month	32,022	14,313	2,237	,025	,253
2500-5000 euro a month- Prefer not to say	-41,566	15,211	-2,733	,006	,063
More than 5000 euro a month- 1000-2500 euro a month	1,070	12,045	,089	,929	1,000
More than 5000 euro a month- Less than 1000 euro a month	16,627	15,793	1,053	,292	1,000
More than 5000 euro a month- Prefer not to say	-26,170	16,611	-1,575	,115	1,000
1000-2500 euro a month- Less than 1000 euro a month	15,557	14,624	1,064	,287	1,000
1000-2500 euro a month- Prefer not to say	-25,101	15,505	-1,619	,105	1,000
Less than 1000 euro a month- Prefer not to say	-9,544	18,567	-,514	,607	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Pairwise Comparisons (biodynamic) of If yes to previous question: When do you buy these wines?					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Other reason-In restaurants	3,192	15,660	,204	,838	1,000
Other reason-For a special occasion	22,672	11,579	1,958	,050	,301
Other reason-For regular consumption	23,175	9,081	2,552	,011	,064
In restaurants-For a special occasion	-19,480	17,275	-1,128	,259	1,000
In restaurants-For regular consumption	19,982	15,710	1,272	,203	1,000
For a special occasion-For regular consumption	,502	11,646	,043	,966	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Pairwise Comparisons (biological) of If yes to previous question: When do you buy these wines?					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Other reason-For regular consumption	17,273	9,068	1,905	,057	,341
Other reason-In restaurants	17,755	15,638	1,135	,256	1,000
Other reason-For a special occasion	31,796	11,562	2,750	,006	,036
For regular consumption-In restaurants	-,482	15,687	-,031	,975	1,000
For regular consumption-For a special occasion	-14,523	11,629	-1,249	,212	1,000
In restaurants-For a special occasion	-14,041	17,250	-,814	,416	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Pairwise Comparisons (natural) of If yes to previous question: When do you buy these wines?					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Other reason-In restaurants	12,299	15,814	,778	,437	1,000
Other reason-For a special occasion	23,811	11,692	2,036	,042	,250
Other reason-For regular consumption	27,476	9,170	2,996	,003	,016
In restaurants-For a special occasion	-11,512	17,444	-,660	,509	1,000
In restaurants-For regular consumption	15,178	15,864	,957	,339	1,000
For a special occasion-For regular consumption	3,665	11,760	,312	,755	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Pairwise Comparisons (biodynamic) of If yes above, how often?					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Always-Not Applicable	8,333	60,013	,139	,890	1,000
Always-Sometimes	18,050	57,978	,311	,756	1,000
Always-Rarely	25,167	60,778	,414	,679	1,000
Always-Often	26,465	58,064	,456	,649	1,000
Always-Very often	60,370	58,717	1,028	,304	1,000
Not Applicable-Sometimes	-9,717	17,720	-,548	,583	1,000
Not Applicable-Rarely	-16,833	25,425	-,662	,508	1,000
Not Applicable-Often	-18,131	17,996	-1,008	,314	1,000
Not Applicable-Very often	-52,037	20,004	-2,601	,009	,139
Sometimes-Rarely	7,117	20,158	,353	,724	1,000
Sometimes-Often	-8,415	9,152	-,919	,358	1,000
Sometimes-Very often	-42,320	12,652	-3,345	,001	,012
Rarely-Often	-1,298	20,401	-,064	,949	1,000
Rarely-Very often	-35,204	22,193	-1,586	,113	1,000
Often-Very often	-33,906	13,037	-2,601	,009	,140

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Pairwise Comparisons (Fair Trade) of If yes above, how often?					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Rarely-Not Applicable	19,111	24,313	,786	,432	1,000
Rarely-Sometimes	-31,156	19,276	-1,616	,106	1,000
Rarely-Always	-46,778	58,119	-,805	,421	1,000
Rarely-Often	-51,876	19,509	-2,659	,008	,118
Rarely-Very often	-58,889	21,222	-2,775	,006	,083
Not Applicable-Sometimes	-12,044	16,945	-,711	,477	1,000
Not Applicable-Always	-27,667	57,388	-,482	,630	1,000
Not Applicable-Often	-32,765	17,209	-1,904	,057	,854
Not Applicable-Very often	-39,778	19,129	-2,079	,038	,564
Sometimes-Always	-15,622	55,442	-,282	,778	1,000
Sometimes-Often	-20,721	8,752	-2,368	,018	,269
Sometimes-Very often	-27,733	12,099	-2,292	,022	,328
Always-Often	5,099	55,524	,092	,927	1,000
Always-Very often	12,111	56,149	,216	,829	1,000
Often-Very often	-7,013	12,466	-,563	,574	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Pairwise Comparisons (biological) of If yes above, how often?					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Rarely-Not Applicable	9,042	24,055	,376	,707	1,000
Rarely-Sometimes	-29,883	19,072	-1,567	,117	1,000
Rarely-Always	-45,000	57,503	-,783	,434	1,000
Rarely-Often	-53,754	19,302	-2,785	,005	,080
Rarely-Very often	-64,463	20,997	-3,070	,002	,032
Not Applicable-Sometimes	-20,842	16,765	-1,243	,214	1,000
Not Applicable-Always	-35,958	56,780	-,633	,527	1,000
Not Applicable-Often	-44,712	17,027	-2,626	,009	,130
Not Applicable-Very often	-55,421	18,927	-2,928	,003	,051
Sometimes-Always	-15,117	54,855	-,276	,783	1,000
Sometimes-Often	-23,870	8,659	-2,757	,006	,088
Sometimes-Very often	-34,580	11,970	-2,889	,004	,058
Always-Often	8,754	54,935	,159	,873	1,000
Always-Very often	19,463	55,553	,350	,726	1,000
Often-Very often	-10,709	12,334	-,868	,385	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.