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Thesis

To obtain the academic degree of

Master of Science in Economics & Business

(Major in Marketing)

Which bottle of wine should I Choose?

The influence of optional information of wines back label and consumption situation on the likelihood of purchase.

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Abstract: The present paper addresses the relationship between the likelihood of purchase of a bottle of wine and the information embedded on its back label. In particular, this study focused on how the presence (or absence) of bottle number (SN), the region of origin (GEO), history (HIS), third party certificates (PDO and AWD) could affect the likelihood of purchase of the wine. Other than that, the study analyzed the extent of the effect of the price (PRICE) on the likelihood of purchase. Since the act of choosing a bottle of wine is often strictly linked to the personal knowledge about wines (KNW) and the context of consumption (FRAME) these two variables were used as moderators.

The present study has involved 206 people through an on-line questionnaire. The data obtained were first cleaned and made ready to use for the subsequent analysis. In particular, two different models were deployed: Choice-Based Conjoint (CBC) and ANOVA.

The results of the first study (CBC) showcased the prominent role of PRICE, PDO, SN, and GEO in affecting consumer choice, which was consistent across all the models run. Furthermore, the relationship FRAME by PRICE which was found to be significant in the main study was also supported by the ANOVA, which in turn revealed that when it comes to choosing a bottle of wine intended for public consumption (FRAME: Public Vs Private) non-knowledgeable users tended to prefer more expensive bottles.

Keywords: Likelihood of purchase; Wine; Logistic regression; Choice-Based Conjoint; Anova

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I. List of abbreviations.

AOC: *Appellation D'origine Contrôlée*
ATB: *Attitude Toward Behaviours*
COO: *Country of Origin*
DO: *Denominación de Origen*
DOC: *Denominazione d'Origine Controllata*
DOCa: *Denominación de Origen Calificada*
DOCG: *Denominazione d'Origine Controllata e Garantita*
EU: *European Union*
IGT: *Indicazione Geografica Tipica*
LE: *Limited Edition*
PBC: *Perceived Behavioural Control*
PDO: *Protected Designations Of Origin*
PGI: *Protected Geographical Indications*
QWPSR: *Quality Wines Produced In Specified Regions*
SN: *Subjective Norms*
TW: T*able Wines*

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1 Introduction and objectives of the research.

1.1 Premise and motivation.

I come from Milo, a little town in Sicily near the volcano Etna, which is renowned among wine lovers for its white wine called *Etna Bianco Superiore DOC*. The territory of the municipality is roughly 16.6 Km^2 most of which is covered by forests and only a small percentage of the surface is dedicated to the cultivation of grapes. The particularity of Milo is that it is the only place in the world where it is possible to produce Etna Bianco Superiore DOC. In fact, it is not possible to name a bottle after Etna Bianco Superiore in other cities/towns around Etna, but rather just Etna Bianco. For this reason, over the last two decades Milo, and in general the territory surrounding Etna has become the target of growing international interest and investments, aiming to revitalize the local and, almost abandoned, winemaking industry.

In this context, the number of producers is very limited. In fact, at the time when this report was written, there were only four main producers of Etna Bianco Superiore, namely: *Barone di Villagrande*, *Benanti*, *Tenute di Fessina* and *I Vigneri* but several more are about to come in the next years. According to the data available, it is possible to say that in the vintages between 2012 and 2014, roughly 30-40,000 bottles in total were produced. In addition, one of the winemakers, which was interviewed for the purposes of this research, stated that each year a production limit of 9,000 bottles is self-imposed. The growing international appeal of Etna Bianco Superiore is confirmed by A. Failla, a responsible person of the sales and marketing at *Benanti Winery*: "*Ten years ago, our market share was twenty-eighty (i.e. 20% external and 80% national market), while now this figure is almost overturned, with seventy (70) percent of export towards the international market (…) Our main clients are based in the USA, Japan, and Northern Europe".*

As Etna Bianco Superiore is gaining the attention of the international market, producers and importers alike, acknowledge the importance of differentiating their products to lure consumers into purchasing their products, through the most exploited but yet powerful and very effective communication media in the wine industry, packaging and labeling (Charters, 1999). Specifically, the label becomes the so-called *silent salesman*, *"who tries to communicate with the consumer in a sincere and competent manner"* (Dimara & Skuras, 2005; Ozanne, 1998). On the one hand, the *front labels* are considered the most cost-effective promotional tool at the point of sale (Mueller, 2010) and usually provide *mandatory information* such as essential legal aspects required by law (e.g. % of alcohol, nationality, presence of allergens, etc.). On the other hand, the back labels are usually dedicated to conveying additional (or *non-mandatory*) information which may include among others: sensorial characteristics, history, and suggested food pairings.

Additional information on the EU legal framework and the factual distinction between mandatory and *non-mandatory* information can be found in Appendix A.

Back labels are widely perceived as an under-utilized area when it comes to providing useful clues to consumers (Barber, 2006). Moreover, a considerable number of international consumers consider the back label as one of the most important sources of information for making a purchasing decision (Charters, 1999; Gluckman, 1986). This finding seems to be consistent across different geographical markets (US, Canada, UK, and Australia).

Given the above, the main task of this research paper is to understand the extent to which it is possible to harness the power of the back label in the fine wine sector. This will provide insights on the mechanism behind the purchase intention of a wine bottle and thus how to increase its desirability in the eyes of consumers. Consequently, the focus of this research is on non-mandatory information (also called optional information) which is information that is not required by law and that a producer of wines can deliberately choose to display on the labels[1]. To this end, this paper will attempt to identify the most attractive combination of different forms of non-mandatory information placed on the back label by analyzing consumer behavior in an experimental setting. Therefore, the main research question addressed by the present paper is as follows:

Does placing non-mandatory information on the back label of wine affect consumers' likelihood of purchase? If so, is this relationship moderated by the consumption setting and/or the personal knowledge of the consumer?

1.2 Research Contributions.

The main expected contribution of this paper is to further extend the existing literature on the topic of wine labeling, with a particular focus on mid-top tier wines. In addition, this paper aims to provide an insight into the wine markets and the consumers' attitude towards non-mandatory information that can be placed on the back labels of wines. Therefore, producers, importers, and marketers alike, could find this paper advantageous for their own sector by adopting the proposed suggestions and/or by adjusting their current labeling strategies accordingly. Another possible beneficiary of the findings of this paper could be the EU policymaker. In fact, the Protected Denomination of Origin/Protected Geographical Indication (PDO/PGI) logos have been taken into account by this study to be among the predictors of the likelihood of purchase. To clarify, the PDO/PGI logos are certifications of quality issued by the European Union to promote and protect "*names of quality, agricultural products, and foodstuffs*".

In fact, only recently, the EU has extended the use of its logos to the wine segment, and, to date, there aren't scientific publications that have studied the effect of such optional information on wine bottle labels. Therefore, with the inclusion of such logos as predictors, it will be possible to understand the extent to which consumers use those elements to infer the quality of the wine.

[1] For more information see the section "The EU legal framework" in Appendix A.

The results of this research could provide the EU agriculture authorities with fruitful insights. In this sense, the EU policymakers can possibly identify inefficiencies in their promotional quality guarantee programs.

In fact, the process of extension of the *Protected Denomination of Origin* and *Protected Geographical Indication* logos and the subsequent unification of all pre-existing regional labels was a major step towards the promotion of higher standards of quality in the production and consumption of foodstuff made in the EU, which needed to be emphasized more by the agricultural commission. One example to be considered is the launching of campaigns aimed at educating the consumer with regards to reading the labels and explaining the meaning of the EU symbols.

1.3 Structure of the Thesis.

In the following sections first, a brief literature review on the importance of labeling in the marketing context will be discussed. Next, the dependent variable will be presented followed by the discussion of the independent variables (predictors) and the two moderators along with the related hypotheses. A conceptual framework is then presented, in order to give the reader a visual interpretation of the study at hand. Then, the discussion will move to the methodology section. In the last sections, the focus will be on analyzing the results which will lead to the presentation and discussion of the conclusions and the managerial implications.

2 Literature review, theory development, and hypotheses.

2.1 The importance of labels: a marketing perspective.

In general, packaging and labeling play a fundamental role in communicating both symbolic and performance-related information about the product to potential customers, thus helping them to make more informed decisions. The aspects of labeling and packaging, although strictly interrelated, have been analyzed by different fields of studies ranging from branding (Keller 2005; Orth, 2008; Underwood, 2003) to retailing (Clement, 2007; Rundh, 2005;) and logistics (Twede, 1992). On the branding side, for instance, several managerial trends suggest a prominent role of packaging as a brand communication vehicle. Keller (2005) considers packaging and labeling (among other elements) as primary brand elements – all of those elements that are uniquely associated with the brand/product.

Primary brand elements contribute to primary brand knowledge, helping customers to identify the products and differentiate the brand/product from competitors. Keller (2001), in his *Customer-Based Brand Equity* model, places packaging as belonging to *style and design* category, both of which compete with the formation of brand performance. Underwood (2003) goes further and posits packaging as a product-related attribute which is often critical to the creation and communication of brand identity. In a nutshell, both packaging and the array of information conveyed through labels work as:

- Systems that help customers to reduce the risk perception related to the act of purchase a packaged good.
- Elements of differentiation against other competitors and recognition among different products.
- Methods of promotion, and consequently as costs reduction factors on mass media communication.

In the food sector, labeling serves as a fundamental source of information since much of the purchase decisions are made at the moment of purchase. As a matter of fact, labels help consumers in the choice-making process, conveying search, experience, and credence attributes.

The specific case of purchasing a bottle of wine is often a difficult experience, which is associated with some degrees of risk (Olson, 2003). In fact, consumers may possess different degrees of knowledge about wines which in combination with their previous experience and the occasion of purchase may compete to create additional complexity. This complexity is further augmented if we consider wine packaging as a set of interlinked elements such as the bottle's shape, color, and label.

As already stated in chapter 1.1 the main focus of this study is to shed some light on how non-mandatory information, placed on the back label, can potentially affect consumer's likelihood of purchase of a bottle of wine (Sherman & Tuten, 2011). The following sub-sections of this chapter will discuss in detail the

dependent variable (i.e. the likelihood of purchase) and all those non-mandatory information used as predictors.

2.2 The theory of planned behavior and the likelihood of purchase.

One of the pillars of this paper relates to the concept of consumers' likelihood of purchase, or in other words, the individual preference that is assigned to a given product with respect to its attributes. In this case, the act of purchasing a bottle of wine is often perceived as a challenging task and thus, it is approached with different degrees of uncertainty (Olson, 2003). In this regard, numerous researches investigated how available information is analyzed, processed, and then transformed into actual behavior in certain situations. One of the most robust theories developed in this area is Ajzen's theory of planned behavior (Ajizen 1988), which originates from the theory of reasoned action (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980).

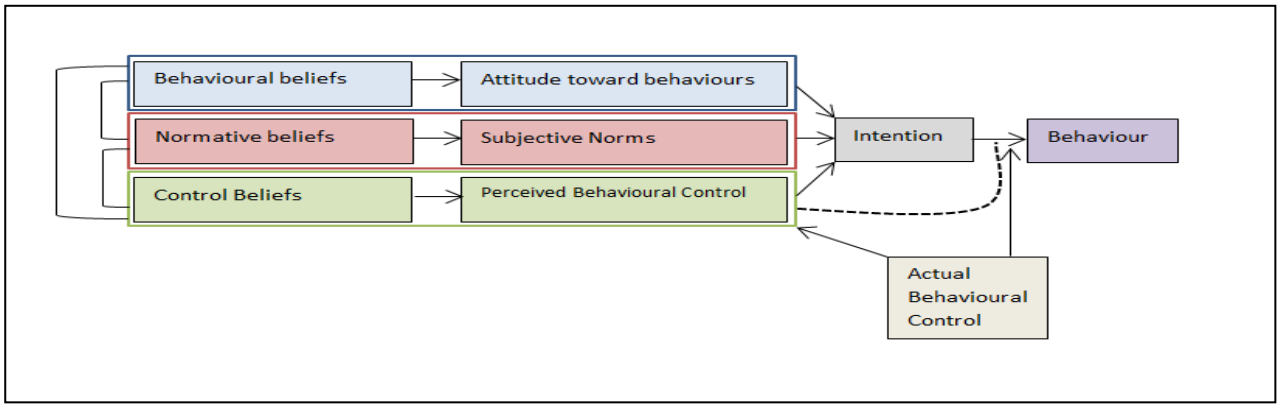
According to the theory of planned behavior, intentions reflect the willingness of people to perform a behavior and the amount of effort they intend to exert to behave in a certain way. Thus, the higher the willingness to engage in a certain behavior, the more likely its execution should be. Intentions depend on both motivational and non-motivational factors, such as the availability of resources or requisites (e.g., time, money, and skills). The latter is defined as the extent of control (or *behavioral control*) a person has over a certain behavior (Ajzen, 1991). By looking at Ajzen's model, which is displayed in **Error! Reference source not found.** it becomes evident that the performance of a given behavior hinges mainly upon three factors.

For one, there is the Attitude toward behaviors (ATB), which is the extent to which one evaluates the behavior favorably or unfavorably and can be interpreted as a factor that increases the complexity of a given task. In the case of purchasing a bottle of wine, it can be assumed that the ATB originates from the label attributes of the wine. In fact, consumers can form their evaluation of goodness (or badness) of purchasing a certain wine based on their own evaluation of the attributes shown on the label itself. The attributes under investigation here are five optional information along with the price (PRICE) and these are: 1) number of bottles produced (SN), 2) region of origin (GEO), 3) methods of production and history (HIS), 4) Protected Designations of Origin logo (PDO), 5) international awards in wine competitions (AWD).

The second factor is subjective norms (SN), which reflect the social pressure or the desirability of performing a certain behavior. In the case of a purchase of a bottle of wine, for example, if the wine is intended for sharing with others, one can feel the pressure of others' expectations which competes to make the choice task even more arduous. In this case, it is possible to relate the SN with the first moderator namely, consumption situation or framing (FRAME), as it is expected that different objectives and external stimuli may affect the purchasing behavior of individuals.

The third factor is Perceived Behavioural Control (PBC) which refers to the amount of control that one *believes* she/he to have over a certain outcome (Bandura 1977). In other words, perceived behavioral control is the perceived difficulty associated with the execution of certain behavior in a given circumstance which can depend on the availability of resources, skills, or knowledge. In the case of wine choice, this is another factor that competes to increase uncertainty and perception of risk. For instance, a consumer which is presented with different wines, brands, and logos may feel the lack of knowledge, resources, or experience to perform the choice. Therefore, here it is possible to link the PBC with the second moderator knowledge (KNW), since experience and personal knowledge about wines may drive/play a supporting role in the formation of the final choice.

Figure 2.2.1 Aijen's planned behavior model



From the presented model it becomes clear that when there are no perceived impediments to take an intended course of action, behaviors can be accurately predicted by intentions only. Otherwise, perceived behavioral control should be used in conjunction with intentions to explain behaviors. Therefore, the greater these factors are (e.g. ATB, SN, PBC), the stronger the intention to engage in and perform the intended behavior should be. Moreover, the theory found that behavioral beliefs, normative beliefs, and control beliefs are the salient beliefs that individuals hold in their conscious, and these are expected to act upon the ATB, SN, and PBC, respectively.

According to the expectancy-value model (Fishbein and Ajzen's 1975), people form attitudes toward an object from a set of beliefs they hold about the object itself by associating it to attributes, events, or characteristics. In marketing, Solomon (2009) refers to attitude as "*a general evaluation of a product (or service) formed over time which satisfies personal motives and affects the shopping and buying*". The same applies to behaviors. In fact, our beliefs link a given behavior to a certain outcome, so that we form different attitudes toward behaviors, which we believe to have positive (or negative) consequences[2]. In this sense, Gutman (1982; pg 61), in his mean-end-chain model, defined consequence as: "*any result*

[2] Please refer to appendix B for the full explanation of the Ajzen & Fishbein's model of multi-attribute measurement.

(physiological or psychological) accruing directly or indirectly to the consumer (sooner or later) from his/her own behavior".

Generally speaking, the model of Fishbein has been successfully adopted by many consumer researchers in order to study how the functional (e.g., attributes) and symbolic (e.g., brands) characteristics of products act upon the purchase along with the expected consequences (e.g., utility and value). In fact, by studying the consumer's attitudes toward an object, it is possible to accurately predict the subsequent choice.

The attentive reader may have noted that the multi-attribute model of attitudes (equation 13, Appendix B) which reflects the consumer's tendency to choose one option over another, is calculated starting from attributes, beliefs, and weights. This construct is very similar to the expected utility model. In fact, both models assume objective qualities, perceptions, and weights (Antonides, 2013).

Thus, the cognitive beliefs in Fishbein's model, which represent the probability that an object possesses certain characteristics, can be compared to the attribute utility level in the utility model. Therefore, the Fishbein model, with due precautions (Leone, 1979), is an expected utility model that assumes the collection and the evaluation of all the relevant attributes information.

Here, it is possible to apply the theory above to the research purpose at hand. In fact, as wine is a product that is rich in a variety of characteristics, consumers can see the bottle of wine as a bundle of attributes. Some of these attributes, may not be observed at the moment of choice (e.g. taste, smell, aftertaste, flavor, etc.) others, instead, may be retrieved by reading the labels. Therefore, people will tend to form an attitude toward the wine by collecting and evaluating the information retrieved from the labels and assigning them a weight.

2.3 Hypotheses Development.

This section lays an in-depth analysis of the variables that are used to predict the effect of optional information on the consumer's likelihood of purchase for a given bottle of wine. The following subsections will first and foremost discuss the main predictors (e.g. price and the five different optional information variables). Thereafter, the focus of the discussion will shift towards the moderators and their expected role in the consumer decision process with regards to wine purchasing. Eventually, at the end of the chapter, a conceptual framework will be presented to give the reader a visual representation of the study.

2.3.1 How the number of bottles produced affects the likelihood of purchase.

The first predictor in the model hinges upon the principle of scarcity. The principle of scarcity states that when the possibility to have something (e.g. good) is limited in time and quantity, humans tend to experience an increased desire for that good.

Following this line of thought, Roux et al. (Roux, Goldsmith, & Bonezzi, 2015) suggested that merely reminding people about the scarcity of resources, activates a competitive behavior which can lead either to increased selfishness or increased generosity towards others (only when generosity leads to a personal benefit). Subramanian (2009) using a game-theoretic model, explored the *Limited Edition* (LE) products, finding that one reason to limit production is the aim to create a perceived exclusivity, which in turn leads customers to pay higher premiums. In practical terms, many firms, operating in different industries attempt to harness this phenomenon, introducing *limited edition* products with serial numbers in order to increase the perceived exclusivity of their products (e.g. Technics SL 1200 GAE, Bugatti Hublot, Glo McLaren edition, etc.).
Smith (2016) further explored the topic of limited editions and limited production, finding that earlier serial numbers on diverse consumer goods, were considered more valuable than more distant ones because of the "*contagion*" effect, which will be discussed in more details in sections 2.3.2 and 2.3.3.

Other experiments found a direct correlation between scarcity and desirability. In fact, priming people about the scarcity of a good, increase the desire to have it (Lynn, 1989). This is the reason why "*limited time only*" and "*limited supply*" messages are so effective for marketers. Redden (2014) builds on these findings linking the perception of limited availability to satiation. The scarcer a good is, the slower is the rate of satiation, which takes place due to the lower attention paid to the quantities consumed. Last but not least, Cialdini (2001) approached the topic of scarcity from a psychological side, finding that when people are presented with products (or opportunities) that are limited in time or supply, they tend to focus more on what they will lose instead of what they will gain.

The literature above asserts that scarcity (real or induced/fictitious) can be linked to the perception of exclusivity and thus enhances the desire. In the wine industry, this principle can be executed under two conditions, namely: one, when the production is limited to a certain number of bottles (mainly due to the lack of cultivable lands in a restricted area as in the case of Milo) and, two, when other competitors cannot afford the investment required to produce the same wine quality (conditions that are perfectly suited to the Etna Bianco Superiore wine).

Given the aforementioned, scarcity can be conveyed to customers by making a serial number salient on the back label of the wine bottle. This serial number refers to the production number of the specific bottle from the total production lot. Therefore, it can be expected that reminding customers about the scarcity of a good, increases the desirability and thus the likelihood of purchase. In other words, it could be argued that the presence of the serial number (SN) on the back label can be linked to a higher likelihood of purchase compared to a case in which such information is not shown. This leads to the following hypothesis:

H1. Consumers are more likely to purchase a bottle of wine which features its serial production number on the back label than a bottle in which this information is absent. In other words, it is expected that the presence of the serial number on the back label may have a positive effect on the likelihood of purchase.

2.3.2 The effect of region of origin on the likelihood of purchase.

The Country-of-Origin Effect, hereafter COO is one of the most studied fields in marketing, branding, and consumer behavior (Keller K. L., 2005). COO has been defined as "*any influence, positive or negative, that the country of manufacture might have on the consumer's product evaluation*" (Elliott, 1994, Pg. 50) The majority of previous studies support the assertion that COO does exist, but the magnitude and the mechanism behind its influence remain unresolved.

Different approaches have been deployed to disentangle the phenomenon of COO. For example, the *brand strength hypothesis*, explains why a significant brand by COO interaction effect exists. This effect stipulates that consumers who want to assess the quality of a product can rely on a well-known brand. Otherwise, they will use other available cues, such as the COO of the product. This implies that the COO will affect the decision-making process more when it is combined with a weak brand (Jo, 2005). In fact, although COO information is used as an extrinsic cue to infer the quality of the product (Cattin, 1982), customers can rely upon COO when it is objectively arduous to appreciate the intrinsic attributes or when they have little prior knowledge (Hugstad, 1986). This is partly due to the fact that both product classes and specific products "borrow" different brand images from their own COO (Erickson, 1984; Hooley, 1988). These conclusions follow the findings of White (1978), who outlines a strong relationship between the country of origin and perceived quality.

In this regard, a meta-analysis, Pharr (2005) depicted a model of COO that includes several endogenous and exogenous[3] variables that can mitigate the effect of COO on consumers. An interesting endogenous variable is the "*country stereotypes*" that customers hold. Stereotypes were found to be significant in product evaluation when information about COO was made salient (Liu, 2005). These findings are, (to a certain degree) in line with a previous study of Johansson (1985). In this sense, in the wine sector, countries like Italy and France (the two leading countries in the wine export by value and volume) may benefit from these kinds of stereotypes as they are commonly perceived to produce and export high-quality wines.

So far, the concept of COO has been introduced at a country (or macro) level, as a factor that under certain conditions can drive consumers' choice. The intent of this paper is to investigate the COO on a micro level instead. In fact, one of the aims of this paper is to understand the impact of specific regions (and/or even towns) in the evaluation of a product.

[3] Endogenous variables are those variables that may be affected by other variables in the system considered, while Exogenous variables are not affected by other variables in the model and are taken as fixed as they are external to the system under analysis.

In a seminal paper, Dhar and colleagues (2014) linked the COO with the perceived authenticity and the principle of *contagion* (introduced in the previous section). On one hand, the principle of contagion is the belief that a product absorbs some sort of special essence by its past and/or by the physical proximity to a person or a place. This phenomenon explains why customers perceive a good to be more authentic when it is produced in the original factory and as a consequence, they are willing to pay more. On the other hand, Beverland and Farrelly (2010) defined "*authenticity*" as: "*everything that conveys to customers what is genuine, real or true"* which competes to create a competitive advantage that is not easily replicable by competitors (Grayson, 2004).

In this sense, the fine wine industry is one of the most cited examples in which geographic origin is strictly cinched to the very region, town, or even vineyard of provenience forming the so-called "*terroir*" (Thode, 1998). Therefore, linking a specific (circumscribed) region to a given wine constitutes a strong competitive advantage for winemakers, since it represents an asset which is not replicable and competes to increase the perception of quality and authenticity (Beverland, 2006). In line with this idea, Johnson (2010) running research on consumers of Californian wines, found that those who were exposed to the additional region of origin information (e.g. Napa Valley, Sonoma Valley, Bennett Valley, etc.), showed a higher perception of quality. Not surprisingly, these findings are in line with those of Dimara & Skuras (2005) as consumers are increasingly eager to know where the products they eat or drink come from.

To conclude, it's plausible to expect that, along with increased quality perception, making salient the image of the region of production as a complement of the writings (see Figure 8.3.1 in Appendix A) can lead to a higher likelihood of purchase. In particular, it is possible to speculate that when the micro-region of production is made salient (through a logo, image, or symbol) on the back label, consumers display a higher tendency to purchase bottles of wine compared to the case when such information is not communicated. Furthermore, such claims which refer to the micro-region of origin can be used by individuals as a means of self-promotion. One possible explanation can be due to the fact that wines from a renowned macro-region (e.g. France or Italy) and micro-region (e.g. Rhine valley, Burgundy region, Napa Valley, Champagne, Chianti, Etna, etc.) are commonly perceived of higher quality and thus, in this case, could serve as a status signaling. Other reasons can be linked to a higher perception of expertise, exclusiveness, and authenticity. This leads to the following hypothesis:

H2. Consumers are more likely to purchase a bottle of wine which displays information about its (micro-) region of origin compared to a bottle where this information is absent. In other words, the presence of the region of origin (for analysis purpose named GEO) on the label is expected to have a positive effect on the likelihood of purchase.

2.3.3 The role of history statements on consumers' likelihood of purchase.

The *theory of contagion* (previously introduced in section 2.3.2) is the psychological process by which consumers believe that a given product acquires the essence from its past, a particular person/celebrity (Newman, 2012) or place because of the physical proximity and temporal proximity. According to these papers, contagion has a positive impact on product evaluation, partly due to the increased perception of *authenticity*.

Authenticity has been found to be among the primary drivers in consumer choice. In fact, consumers seek authentic experiences, which are associated with self-relevant objectives such as the feeling of *control* and the *connection* with the product/service being purchased (Beverland & Farrelly, 2010).

For example, using in-depth face-to-face interviews, Beverland discovered that almost without exceptions wineries were leveraging on their own history in order to build and/or bolster their branding strategies. Consumers valued heritage as a source of credibility and sustained quality over time. This finding supports the conclusions of Dhar (2014) who suggests that when authenticity is a relevant factor, firms must preserve and "show off" their continuity by promoting the heritage or pedigree through physical means of production (e.g. factory, equipment, or historic production facilities).

It is possible to argue that in the fine wine market, winemakers could communicate their authority (superior experience and knowledge) and heritage, seen as a combination of tangible (e.g., original equipment, old cellars/winery, etc.) and intangible assets (e.g. history, methods of cultivation, centennial traditions, etc.), by including information about their history and experience in the winemaking on the back label of wine bottles. Doing so, winemakers could gain a (higher) perception of quality by their consumers and consequently a higher likelihood of purchase. As such, this leads to the following hypothesis:

H3. Consumers are more likely to purchase a bottle of wine that features statements about the history of the winery than a bottle where this information is absent. Therefore it is possible to expect a positive effect of the history statements (HIS) on the likelihood of purchase.

2.3.4 The effectiveness of the certificates issued by third parties.

When it comes to making a decision, consumers put their effort into information search (Brucks, 1985) and deal with different degrees of risk depending on the personal involvement, knowledge, and experience associated with the product and occasion of purchase.

Perceived risks have been investigated and grouped in financial, performance, physical, psychological, and social (Jacoby, 1972). Consequently, consumers make extensive use of extrinsic cues in order to alleviate the risks associated with a given purchase as part of a risk reduction strategy. In two separate experiments, one of the most powerful sources of risk reduction was found to be the warranty (along with the price and reputation of the producer). Warranty works as a guarantee against the case the product doesn't meet

consumer's expectations and therefore reassures the consumer of the product quality, reducing both financial and performance risk. (Bearden, 1982; Shimp, 1982).

Here, it can be assumed that quality certificates serve a similar purpose. They help customers to overcome the difficult task of discerning what is of worth from what is not. In this sense, consumers are forever seeking a warranty provider (or expert) who (in their opinion) is *trustworthy*, *independent* and possesses a deep/broad knowledge, depending on the goal of the information search. In fact, deep knowledge is associated with a learning goal while broad knowledge is associated with a decision-making goal (Weiss, 2008).

In this sense, experts assume the role of a trusted third-party agent (e.g. other people or private and public institutions) which becomes the *warrantor of trust* (Shapiro, 1987). These agents/experts possess superior knowledge through their talent, previous experience, or studies. Therefore, consumers delegate partly or completely (to the trusted agent) the burden of making a choice and thus use them as short-cuts providers.

Moreover, a study demonstrated that, when strong arguments are produced by *super-partes (independent)* sources, listeners tend to lower their cognitive barriers, paving the road to persuasion (Cialdini, 2001). Pope (2009) found that publishing hospital rankings in one of the most influential specialized media (USNWR[4]) had a significant impact on patient hospital choice. In line with this discussion, a natural experiment allowed researchers to observe that when a renowned and trusted magazine first issued a negative review about the safety of a baby product and shortly after retracted that review, consumers responded promptly to the new information and contrary to most of the laboratory-setting experiment, consumer discarded the wrong information as invalid after the amendment was published (Simonsohn, 2011). In addition, expert suggestions were found to be directly linked to the intention to buy (Aqueveque, 2006) and to the reduction of perceived risk.

In our case, wine can be considered a credence good which is usually perceived to be of medium-high risk because of a combination of different motivations. First, credence goods (in contrast to other consumable goods) are those products in which, intrinsic attributes such as taste, flavor, aftertaste, bouquet, smell, etc. are directly accessible to the consumer only after the actual consumption and therefore, he/she can rely on extrinsic cues (e.g. labels information) in order to form a judgment. Second, with regards to the market, there are roughly five to ten thousand *Vitis vinifera* or grape varieties, as well as thousands of brands and hundreds of different styles, regions, price tiers, and labels to choose from. These two factors alone explain why the choice of a bottle of wine is often associated to a certain degree of risk and complexity (Olson, 2003), and why, in most of the case, consumers approach the purchase of wine with some caution and insecurity.

[4] US and World Report Rankings

Given this complexity of choice, consumers do examine and evaluate all the available information from different sources before the purchase as part of their risk reduction strategy (Mitchell, 1988; Rasmussen, 1999).

In light of the literature above, it would be of interest to test the effect of two different third-party certificates/awards (*PDO logo* and *wine awards*) on the likelihood of purchase of a bottle of wine. These certificates are often represented by symbols or logos that can be embedded on the original label or added as a sticker in a second moment.

2.3.4.1 EU schemes (PDO/PGI).

Protected Designation of Origin and *Protected Geographical indication* hereinafter referred to respectively as PDO and PGI programs are intended to promote and protect the names of quality agricultural products. PDO and PGI products have specific characteristics such as their method of production, place, and overall quality.

The increased consumer awareness about the correlation between diet and health has prompted the demand for higher quality foods, and greater access to information about food production and processing techniques (Dimara & Skuras, 2005; Fotopoulos, 2003). The introduction of PDO and PGI labeling (see Figure 8.3.5 in Appendix A) by the European Union goes exactly in this direction, establishing the EU, as a consumers' guarantor for higher standards of quality and authenticity.

The PDO/PGI labels can be seen as a branding strategy, in which there are both traits of brand extension and secondary brand associations. In fact, PDO and PGI can be considered as brands and all the labeled products as their extensions. In this sense, a brand extension strategy would imply a leveraging effect on the existing brand in order to improve the image of all the products under the same umbrella which in turn produces a reciprocal spillover on the main brand (Ghose, 2013). A positive spillover effect is explainable in two ways. On one hand, with the existence of economies of information which implies that umbrella-branded products benefit each other from their own advertising. On the other hand, with the theory of consumer associative network (Henderson, 1998), which posits that consumers retrieve specific knowledge from their memory when nodes are activated directly by external cues or when other linked nodes are activated.

The PDO/PGI program can be also interpreted as a source of secondary brand associations, which posit that each product is likely to benefit from borrowing other entity brand associations (companies, country, events, endorsers, products…). Secondary brand associations are particularly effective when consumers have a lack of motivation or capacity to judge a product on a deeper level and thus hinge upon a secondary association as a short-cut. (Keller K. L., 2005).

In this study, the focus is only on the PDO logo as a complementary visual information variables paired with the corresponding categorization, which takes different names for different countries. For instance, PDO wines in Italy correspond to either DOC or DOCG (see Figure 8.1.2 in Appendix A), AOC in France, DO (de Pago), and DOCa[5] in Spain. There are three main reasons why only the *Protected Designation of Origin* logo will be tested. First, most of the wines of higher quality are included under the "umbrella" of PDO classification. Second, *Protected Designation of Origin* products, according to the European Commission website, are: "*products and foodstuffs which are produced, processed and prepared in a given geographical area using recognized know-how"* (European Commission, 2017). In this categorization fall worldwide known and recognized branded products such as *Mozzarella di Bufala Campana, Parmigiano Reggiano, Camembert de Normandie, Brie de Meaux, Noord-Hollandse Gouda, Boerenkaas, Feta, Peza Irakliou Kritis, Jamón de Huelva* (which is priced from 40€ to 100 €/kilo), *Crudo di Parma, San Daniele.* Third, and most importantly, the relatively new EU regulation on labels (479/2008 and 538/2011 see Appendix A) opened up the opportunity for winemakers to test the efficacy of the use of the EU logo on the label, which so far has been largely ignored by most producers.

Therefore, in the light of the literature presented above, it is possible to expect that all the products under PDO umbrella are likely to benefit from each other's spillover effects thanks to both economies of information (visibility, the perception of quality, diffusion, etc.) and the consumer associative network.

In conclusion, a wine that includes the PDO logo (see Figure 8.3.5 in Appendix A) on its label can "borrow" some credibility and trust from other famous PDO products and thus, give customers a point of reference in terms of quality that eventually increases the likelihood of purchase.

H4. Consumers are more likely to purchase a bottle of wine with an embedded PDO logo than a bottle where such information is absent. Specifically, it is expected that the presence of the PDO logo has a positive effect on the likelihood of purchase for the bottle of wine.

2.3.4.2 International awards.

As previously discussed, wine can be considered as a credence good in which, by definition, the intrinsic qualities cannot be assessed before the consumption itself. For this reason, and because of the impossibility to acquire and process the complete information, consumers rely on extrinsic cues such as price, labels, or brand to infer the quality of a product.

For instance, one study analyzed the reasons behind the fact that products that are often awarded by critics or expert panels don't seem to have subsequent success in terms of purchases by consumers. This

[5] DO: Denominació de Origen; DOCa: Denominación de Origen Calificada; AOC: appellation d'origine contrôlé

study supported the hypothesis that when consumers have to choose the product which they value as the "*best*" (recognition), they take into consideration a different set of information such as *creative control*[6] and *creative authenticity*[7]. Such information is ignored when it comes to deciding what is "*liked*" most. In the latter situation, the evaluation of the product largely depends on the elaboration of internal information which may include the actual consumption and the retrieval of previous experiences. But this does not hold true in consumption experiences which involve non-familiar products (e.g. Cajun Food). In fact when consumers were exposed to non-familiar products (Cajun Food) they showed the tendency to rely more on external judgments (Valsesia, 2015).

To summarize, this study entails that in most of the hedonic consumption[8] situations, consumers are driven by what they like and, only when they face unfamiliar products, they tend to rely on the *recognition processes* (even if other studies revealed that consumers tend to be overconfident). On one hand, wine consumption is a hedonic experience and therefore the effect of recognition (conveyed through awards put on the label) may be limited. On the other hand, it's possible that people who are unfamiliar with the specific bottle of wine may make extensive use of external suggestions; thus the unfamiliarity factor counterbalances the "hedonic" (liking) experience effect.

Moreover, consumers see intangible resources such as the reputation of the producer as an important predictor of product performance. The reputation stems from legitimation which can be obtained through certification contests, which are intended to yield credibility and visibility for producers. Rao (1994) presented several well-known examples of industry-specific organizations that hold contests and rank the participants' product and service on the basis of pre-set performance (e.g. *Michelin guide for restaurants & hotels*, *Consumer Reports* or *J.D. Powers*). Eventually, the study found that companies who win these competitions yield higher validity in the eyes of consumers, improve their access to resources, and finally benefit from higher life chances.

For the wine sector, there are several established and renowned wine competitions around Europe (and the globe) which are intended to award the best-performing wines from different vintages each year. One of the most important competitions, albeit of recent creation, is the one held by *Decanter*, a UK based magazine, which every year reviews and awards over thirteen-thousand wines from all over the world. Wines are judged by multiple panels, each chaired by a regional or category specialist and a 100-point scale is used to grade the wine. These kinds of awards can be interpreted as an "expert recommendation" which can be conveyed either through a single logo (Figure 8.3.6 in Appendix A) or a sentence. Based on the literature above, the following hypothesis can be formulated:

[6] The extent to which the same entity takes responsibility for all stages of the creative process
[7] The extent to which a product is considered a faithful execution of its creator's vision
[8] *"Hedonic consumption" designates those facets of consumer behaviour that relate to the multisensory, fantasy and emotive aspects of one's experience with product"* (Holbrook, 1982)

H5. Consumers are more likely to purchase a bottle of wine with labels featuring international awards issued by a third party, than a bottle of wine in which such information is absent. More simply, the presence of awards on the label is expected to have a positive effect on the likelihood of purchase for the bottle of wine.

2.3.5 How Price range affects the likelihood of purchase of a bottle of wine.

Price (along with the brand name), is usually perceived by consumers as one of the most important attributes in product choice. Moreover, it's commonly used as a tool to infer the quality of a product/service (Rao, 1989; Zeithaml, 1988).

In his meta-analysis Olson (1977) has collected some of the most influential studies in the field of pricing and when this is used as an extrinsic cue of product quality. What appears clear is that the price-quality relation does not work in the same way throughout different product categories. For example, some studies have demonstrated that the attention of consumers on prices is larger for high priced packaged goods, durable goods, and services relative to low priced ones. Among nondurable goods, perfumes and wines are the exceptions. Moreover, the reliance on price as a quality cue is moderated by other factors such as category complexity, brand name (Gardner D. M., 1971; Monroe, 1985), store reputation, lack of price benchmarks or overall product knowledge (French, Williams, & Chance, 1973).

Considering the above, price appears to be an extrinsic cue that captures most attention when information about the other extrinsic and intrinsic characteristics are fallacious or not sufficient in order to make a choice (Zeithaml, 1988). Therefore, price cues may be employed by consumers as part of their risk reduction strategies, although their role was found to be of lower importance compared to warranties (especially for new products) in the overall risk reduction (Shimp, 1982).

Since the wine market consists of thousands of brands, grape varieties, regions, labels, styles and a wide range of prices to choose from, purchasing wine is often seen as a difficult and risky task. Which gets even harder when the final goal of the purchase is entered in the equation. Mitchell (1988) established that consumers experience different forms of risk in buying wine. These risks lead consumers to seek information, become brand loyal, trust suggestions, or use price as anchoring. All these actions represent forms of what Roselius (1971) calls *risk relievers.*

The price range, in this study, is represented by three tiers (or levels) namely: *low* price, ranging between €16,99 to €22,99 (where the bottom level is represented by the entry-level bottle in the market of Etna Bianco); *mid*-price (with a range that goes from €22,99 to €28,99) and lastly, the *high* price range which is set to be comprised between € 28,99 and €37,99.

People pay close attention to price, as it represents a strong and reliable benchmark for quality however there is no explicit theory that explains the directionality of the price-purchase relationship of wine. Therefore, the following hypothesis is established:

H6. Consumers are not expected to demonstrate a different likelihood of purchase for the different price tiers of wines (e.g., low price, mid-price, and high price).

2.4 Moderator Hypotheses.

The theory of planned behavior (discussed in section 2.2) suggests that it is possible to predict the likelihood of purchase through intentions, which in turn can be predicted by a combination of three factors. In fact, other than the attributes of the labels (discussed in the previous sections), intentions can also be influenced by both social norms and perceived behavioral control, here investigated through the situation of consumption (FRAME) and the knowledge about wines (KNW) respectively. To this end, the present paper includes two moderators, namely frame and knowledge to better understand their role in the relationship between the attributes shown on the label of a bottle of wine and the subsequent likelihood of purchase.

2.4.1 The moderating effect of consumption situation on the relationship between label attributes and the likelihood of purchase.

The literature about the effect of consumption situation on consumers behavior toward brands and products has been investigated from different perspectives: psychology (Deutsch, 1955; Endler, 1962) marketing (Belk, 1974, 1988; Bearden W. O., 1978; Lai, 1991) and branding (Sandell, 1968). Based on the abundant literature of this topic it is possible to say that the intention of consumers to purchase a product partially depends on the extent to which they associate the product characteristics with the anticipated consumption situation. The latter also determines the depth of information search (Aqueveque, 2006). In general, it is possible to assert that, people tend to prefer different products or brands according to different occasions/situations.

The impression management focuses its interest on the tactics commonly used by individuals to shape their own image in the eyes of perceivers. In fact, people seek *status, prestige, and respect from others* and the latter explains why individuals are constantly trying to "sell" themselves to others which can occur intentionally, unintentionally or both (Goffman, 1969; Jones & Wortman, 1973). More specifically, strategic *self-presentation management* requires an *actor* who uses his/her own *verbal and non-verbal* behaviors to enhance or maintain the power in a relationship. The ultimate objective of such tactics is to obtain an appreciation of personal qualities by others.

On the one hand, five classes of self-presentation phenomena were found to be widely used, namely: *Ingratiation, Intimidation, self-promotion, exemplification,* and *supplication* (Jones & Pittman, 1982). On the

other hand, Gordon (1996) pinpointed several factors that moderate the effect of self-presentation tactics on judgments (*the combination of tactics deployed, the role of the perceiver, the setting, the status, and dependency*). Therefore, the findings presented above, confirm that individuals act in a way that is intended to improve the perception of themselves in the eyes of others, deploying both verbal and non-verbal tactics.

At this point, a practical question should be raised: how can the perception of being judged by others, affect the purchase intention of an individual (which can be interpreted as a *non-verbal tactic*)?

A study of 2002 (Ratner & Kahn) found that in situations in which individuals merely perceived that they would be judged by others on the basis of their choices, tended to include in their choice set more items than normally chosen for private consumption in order to appear more interesting and creative.

Along this path, another paper investigated the reasons behind the phenomenon of purchasing counterfeit luxury products. Not surprisingly, this phenomenon was more pronounced in consumers displaying a *social-adjustive* attitude than in the case in which *value-expressive* attitudes were prominent (Wilcox, Kim, & Sen, 2009).

The findings above are consistent with the results of Shocker and colleagues (1991), who studied the formation of the *awareness*, *consideration,* and *choice* set in purchase situations. They defined the *consideration set* as built on goals and objectives which are affected by contextual and environmental factors such as *social consideration.* In fact, an individual may deviate at any time from its consideration set because others want him to consider other possible choices.

From the results presented above, it is possible to conclude that exists a direct relationship between public consumption, social approval-seeking, and attitude toward the products.

To recapitulate, from the considerations put forward so far, it clearly emerges that in a situation in which individuals feel the pressure of others' judgment, their behaviors (verbal and non-verbal) change accordingly (along with the consideration set), in order to improve or sustain their social image. In this sense, it's possible to expect that when an individual has to choose a wine for *personal vs. public consumption* the attitude toward different labels changes. In particular, one may consider a bottle with a serial number on it to express a message of exclusivity/social status. In the same way, one can choose a bottle with an award certification, to appear more knowledgeable when the purchase is intended for dinner with others rather than when is for personal consumption. Taking into consideration that labels feature different pieces of information, which can be used as a self-promotion tool, the likelihood of purchase will thus be altered if the consumer is placed in the public scenario compared to the private situation. Given the above, the following hypotheses can be formulated.

H7a. The presence of a serial number (SN) on the back label of wines will lead to a higher likelihood of purchase of wine if consumers are framed into a public consumption setting compared to consumers framed into a private consumption setting.

H7b. The presence of a country of origin (GEO) on the back label of wines will lead to a higher likelihood of purchase of wine if consumers are framed into a public consumption setting compared to consumers framed into a private consumption setting.

H7c. The presence of certificates in the form of the PDO logo (PDO) on the back label of wines will lead to a higher likelihood of purchase of wine if consumers are framed into a public consumption setting compared to consumers framed into a private consumption setting.

H7d. The presence of certificates in the form of international awards issued by third-party - Decanter's like logo- (AWD) - on the back label of wines will lead to a higher likelihood of purchase of wine if consumers are framed into a public consumption setting compared to consumers framed into a private consumption setting.

Referring to section 2.3.5, it was discussed that price plays a fundamental role in consumer choice. The relationship between price and the subsequent choice is not always clear for different product classes (H6) and thus, its effect could be better understood when it is paired in combination with the knowledge of consumers and (most important) with different consumption situations in which consumers are. Consequently, the price can influence the purchase of a certain wine depending on the specific circumstances.

Therefore, following the theories outlined in section 2.3.5 along with the findings discussed above (regarding social status signaling), the following hypothesis can be formulated:

H7e. It is expected that participants framed in the public consumption setting will experience a higher likelihood of purchase of wine for the high price range wines compared to participants framed in the private consumption setting.

2.4.2 The moderating role of knowledge about wine on the relationship between label attributes and the likelihood of purchase.

In this paper, knowledge was included as a variable that can affect the relationship between the provision of information and the subsequent choice of the respondents. In general, it is plausible to expect that different levels of expertise correspond to different preferences when it comes to choosing a bottle of wine.

The central role that consumer's knowledge holds in applied science (particularly in marketing and consumer behavior) has led researchers to profusely refine models that are able to capture the very nature

and the working mechanism of this construct. One of the most spread yet convincing models that explain consumer knowledge, is the one proposed by Brucks (1985) in which three (intertwined) dimensions (or categories) of consumer knowledge are identified. *Subjective Knowledge*: what consumers think they know; *Objective knowledge*: what consumers actually know and *Previous Experience* with the product category.

Many publications have discussed the role of knowledge across all the phases of the decision-making process. For instance, some papers have investigated the relationship between product knowledge and information search (Beatty and Smith, 1987; Moore and Lehmann, 1980) as well as the amount of information used in the decision-making process (Raju, Lonial, and Mangold, 1993). Among these publications, the *consumer's knowledge and experience-hypothesis* worth a mention. This theory, which divides consumers into "knowledgeable" and "novices" predicts that experts use more attributes than novices in choice-making and they use different elements to evaluate different brands (Alba, 1987; Mitchell, 1996).

Following Brucks' model, the present paper focuses on subjective knowledge because it has been demonstrated to be a powerful predictor of behaviors, operating not only as a direct influencer of intentions but also as a moderator of the relationship between attitudes and intentions (Berger, 1994). In particular, non-knowledgeable consumers are expected to use more immediate and accessible information (such as country of origin and certificate issued by third parties) which allows them to infer the quality of the wine. In fact, the country of origin has been found to be one of the drivers in decision-making for the non-experts as novices lack extensive knowledge or class knowledge and thus will use COO as halo (Han, 1989). Moreover, the lack of broad class knowledge (and experience indeed) could be related to lower attention paid to price differentials (compared to their expert counterparts) since they don't possess alternative points of reference for the "right" pricing for the product.

Based on the literature above, the following hypothesis can be formulated.

H8a. Less knowledgeable consumers will demonstrate a higher likelihood of purchase when a serial number (SN) is embedded on the back label of wines in comparison to consumers who are more knowledgeable.

H8b. Less knowledgeable consumers will demonstrate a higher likelihood of purchase when the country of origin (GEO) is embedded on the back label of wines in comparison to consumers who are more knowledgeable.

H8c. Less knowledgeable consumers will demonstrate a higher likelihood of purchase when a certificate in the form of the PDO logo (PDO) is embedded on the back label of wines in comparison to consumers who are more knowledgeable.

H8d. Less knowledgeable consumers will demonstrate a higher likelihood of purchase when a certificate in the form of Decanter's award logo (AWD) is embedded on the back label of wines in comparison to consumers who are more knowledgeable.

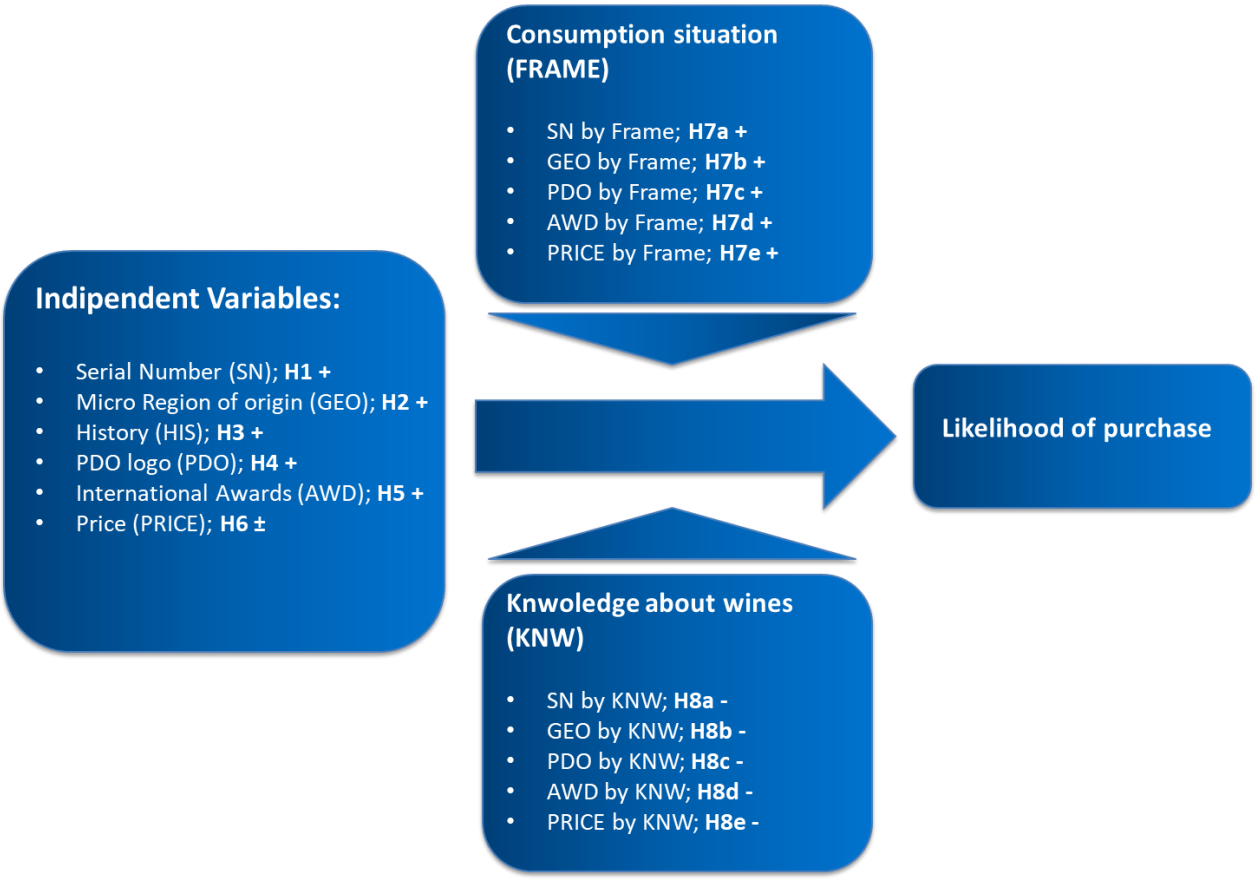
H8e. Less knowledgeable consumers will demonstrate a higher likelihood of purchase for low priced wines as they lack a wide range of price points in comparison to consumers who are more knowledgeable.

2.5 Conceptual framework.

Figure 2.5.1 (below) presents the expected relationships between the independent variables (the attributes of the bottle) and the likelihood of purchase measured through the utility derived by a combination of attribute levels.

The application of this framework would require, every consumer to select between wines with different back labels and different price levels. These variations will be comprised of combinations of the available set of attribute levels. As a result, the utility assigned to each attribute level and its relative importance will be observed and thus the aggregated preference for any given set of information will be estimated. Moreover, this relationship is expected to be affected by two factors which are respectively: consumer knowledge about wine (measured with a multi-item seven-point Likert scale), and the consumption situation. Both of these factors are expected to impact the utility derived from a given bottle of wine (more details on the expected effects in the following chapter).

Figure 2.5.1 Conceptual framework of the thesis



3 Methodology.

This chapter discusses the employed research methods that were used in this study to test the hypotheses. Subsection 3.1 of this chapter discusses what the research design is (e.g. the approach used for the collection of data and what the design of the experiment was), thereafter section 3.2 continues with discussing the employed statistical methods that were used to analyze the collected data.

3.1 Research design.

3.1.1 Data collection.

The survey was launched on the 17th of February and closed on the 15th of March, during which 232 responses were collected. From the data, 24 responses were deleted either because the survey was not completed or the total completion time of the survey exceeded twenty-four hours, which could have introduced biased records in the dataset. The final analyzed sample resulted in 208 participants.

Non-probability sampling method was applied to collect the data instead of a more conventional simple probability sampling, due to the relative ease and its time/costs effectiveness. Such a sampling method can be helpful in exploratory research (initial study) in order to discover if a given problem does exist or not (Malthora, Birks, & Willlis, 2012). As a result, this study employs a sampling method that possesses both the traits of convenience and judgmental sampling.

An online questionnaire is employed in order to collect the data needed for the analysis. In fact, it allows us to better target the group of respondents and at the same time show pictures or graphs which stimulate the participation of respondents.

In general, online surveys, suffer from self-selection bias. In fact, people can deliberately decide to answer the survey or not, depending on many factors: personal involvement with the subject, level of confidence, lack of time or availability of sufficient knowledge on the matter (Contant, 1990) leading to a low coherence with the desired target group. For these reasons, the use of online surveys without access to panels can lead to low sampling control (Childers & Skinner, 1985). This issue was tackled through the use of different social media groups both dedicated/specialistic (e.g. Facebook groups such as “wine-lovers”, “Sommelier” etc.) and non-dedicated. (e.g. Facebook friends, colleagues, and university groups)

Another problem that is strictly linked to the selection bias is the non-response bias, which occurs when the target individuals do not answer because of low commitment (Malthora, Birks, & Willlis, 2012). In order to avoid this issue, to increase the response rate a non-monetary prize was used (two bottles of Etna Bianco Superiore) which were assigned randomly. In fact, at the very beginning of the survey, respondents were told that, once the survey was completed they had to send an email to a dedicated email address with their contact details in order to partake in the drawing (see Appendix C, section 10.1).

Lastly, online surveys do have less or no control over the collection environment around the respondents, which means that researchers can't control the amount of distraction and noise while the respondents are completing the survey (Malthora, Birks, & Willlis, 2012). Although there is almost nothing that can be done to lower the level of distraction, the length of the survey was kept as short as possible to avoid distraction or boredom of the task assigned to the respondent. In fact, according to Johnson (1996), the number of tasks asked should be under 20 in order to avoid an increase in the random error component.

3.1.2 The structure of the survey.

The survey used in this paper consists of two versions of the same questionnaire (A and B). These two versions (A and B) differ because one (A) opens with a brief description of the scenario (or setting), where the respondent is framed in the private consumption situation, while the other one (B) depicts a situation related to public consumption in which the respondent was exposed to the public scrutiny. The two questionnaires were launched simultaneously and were randomly assigned to each participant to have a balanced distribution of both versions.

The structure of the questionnaire was divided into three sections.

The first one included four demographic-related questions (age, gender, education level, and income). An age limit for participation was set to 18 since it is the most widespread legal age for purchasing alcohol in Europe.

The second section of the questionnaire exhibits a multi-item scale. In order to discern the effect of subjective knowledge from objective knowledge and previous experience, Flynn (1999) developed a five-item scale that was employed in this paper to assess the subjective knowledge of respondents about wines (see section 2.4.2). This model has been proven as a valid and reliable scale, which has been used to better assess subjective knowledge in different product categories.

In fact, with the Flynn scale, it will be possible to see if there are any differences between those who may be considered as *knowledgeable* and the *non-knowledgeable/novices* in the evaluation of the importance of information. The complete five-item questionnaire can be found in Appendix B.

At the beginning of the third section, respondents were randomly assigned to one of the two consumption scenarios (i.e. private or public). A scenario-based approach allows for greater control over internal validity (Bitner, 1990). Furthermore, such an approach is ideal to answer questions that cannot be tackled with field experiments without incurring additional time and financial effort (Schendel, 1979)

In the private consumption situation (which could include a self-rewards or pure enjoyment for private meals with family and/or close friends) respondents were framed into a scenario in which they were asked to imagine a situation of consumption on their own (please refer to Appendix C, Third section, Scenario A for the complete scenario description).

For the public consumption situation (which may include gifts, meals with others known and/or unknown, special occasions, etc.) the framing was related to a situation of a networking dinner with colleagues and superiors, so that the consumer's choice (bottle of wine) could be under public scrutiny (please refer to Appendix C, Third section, Scenario B for the complete scenario description).
For both scenarios, the same budget (17-50 €) was provided.

After being randomly assigned to one of the consumption scenarios, participants were asked about their likelihood of purchase of a generic wine bottle which was randomly priced at one of the three price tiers presented in Table 3.1-1. The respondents' likelihood was measured using a Likert scale of 1 to 10.

Following this question, participants were then presented with multiple-choice tasks and were asked to select their preferred bottle of wine. The number of choice tasks was set to eight to minimize the deterioration of the quality of the responses (Johnson R. M., 1996)

A full overview of the questionnaire is provided for the reader in appendix C.

3.1.3 Experimental Design.

In the experiment, respondents were given eight choice tasks where they had to select between two different labels at a time, aggregating to a total of sixteen labels.

The different profiles of the presented wine labels were the result of a combination of six attributes and their subsequent related levels as summarized in Table 3.1-1. Moreover, to increase the adherence to a real-life purchase on each label were included the most common mandatory information, namely: alcohol content (13% vol.), vintage year (2012), net content (750 ml) along with a dummy or fictional brand (*Palmento Caselle "Vigna Parmintazzu"*) which was held the same across all choice tasks for both questionnaires.

The reason why, in this paper, the brand is not tracked and kept constant across all the cards is that previous studies (Orth, 2008; Underwood & Klein, 2002) demonstrated that when consumers face unknown or unfamiliar brands, they tended to rely more on other extrinsic cues to make a decision. Since the aim of this study is to understand the effect of different optional information on choice, keeping the brand name constant ensures that the measurement of the information effect on choice is not conditioned or partially driven by the brand.

Furthermore, in order to avoid any kind of influence (positive or negative), style, colors, design, and fonts were kept constant for all the labels. For what concerns the international awards, a *Decanter*-like logo (see Figure 8.3.6, Appendix A) with a realistic score (95 out of 100) will be used in order to test the effect of such information on the purchase.

Moreover, to make the experiment more credible, real market price referred to a bottle of Etna Bianco Superiore, was used (reflecting the average price of the vintages between 2012 and 2015).

Table 3.1-1 Attributes Level considered

Attribute	Levels	
1. N° of bottles produced	1	Not present
	2	Present
2. Micro-region of origin	1	Not present
	2	Present
3. History statement	1	Not present
	2	Present
4. PDO logo	1	Not present
	2	Present
5.International awards	1	Not present
	2	Present
6. Price	1	€ 16,99 to € 22,99
	2	€ 22,99 to € 28,99
	3	€ 28,99 to € 37,99

The number of possible combinations obtainable from the table above totals 96 (2x2x2x2x3). Since participants are not able to evaluate all these resulting combinations, a reduction was required. In order to do so, an orthogonal design (José M. Gil, 1997) was performed on SPSS to reduce the number of possible choices, which generated a more reasonable number of combinations, namely 16. The set of profiles generated in SPSS can be found in Table Table 9.3-1 included in appendix B.

Following the methodology of Bruwer (2010), the profiles (see Table 9.3-1) were shown in constant pairs so that, profile one was paired with profile sixteen, profile two with profile fifteen, and so on. The sequence of presentation of each pair of profiles was randomized across all respondents in order to reduce the drop off in the quality of the response after reading the first cards. Moreover, this technique prevents the so-called order effect bias. Although the introduction of an opt-out solution (Dhar & Simonson, 2003) (which allows respondents not to choose either option one or two) would have helped to increase the adherence with real purchase situation, in this case, this expedient was unnecessary, since the scope of this paper is not to provide any market simulation.

3.2 Research Method.

In the marketing context, conjoint analysis is a widely used tool to better predict consumers' choices and thus tailor products and services to customers' preferences (Green, 1991; Wittink, 1989). In fact, conjoint analysis is a decompositional[9] instrument employed by marketers, which can predict the preference of customers for a given product or brand by analyzing the importance assigned to each product attribute-level. In the conjoint analysis, consumers see the product or service as a bunch/combination of different attributes each with different levels and thus they evaluate all the attributes at once which is close to a real purchase situation. Eventually, marketers can see which attributes are more important in the overall evaluation by decomposing and analyzing the part-worth utilities and importance weights of each attribute level (Janssens, 2008).

The attribute part-worth utility represents the observed contribution of that specific attribute to the formation of the total utility u_i linked to the product/service under examination. Therefore, given alternative *i,* the deterministic component of the utility v_i that a consumer *n* derive from this alternative can be expressed as in the following equation (1):

$$u_i = v_i + e_i$$

Equation 1. Total utility formula

The deterministic component v_i can be rewritten as in equation 2.

$$v_i = \beta_0 + \sum_{m=1}^{M} \beta_m x_{mi}^n + e_i$$

Equation 2. Equation of the deterministic component of utility[10]

Where:

i ∈ S_n***:*** alternative *i* belongs to the set of consumer's alternatives S_n

m*:* represents the attribute which describes alternative *i.*

β_0***:*** The constant utility coefficient which represents the base utility for all the alternatives analyzed.

β_m: utility weight (coefficient) of attribute *m* of the alternative *i.*

x^n_{mi}: observed value for consumer *n* of the attribute *m* of alternative *i*.

[9] A decompositional approach derives one's utility functions from his/her responses to a set of complete profiles.
[10] Adaptation from Naresh K. Malhotra; Marketing Research 4th edition.

β*mXmi*: part-worth (or marginal) utility contribution of attribute *m* to the overall utility of alternative *i*. As a result, an increase in the Part-worth utility is translated into an increase in the explained total utility.

e_i: Random error component, which is not captured by the model.

Applying the aforementioned equation to the case study at hand, we can see the back label of a bottle of wine as made of different attributes (information) *m* (e.g. *the* number of the bottle, PDO logo, region of origin, etc.). As the consumer *n* is presented with several labels *(i)* each carrying different information, he/she will assign to each of these variables a weight (or importance) β in accordance to the presented value *x* of the information (in our case either presence or absence on the label). Eventually, the consumer will prefer the wine with a label that embeds the right mix of information which maximizes his/her own utility.

In this paper, conjoint analysis was employed because the dependent variable under study is represented by the preference assigned to a bottle of wine given a set of pre-determined attributes each carrying a subset of levels.

There are different types of conjoint analysis, but for the research at hand, a so-called Choice-Based Conjoint (CBC) was used. What distinguishes the Choice-Based-Conjoint from other types of conjoint is that respondents, instead of rating or ranking the options presented, express a choice (preference) among two or more concepts, making the choice experience more adherent to actual market behavior. Furthermore, it's notably the most used method among conjoint models.

The drawbacks of using a Choice-Based-Conjoint are mainly related to the fact that choices indicate just which profile is preferred and do not take into account by how much an option is preferred compared to the other options available. Moreover, since the choice tasks usually include several profiles, each carrying several attributes to be evaluated, respondents can get tired and use simplification strategies leading to missing relevant information. Last but not least, where the possible combinations are too many, an orthogonal design is required in order to reduce the number of profiles to be submitted (see section 3.1.3). If on one hand, this procedure helps to create a more manageable number of profiles, on the other, it implies that the interaction effects (where possible) do not exist. Thus, must be assumed that interaction between attributes equals zero.

In most of the publications, fractional designs are chosen because these limit the number of profiles and therefore the complexity for the respondents as well as the effort in the data collection. Of course, one has to be aware that where interaction effects exist the estimation of the model can be biased.

Although several attempts have been carried to overcome this limitation (Lusk, 2005), Louviere & Carson (2009) acknowledging the widespread difficulty in overcoming this trade-off (simplicity vs. inclusion of

interaction effects), reiterated that main effects models capture preferences sensibly well and typically account for most of the variance in the data.

As already explained, the CBC is conceived to present the respondents with a discrete number of options (or profiles) from which to choose. The options presented are combinations of changing levels of a set of multiple attributes and eventually, the respondent is asked to make a choice between these options. With the Choice-Based-Conjoint, the estimation of the utility (derived by the respondents) is based on a choice set and every choice can be described in terms of its attributes (Woodworth, 1983). An unobservable (latent) preference is assumed to be present and this is derived from the actual choices made by the respondent.

The Binary Choice Model is the analysis tool employed in this research since it computes the probability that a respondent chooses a given alternative as a function of the attributes of the options available. In fact, given the choice set S_n which has only two possible options (*i* and *j*), the probability of selecting alternative *i* for the respondent *n* can be written as in the equation that follows (3)

$$P_{n(i)} = \Pr(U_{in} \geq U_{jn})$$

Equation 3. Probability of choice related to alternative *1*

with the consequent probability of choosing alternative *j* of (4):

$$P_{n(j)} = 1 - P_{n(i)}$$

Equation 4. Probability for respondent n to choose alternative *2*

The underlying assumption for the binary choice model follows the random utility model which assumes that individuals always choose the option with the highest utility. In this sense, it is possible to decompose the utility function into two separate components. Given U_{in} and U_{jn} as utility functions for person *n* for the products *i* and *j* respectively, these can be rewritten as in equation 5.

$$U_{in} = V_{in} + \varepsilon_{in} \qquad U_{jn} = V_{jn} + \varepsilon_{jn}$$

Equation 5. Decomposition of total utility

Where V_{in} and V_{jn} are considered non-random functions also called systematic components of the utility while ε_{in} and ε_{jn} represent the random component (or disturbance) of the utility. In the light of these

decompositions, the probability (Equation 5) can be rewritten as in equation 6 below (Moshe E. Ben-Akiva, 1985):

$$P_{n(i)} = \Pr(U_{in} \geq U_{jn})$$

$$\Pr(V_{in} + \varepsilon_{in} \geq V_{jn} + \varepsilon_{jn})$$

$$\Pr(\varepsilon_{jn} - \varepsilon_{in} \leq V_{in} - V_{jn})$$

Equation 6. Probability formula is the difference between random and deterministic components

3.2.1 Statistical Method for analysis and data preparation.

In order to analyze the data collected through the survey, a binary logistic regression was employed. The reason why such a statistical method was used in this paper lies in the fact that the dependent variable to be estimated is dichotomous. In this study, the dependent variable is the consumer choice (likelihood of purchase). In fact, respondents make their choices according to their preference for certain kinds of attributes comparing two profiles (labels) at a time for a total of eight times. Mathematically the logistic regression predicts the odds for the dependent variable (which can be either a *success* or a *failure*) of being a success given the combination of the independent variables.

The Logit transformation can be divided into two steps: first, it takes the odds of an event happening (for different levels of the independent variable) and then takes the logarithm of the odds to turn the dependent variable from binary to continuous.

Assume that $L=a+bx$ is a linear function of a single explanatory variable x (the case of multiple independent variables is the same) and $P(Y=1$ given x values) represents the probability of the dependent variable being a success. The first step is to calculate the odds of the dependent variable being a success given the values of x (s), which can be written as in equation 7.

$$\frac{P}{1-P} = \frac{1+e^{L}}{1+e^{-L}} = e^{L} = e^{a+bx}$$

Equation 7.

Next, take the Log of the odds (Log-odds) as follows in the equation below (8).

$$Ln\left(\frac{P}{1-P}\right) = \ln(e^{L}) = L = a + bx.$$

Equation 8.

In this case, the dependent variable is *choice (likelihood of purchase)*, meaning that respondents have to choose every time between option one or two. Therefore, the formula will be (9):

$$\ln(choice) = \beta_0 + \beta_1 * Nbottle + \beta_2 * Region + \beta_3 * History + \beta_4 * PDO + \beta_5 * Inter_{Awd} + \beta_6 * Price$$

Equation 9.

with a probability of (10):

$$P = \frac{e^L}{e^L + 1}$$

Equation 10.

In general, since the utility assigned to a given attribute level is obtained from its Beta-estimate resulting from the binary logistic regression, when significant, a positive value of the Beta means that consumers derive more utility from the attribute level under examination than the opposite case. For instance, if the beta of the attribute "bottle number" is positive, then it will mean that consumers do derive more utility when such information is present than when it's absent because the attribute is a dummy.

The Betas obtained from the Logistic regression can be interpreted as part-worth utilities and thus reflect the utility respondents derive from a given attribute. Mathematically, Betas represent the increase or decrease of the *log odds* for a change in one unit of the independent variable, or in other words, the odds multiply by a factor *e^β* for one unit change in the *x*.

Last but not least, data gained through the survey were elaborated and inputted manually in order to make them ready for the analysis and to create a meaningful input. In fact, the dependent variable included in the model was designed to reflect if option one is chosen or not which logically entails the consequence for option two.

4 Empirical analysis.

This chapter presents the results obtained from the survey and analyzes the main findings. First, the demographic data of the respondents is assessed and analyzed along with several scale validity measurements. Second, the procedures and the results of the logistic regression are described.

4.1 Demographic Data: Reliability testing of the indexes and demographic distribution.

In Table 11.1-1 (appendix D), the demographic data is presented. At first glance, the distribution between males and females is slightly more in favor of males 121 (58.2 %) than females 87 (41.8 %). Another important aspect lays in the differences in the age of the respondents. The largest pool of respondents (43.3 %) are between 25 and 34, a category presumably made of young professionals. While the second most important age range is the one between 35 and 44 years old. The two categories together account for more than two-thirds (69.7 %) of the total sample. Looking at the annual income declared in the survey, it appears that approximately one-third of the respondents declared an annual income below € 15.000 (29.3%), which may be partially due to the high participation rate of young respondents (e.g. university students).

Overall, the respondents seem to be well educated. In fact, the respondents that have attained bachelor, masters, and doctorate degrees (joint together) account for seventy percent (70%) of the total sample.

With regards to the distribution of the respondents (concerning the consumption setting), the randomization process seems to have worked as per expectations. It appears that 51.4 % of respondents were assigned in the private consumption situation (scenario A), while the remaining 48.6 % was diverted to the public consumption situation (scenario B).

The respondents were further asked a set of five questions, as per the Flynn model. Based on their answers, a score was calculated, which was used to discern the people who possess more knowledge and expertise on wines (i.e. knowledgeable) from those who do not (i.e. novices or non-knowledgeable). The maximum score that a person could attain was 35, whereas the minimum a person could attain was 5. The resulting average of the estimated score was 24.5 (SD 7.24) with a median of 26. The number of respondents with a score above the average (i.e. knowledgeable) was a hundred-fourteen (114) accounting for 54.8 % of the sample. The respondents with a score below the average (i.e. non-knowledgeable) accounted for 45.2 % (i.e. 94 people) of the sample. Overall, it appears that the distribution between knowledgeable and non-knowledgeable respondents is even.

Lastly, when respondents were asked if they usually read the back labels of the wine bottles when purchasing wine, 88.9 % of the people answered positively. This figure is in line with previous findings

(Charters, 1999; Gluckman, 1986) establishing the importance of the back label as a source of information when purchasing a bottle of wine.

4.1.1 Testing the validity of the Flynn model.

As discussed in the section above, to estimate whether a respondent is knowledgeable or non-knowledgeable about wines, a set of five questions, the so-called Flynn model (Flynn, 1999), was used in the survey. Here for the sake of clarity and conciseness, only the main statistics related to Flynn's scale are reported. The scale showed a reliability statistic (Cronbach's Alpha) of .93. with all the items loading on one factor and explaining the 72% of the total variance.

4.1.2 Pre-test propaedeutic for the analysis.

Before moving to the analysis of the data, a pre-test of the variables (that were used in the main analysis) was conducted to check for possible distribution irregularities of the demographics resulting from the randomization and allocation of respondents in the different consumption settings and knowledge groups. To this end, four ordinal variables were created in SPSS (Age_range_num; Gender_num; Income_num; Edu_level_num) which take into consideration the age, gender, income, and level of education, respectively.

A t-Test was performed between the respondents in the public frame type and the respondents in the private frame type to see if there are any significant differences in the demographics that should be taken into account. The parametric statistics are aggregated in Table 11.1-2 Group statistics for Frame (in Appendix D).

The Equality of means test (see Table 11.1-3 T-test for Frame, Appendix D) displays that there are no significant differences between the participants in Setting A and the ones in B in terms of Gender (sig: .95 >.05), Age (sig: .24 >.05), Education (sig: .23 > .05) and Income (sig: .90 > .05) at a confidence interval 95%. In other words, for each of the variables tested, there aren't significant differences between people who completed the questionnaire A and those who completed questionnaire B (or are equally distributed between private and public consumption situation). This implies that the randomization process is reliable and that demographic factors should not bias the results of the main study.

The same test was replicated to see whether there were any significant differences between participants who can be considered as knowledgeable about wine and those who are not. Consequently, the knowledge variable was used as a grouping variable instead of the consumption setting. The parametric results are aggregated in Table 11.1-4 and the equality of means tests is presented in Table 11.1-5 (in Appendix D). The Levene's test suggests that the (H_0 hypothesis for equal variances among the groups involved may not be rejected (sig. > .05) for Gender (F= 3.03; sig: .351), and Education (F=.98; sig: .95) Whereas, for the Age

(F=2.03; sig: .016) and the Income (F=7.55; sig: .006) we must reject the assumption of the equality of variance between groups.

When we consider Age (sig: .016 < .05), it can be observed that there is a significant difference between the two groups of participants. In fact, non-knowledgeable participants (M=2.40; s= 1.01) appear to be slightly younger relative to their knowledgeable counterparts (M=2.76; s=1.13). This implies that older people may be more knowledgeable than younger ones. When we further consider the significance of income (sig: .006 < .05), it can be seen that there is also a significant difference between non-knowledgeable participants (M=2.92; s=1.84) and knowledgeable ones (M=3.79; s=2.61), thus implying that people who tend to have a higher disposable income seem to be more knowledgeable (about wines) than those with lower disposable income.

Given the aforementioned, it can be concluded that knowledgeable participants tend to be older and have a higher disposable income relative to their non-knowledgeable counterparts. This is a logical relationship as it is generally expected for younger people to have less knowledge and financial power than older people.

Moreover, a Variance Inflation Factor test (VIF) was performed. To assess the presence of multicollinearity in the following variables: Age, Gender, Education, and Income. The results are presented in Tables Table 11.1-6-7-8. According to the literature (Field, 2013), the tables that are crucial in assessing the presence of multicollinearity are basically two: the Coefficient table and the Collinearity matrix. From the former, it is possible to see the VIF statistic, which should be less than 5 (1.02) and the tolerance statistic, which should not be below 0.2 (.98). From the latter, it is possible to double-check if there are factors which load on the same dimension. In this case, Age and Education share 24% of the load (quite logical, nothing to worry about) but must be noticed that each factor loads for more than 75% on a different dimension and most importantly, no values of condition index exceeds 15 (Hair, 2006).

In light of the results from the t-Tests and the VIF, it can be concluded that no significant demographic factors are expected to affect the results of the main study.

4.2 Hypotheses testing: Results.

In the following subsections, the results of the Logistic Regression are presented. Table 4.2-1 (displayed below) provides a summary of the different models that have been used. Therefore, each column represents a different model, whereas the rows contain statistics of the variables that were used by the different models. Overall, 3 different models were used to estimate the impact of optional information on the likelihood of the purchase of a bottle of wine. They are defined as follows:

Model 1 It is an analysis which takes into consideration only the control (demographic) variables.

Model 2 probes the effect of the independent variables along with the control variables on the likelihood of choice.

Model 3 analyzes how the combined effect of the two moderators (knowledge and frame) put in relation to the various independent variables could potentially affect the likelihood of choice. Therefore, introducing the interactions between the moderators and the IVs to the model above it could be possible to spot if those interactions exert some effect on the likelihood of purchase.

In every regression, it is important to check if the model could be influenced by cases that differ from the main trend of data (thus influencing the results). One method to search for such outliers is through the analysis of residuals. Such an analysis looks at the difference between the predicted and the observed values of a statistical model. Consequently, the standardized residuals obtained from the various models were analyzed to search for data points that would significantly deviate from the expected model fit. The estimates of Cook's distance and Leverage were deployed to check for any such potential influential cases.

Overall, the relevant statistics seem to confirm that exists a good fit between the models and the actual observation. A summary table, for all three models, can be found in Table 11.1-12 (Appendix D).

4.2.1 How to interpret the results of logistic regression

This section provides a detailed explanation of the statistics presented in Table 4.2-1. The aim of this section is to provide additional clarity with regards to the interpretation of the main results.

First, *-2LL* (i.e. *Deviance*) is an estimate of how good the data fits the model. The *Deviance* has a Chi-squared distribution which allows measuring the model performance as more predictors are added to the model. Second, the *residual sum of squares* (SSR) tells us how much-unexplained variance there is in the logistic regression.

The *-2LL* along with the SSR can both be used as a benchmark of model performance. Whenever the *-2LL* of one model is lower relative to another model, it is expected that the former model performs better. The same is applicable for the SSR, i.e. whenever a model has a lower SSR relative to another model, the model with the lower SSR is expected to perform better.

In this case, the base-line model (or null) that includes only a constant the *-2LL* has a value of 2285.96. The same null model is used across all scenarios (e.g. Model 1, Model 2, and Model 3) as it serves as a point of comparison. The difference between the baseline and the various scenarios can be calculated as:

$$\text{Chi-square} = (-2LL_{\text{baseline}}) - (-2LL_{\text{model } n}), \text{ where } n \text{ stands for 1, 2, or 3}$$

For instance, after including all of the variables in Model 2, the *-2LL* has a value of 2099,78 and thus the resulting difference is equal to 189.14 (2285.96 – 2099.78). From this, it can be concluded that Model 2 has a significantly lower *Deviance* relative to the baseline model, implying that Model 2 has better predictive power than the base model. Model 3 appears to be performing slightly better relative to model 2.

The *Hosmer and Lemeshow* (R2L) statistic is another measure of the goodness-of-fit (i.e. how well the model explains the variance in the outcome variable). The R2L assesses whether or not observed values match expected values in subgroups of the model population. If the R2L has a **p-value above .05**, this means that the predicted values and observed data in subgroups are similar and are well-calibrated. All three models have a p-value above .05, whereby Model 3 has the lowest R2L value of 2.96 (sig .93). This implies that adding more statistically significant interactions leads to a lower value of the (R2L) statistic and thus indicates a better fit of the predicted data to the observed ones. In fact, as a general rule of thumb, low values of the chi-square and significance close to one usually indicates a good regression fit with the observed data.

The *Cox & Snell R* and the *Nagelkerke R* squares are two other indicators that can be used to assess how well the model fits the data. They measure how much of the total variance in the output variable can be explained by the set of independent variables included in the model. The *Cox & Snell R* square is known to be a more conservative estimate compared to the *Nagelkerke R* square.

For instance, for Model 2, this range goes from 11% to 14% of the total variation. Now, the reader should take into account that there is a debate among scholars on whether to report and which is the best "pseudo-R-squared" measure and, for sure, this paper does not want to go through all the suggested approaches. In this regard, Hosmer and Lemeshow stated that "*low R^2 values in logistic regression are the norm and this presents a problem when reporting their values to an audience accustomed to seeing linear regression values"* (Hosmer & Lemeshow, 2000; p.167). This is particularly true when using the Cox & Snell measure, as its maximum value never reaches 1 (perfect adherence with the observations). In this specific case, according to the standard interpretation, it is possible to say that the model predicts moderately well the outcome variable.

The last important aspect of the models is the estimated effect and direction of each independent variable (IV) on the probability of purchasing a bottle of wine. This is represented by the unstandardized Beta coefficients (β), which indicate the change in log-odds of the target outcome (e.g. should this wine bottle be purchased or not) per one unit change in the IV. If these unstandardized coefficients are exponentiated, the so-called Odds Ratio (hereinafter also referred to as **ExpB**) is obtained. For a better interpretation of the results, it is recommended that the Odds ratio is used instead.

Therefore, If the value of ExpB is greater than 1 than it indicates that when the associated predictor increases by one unit, the chances of the outcome taking place multiplies by the value of the ExpB. Vice versa, when the ExpB is less than 1, it means that as the predictor increases by one unit the probability associated with the outcome occurring decreases.

For instance, the Odds Ratio of the variable PDO in Model 2 is 1.60 (see Table 4.2-1). This implies that the presence of a PDO logo on the back label of a wine bottle increases the likelihood with 60% for a consumer to purchase a wine bottle, relative to the situation where a PDO logo is not present

It should be noted that Table 4.2-1 does not display the Confidence Interval (C.I.) of the Odds Ratio. In order to calculate them, the following method should be used:

$$C.I. = e^{(\beta \pm 1.96 * S.E.)}$$

It is important to notice that the confidence interval of significant Beta coefficients does not cross the value of 0 (similarly the CI of the Odds Ratio does not cross the value of 1). This because an independent variable can either increase or decrease the probability of an event from happening.

Last but not least, all three models were built hierarchically, implying that the analysis was divided into blocks (or steps). Hence, every time a new variable is included in either one of the models, its effect on the dependent variable is measured first before moving on to the next block/variable.

Given the aforementioned, the next subsection discusses in detail the results presented in Table 4.2-1**Error! Reference source not found.**.

Table 4.2-1 Results of the Logistic Regression

Variables	Model 1					Model 2					Model 3				
	β	***S.E.***	*Wald*	***p-value***	***Odds Ratio***	***β***	***S.E.***	*Wald*	***p-value***	***Odds Ratio***	***β***	***S.E.***	*Wald*	***p-value***	***Odds Ratio***
GENDER	*-0,03*	*0,10*	*0,08*	*0,77*	*0,97*	*-0,03*	*0,11*	*0,09*	*0,76*	*0,97*	*-0,03*	*0,11*	*0,07*	*0,79*	*0,97*
AGE	*0,01*	*0,05*	*0,02*	*0,89*	*1,01*	*0,01*	*0,05*	*0,02*	*0,88*	*1,01*	*0,00*	*0,05*	*0,00*	*0,96*	*1,00*
EDUCATION	*0,00*	*0,04*	*0,00*	*0,99*	*1,00*	*0,00*	*0,04*	*0,00*	*0,99*	*1,00*	*-0,01*	*0,05*	*0,05*	*0,83*	*0,99*
INCOME	*0,02*	*0,03*	*0,67*	*0,41*	*1,03*	*0,03*	*0,03*	*0,75*	*0,39*	*1,03*	*0,03*	*0,03*	*0,94*	*0,33*	*1,03*
PRICE	""	""	""	""	""	*-0,46*	*0,19*	*6,11*	***0,01*****	*0,63*	*-0,37*	*0,21*	*3,13*	***0,08******	*0,69*
HIS	""	""	""	""	""	*-0,20*	*0,49*	*0,17*	*0,68*	*0,82*	*-0,20*	*0,49*	*0,17*	*0,68*	*0,82*
PDO	""	""	""	""	""	*0,47*	*0,12*	*15,78*	***0,00****	*1,60*	*0,38*	*0,19*	*4,31*	***0,04*****	*1,47*
SN	""	""	""	""	""	*0,31*	*0,09*	*12,08*	***0,00****	*1,36*	*0,25*	*0,16*	*2,42*	*0,12*	*1,28*
AWD	""	""	""	""	""	*-0,17*	*0,31*	*0,32*	*0,57*	*0,84*	*0,16*	*0,42*	*0,15*	*0,70*	*1,18*
GEO	""	""	""	""	""	*0,27*	*0,08*	*10,99*	***0,00****	*1,31*	*0,27*	*0,15*	*3,42*	***0,06******	*1,31*
FRAME	""	""	""	""	""	""	""	""	""	""	*0,43*	*0,27*	*2,58*	*0,11*	*1,54*
FRAME by PRICE	""	""	""	""	""	""	""	""	""	""	*-0,28*	*0,12*	*5,66*	***0,02*****	*0,76*
FRAME by GEO	""	""	""	""	""	""	""	""	""	""	*-0,09*	*0,16*	*0,29*	*0,59*	*0,92*
AWD by FRAME	""	""	""	""	""	""	""	""	""	""	*-0,61*	*0,38*	*2,59*	*0,11*	*0,54*
FRAME by SN	""	""	""	""	""	""	""	""	""	""	*-0,08*	*0,18*	*0,23*	*0,63*	*0,92*
FRAME by PDO	""	""	""	""	""	""	""	""	""	""	*0,26*	*0,19*	*1,87*	*0,17*	*1,30*
KNW	""	""	""	""	""	""	""	""	""	""	*0,07*	*0,27*	*0,08*	*0,78*	*1,08*
GEO by KNW	""	""	""	""	""	""	""	""	""	""	*0,08*	*0,16*	*0,22*	*0,64*	*1,08*
KNW by PDO	""	""	""	""	""	""	""	""	""	""	*-0,08*	*0,19*	*0,15*	*0,70*	*0,93*
AWD by KNW	""	""	""	""	""	""	""	""	""	""	*-0,06*	*0,38*	*0,03*	*0,87*	*0,94*
KNW by PRICE	""	""	""	""	""	""	""	""	""	""	*0,08*	*0,12*	*0,44*	*0,51*	*1,08*
KNW by SN	""	""	""	""	""	""	""	""	""	""	*0,19*	*0,18*	*1,12*	*0,29*	*1,21*
CONSTANT	*0,15*	*0,21*	*0,47*	*0,49*	*1,16*	*0,02*	*0,30*	*0,00*	*0,95*	*1,02*	*-0,19*	*0,36*	*0,27*	*0,60*	*0,83*

χ2 (-2LL)	1,096	(4)		0,895		189,14	(10)		,000*		202,17	(22)		,000*
Cox & Snell R^2	,001					0,107					0,119			
Nagelkerke R^2	,001					0,144					0,153			
Hosmer & Lemeshow χ2	7,25	(8)		0,51		3,20	(8)		0,92		2,96	(8)		0,93

I.C(lower; upper bound) = exp(β ±1,96*S.E.)

***<.01; **<.05; ***<.1**

4.2.2 Results of Logistic Regression.

Before moving to the analysis of the results of the full model it is necessary to spend a few words on models 1 and 2 and what they tell. Model 1 was built only upon the demographic variables and the results showed that the explanatory power of the model remained unchanged regardless of the addition of these predictors. Whilst for model 2, which included the main IVs on top of the demographic variables, the results show that the addition to the base model of the main IVs significantly increased the explanatory power of the logistic regression (χ^2: 189 sig .000) and the total explained variance was between 11 and 14 %. But more interesting, is the significance of the Betas of Price (-0.46), PDO (0.47), SN (0.47) and GEO (0.27). These results are somewhat promising for the next step. In fact, if the study had not included the moderators, we could have concluded that H1, H2, H4 were supported and that exists a negative directionality in the relationship price/choice H6 (i.e. The higher the price the lower the probability of purchase).

The model we must refer to, in order to define if the set of hypotheses are supported or not by the experiment, is model 3, which again, includes all the IVs of model two plus the moderators and their interaction terms.

As it is possible to observe from Table 4.2-1 that all the relevant statistics of the Logistic Regression are in line with those of model 2. In fact, the deviance statistic has a significant (p-value .00) chi-squared value of 202 meaning that the inclusion of the moderators to the base model has improved significantly the explanatory power of the logistic regression. And this is also confirmed by the Cox & Snell R2 and Nagelkerke R2 which slightly increased the ranges of the explained variance of model 2 to 12-15%.

Moving to the analysis of the predictors included in model 3 the first thing to note is that the β related to SN (.25) is not significant at 90 % confidence level (.12) despite was significant in model 2 (β: .31 p-value: .00). Recall that, H1 predicted that the presence of SN on the label would have a positive effect on the likelihood of purchase, but the data seems to discredit this hypothesis. The fact that SN was significant in model 2, to become non-significant in model 3 allows us to suppose that H1 cannot be fully rejected as in model 2, 36 % of consumers were more likely to buy a bottle of wine with SN on its label. For sure, this relationship needs to be further analyzed.

Hypothesis 2 predicted that consumers are more likely to purchase a bottle of wine when the specific geographic area of production is embedded on the back label. From the results presented in Table 4.2-1, the β related to GEO equals .27 and is significant at a 90 % confidence level. The odds ratio (1.31) tells us that 31% of consumers are more likely to buy a bottle with such information about the specific regions on the label. As it was explained in section 2.3.2, it is possible to say that, including the information of the micro-region of production (or “terroir”), leads to a higher likelihood of purchase as the results of increased perceived quality and authenticity of the wine. For this reason, we must accept H2.

In section 2.3.3 the theory predicted that placing the history description (HIS) on the label of a bottle of wine could exert a positive effect on the likelihood of purchase for that bottle (as per hypothesis 3). The data from model 3 show that this is not the case. In fact, the p-value (.68) of the Beta is well above the critical value of .05. For this reason, we must reject H3.

Hypothesis 4 (section 2.3.4.1) stated that when PDO information is displayed on the back label of a bottle of wine, consumers are more likely to purchase that bottle. In fact, this statement is supported by model 3 above. Looking at the significant (.04) β (.38) related to PDO it is possible to assert that there is a positive effect exerted by PDO on the likelihood of choice for a given bottle of wine. The odds ratio equals 1.47 and this can be interpreted as follows: the presence of the PDO logo on the label increases the chances for a bottle of wine to be chosen by 47% relative to the case in which this information is not embedded on the label. Therefore, it is possible to accept H4 and confirm the theories presented in section 2.3.4.1. As it was hypothesized, wines that embed the PDO logo are likely to benefit from the so-called brand spillover effects, borrowing credibility and trust from other well-known PDO branded products, thanks to both economies of information (visibility, the perception of quality, diffusion, etc.) and the consumer associative network.

For what concerns the effects of international awards (AWD) on the likelihood of purchase (H5), the data didn't support the hypothesis, having a p.value (.70) over the critical value. Therefore it is possible to reject H5.

As the reader may remember, hypothesis 6 was related to price and posited that consumers were not expected to show a different likelihood of purchase for different price tiers as there is no theory that explains the directionality of the price-purchase relationship in the wine sector when the price is considered alone.

The table above shows that when the price is concerned, the beta value (-.37) is significant at a 90% confidence level. A negative β implies that a unit increase in price will result in a decrease in the odds of the output variable (e.g. likelihood of a wine bottle purchase) by a factor of 0.69. As this interpretation may appear "counterintuitive", the relationship can be reversed or "flipped" by considering the likelihood of **NOT** purchasing a bottle of wine over the likelihood of purchasing. Consequently, the odds of **NOT** purchasing a wine bottle can be computed by taking the reverse of 0.69 (e.g. 1/0.69=1.45). This means that the more expensive wine bottle increases the likelihood with 45% for a consumer to **NOT** purchase this wine bottle, relative to a cheaper wine bottle. This result shows that it is possible for consumers to experience a different likelihood of purchase across different price ranges.

In light of the results above, Price is quite important information that influences the choice of a given bottle of wine and therefore we must reject hypothesis H6.

Among the multiple interactions of *Frame (Price, Serial Number, PDO logo, Geographic area, and Awards)* the only *Frame* by *Price* showed a significant and negative β (-.28) at 95% confidence level. Whilst, all the other interactions (*Geographical Area, Awards, PDO, Serial Number*) have non-significative betas which mean that H7 (a,b,c and d) can be rejected.

The resulting odds ratio of *Frame by Price* (.76) follows the same interpretation of the above. In this case, Public consumers are 1.3 times (e.g. 1/.76) or 30% more likely to choose more expensive bottles relative to Private consumers. In section 2.4.1 hypothesis H7e pointed out that publicly framed consumers were more likely to purchase more expensive wines as per the self-promotion (peacock tail) theory. This result confirms that *ceteris paribus,* people who are publicly framed are 30% more likely to purchase a bottle of wine. Therefore it is possible to accept H7e.

Lastly, *Knowledge* and all its interactions (e.g*., Geographical Area, Awards*, *PDO, Serial Number, and Price)* resulted not significant, which implies that Knowledge may not exert a moderating role in the relationship between the above independent variables and the probability of wine purchase. Therefore, we can discard H8 (a,b,c,d,e). The same applies to *Frame* and all its interactions (e.g., *Geographical Area, Awards, PDO, Serial Number*) but the one with *Price* which means that H7 (a,b,c and d) can be rejected.

5 Discussion of the results

From the results obtained above, it is possible to conclude that the likelihood of choice for a bottle of wine is affected by several factors while others do not exert any effect. The sections that follow are dedicated to the discussion of all the significant effects that were found in the main study, accompanied by a deep dive into the relationship of price, frame, and knowledge.

5.1 The role of price and its interaction with frame.

Contrary to what was predicted in Hypothesis 6, Price was found to be a significant factor that affects the likelihood of choice for a bottle of wine. This relationship was found to be stronger for model 2 (β: -.46 p-value: .01) than model 3 (β: -.37 p-value: .08). This difference in the significance may be due to the fact that part of the explanatory power of the predictor was absorbed by the relationship with *Frame* (which will be explained in a few moments). Basically, the meaning of the negative relationship between price alone and the likelihood of choice shown in the results, demonstrates that also in the wine sector there is a negative directionality of price in relation to the likelihood of purchase. Or put simply, consumers tended to choose less expensive wines.

When *Frame* is used as a moderator, the interaction with the price (β: -.28 p-value: .02) was found to be negative and significant. In fact, as it was predicted, the mere fact of being under public scrutiny led publicly framed consumers to prefer more expensive wines over their private counterparts. This fact supports the theories put forward in section 2.4.1 and more specifically the hypothesis 7e. In this case, we witnessed an adjustment of the consideration set due to contextual factors (Shocker et al., 1991). Although the information related to *price* is not usually included on the label, here it is plausible to assume that, those consumers who were publicly framed, showed the tendency to choose more expensive wines because price took the role of a risk reliever and was used as a quality signal for the wine (Rao, 1989; Zeithaml, 1988). All in all, it is possible to conclude that merely priming the consumer in a public consumption setting, leads to use the price as a proxy to assess the quality of the wine and ultimately make a choice that tries to meet other's expectations.

5.1.1 Testing the validity of the relationship between price, frame, and knowledge: a robustness test.

From the results above (see 4.2.2) it was possible to see that the only significant interaction was the one that involved the moderator *frame* and the predictor *price*, whilst the others involving the *knowledge* were found to be not significant. Due to this result and the complexity of the analysis, the hypotheses related to the possible effects of both the moderators were stressed further out and a closer look was given into the

relationship that may exist between *price, fra*me, and *knowledge.* In order to do so, an Anova test was deployed as a robustness test.

The data input for the Anova was obtained by including a question on the likelihood of purchase for a generic bottle of wine right before the presentation of the pairs (see section 3.1.2). This procedure, allowed to record the dependent variable (*likelihood of purchase*) as an interval variable (on a scale from 1 to 10) in relation to *Frame* (Frame_type: Private, Public), *Knowledge* (Knowledge_type: Non-knowledgeable, Knowledgeable) both coded as dummies and *price* (Price_Category: High, Mid, Low). By doing this procedure it was possible to test the internal validity of the main study (logistic regression).

First of all, a 2 x 3 (between subjects) ANOVA was performed. The independent variables involved in this first study were the *Price* and the *Frame*. A representation of the structure of this first study can be found in Table 11.1-9 (Appendix D).

The results of the ANOVA are shown in Table 5.1-1 3x2 ANOVA (below). First, the statistics of both Frame F(1;202) = .912; p= 341 (>.05) and Price F(2;202) = .238; p=.788 are greater .05 which means that neither price nor frame exerts an effect on the likelihood of purchase when are taken alone.

Table 5.1-1 3x2 ANOVA

Tests of Between-Subjects Effects					
Source	df	Mean Square	F	Sig.	η^2
Model	5	10,203	1,777	,119	,042
Intercept	1	5783,299	1007,372	,000	,833
Price_Category	2	1,368	,238	,788	,002
Frame_Type	1	5,233	,912	,341	,004
Price_Category * Frame_Type	2	20,834	3,629	**,028**	,035
Error	202	5,741			

But, interestingly, there is a significant interaction effect (Price*Frame) F(2;202) = 3.63; p=.028 (<.05) on the dependent variable. The results of this finding are presented both in tabular and graphical format (Table 11.1-9, Appendix D; Figure 5.1.1 Graphical representation of the Confidence Intervals of Frame*Price, below).

In this case, it may be useful to look at non-overlapping confidence intervals and to do so a graph with those intervals is provided, which allows for visual inspection (see Figure 5.1.1). In fact, generally, when two means are compared, it is always true that if their confidence intervals do not overlap each other then their statistics will be statistically significantly different. Conversely, it is not true the opposite and therefore, two statistics that have overlapping confidence intervals could be still statistically different. The reader must be warned that this approach constitutes a “visual” inspection that tends to be easily misinterpreted but is the easiest way to get a grasp of what is going on when comparing different group means.

Figure 5.1.1 Graphical representation of the Confidence Intervals of Frame*Price

The first thing that it is possible to observe is that the probability of purchase was significantly higher for the high-priced wines when the consumption was set public (M=6.108; s=.39) compared to the case in which the consumption was private (M=4.718; s=.38). In light of this result, it is possible to confirm H7e, namely consumers under public scrutiny tend to prefer more expensive wines compared to those who are not.

Subsequently, a second ANOVA was performed in which also the *knowledge* dummy was included, making a 3x2x2 design (between subjects). Table 11.1-11 (Appendix D) summarizes all the variables included in this study, while Table 5.1-2 represents the results of the ANOVA.

Table 5.1-2 3x2x2 ANOVA

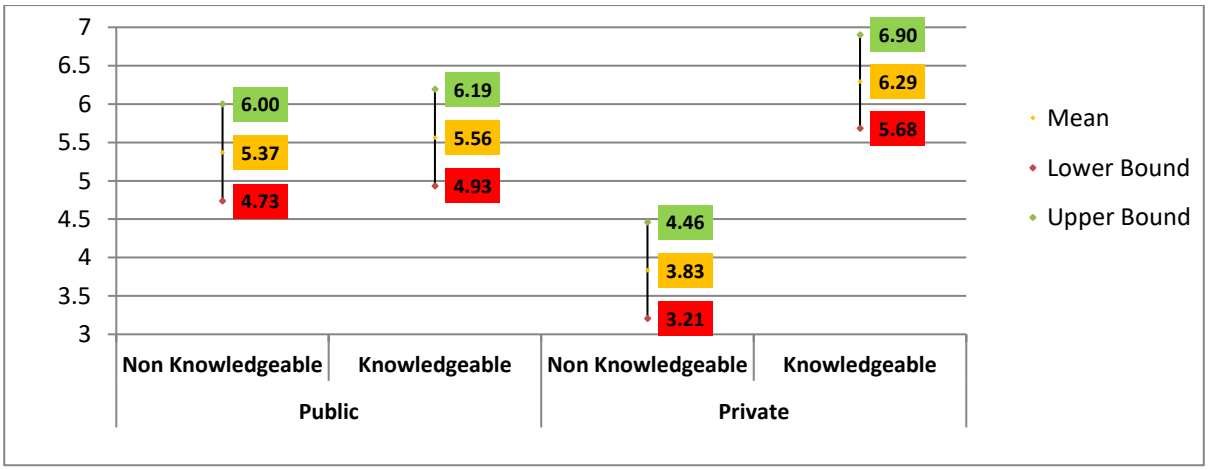
Tests of Between-Subjects Effects Dependent Variable: Prob_Purchase					
Source	df	Mean Square	F	Sig.	η^2
Model	11	20,042	3,967	,000	,182
Price_Category	2	,116	,023	,977	,000
Frame_Type	1	8,132	1,610	,206	,008
Know_Dum	1	88,524	17,522	**,000**	,082
Price_Category * Frame_Type	2	31,962	6,326	**,002**	,061
Price_Category * Know_Dum	2	3,151	,624	,537	,006
Frame_Type * Know_Dum	1	64,402	12,747	**,000**	,061
Price_Category * Frame_Type * Know_Dum	2	2,680	,530	,589	,005
Error	196	5,052			

By looking at Table 5.1-2, it is possible to note that only one out of the three main effects is significant, namely, *Knowledge* (Know_Dum) F(1;196) = 17.5; p=.00 (<.05). More importantly, the table shows that out of three second-order effects just two are significant: first, the interaction between *Price* and *Frame* (Price_Category * Frame_Type) F(2;196) = 6.33; p=.002 (<.05) and second, the combination of *Frame* and *Knowledge* (Frame_Type * Know_Dum) F(1;196)=12.75; p=.00 (<.05).

The interaction Price by Frame has already been disclosed above (Figure 5.1.1), while the other second-order interaction that was found to be significant is the *Frame by Knowledge* (F(1;196)=12.75; p=.00), which makes the significance of the factor *Knowledge* less crucial for the study at hand.

At a first glance, Figure 5.1.2 (below) reveals that when the private frame is considered, the probability of purchase of a bottle of wine (independently from its price) for those who can be considered as knowledgeable (M=6.292; s=.31) is significantly higher than non-knowledgeable ones (M=3.833; s=.32). This difference cannot be found among those who were assigned to the public setting.

Figure 5.1.2 Graphical representation of the Confidence Intervals of Frame*knowledge relationship



In other words, it can be concluded that non-knowledgeable respondents are less likely to purchase a bottle of wine for themselves (private consumption) compared to any of the other cases. But when they are asked to share their chosen wine (public consumption) their probability of purchase (M=5.367; s=.32) becomes comparable to the ones of the knowledgeable consumers (M=5.562; s=.32). This result may give us a hint about which group of respondents may drive the relationship *Frame* by *Price*.

For this reason, a deep dive into the third-order interaction effect (*Price by Frame by Knowledge*) is due, despite its non-significative F (2;196) = .530; p= .59 (see

Table 5.1-2).

Figure 5.1.3 (below) provides a good representation of the third-order interaction. In fact, when the private consumption is concerned it appears that the gap between the means of the knowledgeable group and the non-knowledgeable group increases as the price rose up. In fact, the attentive readers may have noted that

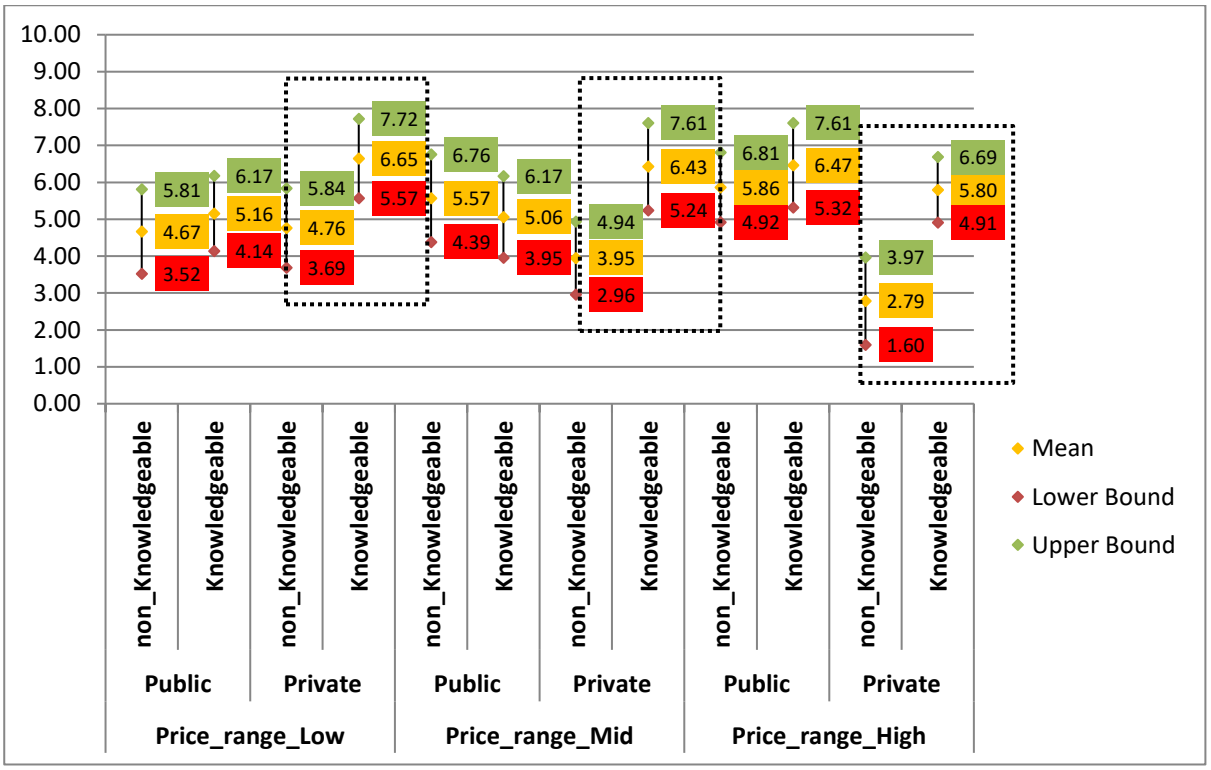
the C.I. of the two groups (knowledgeable and non-knowledgeable) are utterly not overlapping in the mid and high price tiers for the private consumption frame. These results, help to better understand the second-order interaction between *knowledge* and *frame*.

The Anova study gave support to H7e and in spite, the Logistic Regression failed to find a significant result for the interaction effect between knowledge and price (β -.08; p-value .51>.05) the same can not be said for the ANOVA test. In fact, knowledge alone was found to be significant at 95% confidence interval, F(1;196) = 17.5; p=.00 (<.05). We have seen that whilst for private setting the knowledgeable and Non-knowledgeable display very different scores, the same did not seem to work for the public setting.

In fact, looking at Figure 5.1.3 it is possible to see that, for the private setting, the likelihood of purchase of non-knowledgeable tended to decrease as the price rose up, somewhat supporting hypothesis 8e, namely: "*Less knowledgeable consumers will demonstrate a higher likelihood of purchase for low priced wines as they lack of a wide range of price points in comparison to consumers who are more knowledgeable".* In other words, it can be said the non-knowledgeable group "drives" the relationship *Frame by Price*.

If for the private setting the observed behavior of experts and non-experts is diametrically opposed, the opposite can be observed when the public setting is concerned. In this case, the pattern of behavior of Non-knowledgeable was close to the Knowledgeable ones. This finding is substantially in line with H7e as the consumers who were framed in the public setting were expected to prefer more expensive wines compared to their counterparts (private). Moreover, the fact that both non-knowledgeable and knowledgeable consumers display a similar likelihood of purchase for high-priced wines when the consumption is set to be *public* means that non-knowledgeable consumers show the tendency to implement the "peacock" theory, using the price as a proxy for the quality of the wine and as risk reliever more than their counterpart.

Figure 5.1.3 Graphical representation of the Confidence Intervals of Price*Frame*Knowledge



5.1.2 PDO and geographic area.

The logistic regression revealed the other two important factors that may influence the likelihood of purchase for a bottle of wine, namely the PDO logo and the geographic region of origin (GEO).

These two elements have been proven to increase the chances for a bottle of wine to be chosen respectively by 47% and 31%.

For what concerns the COO, the fact that the information (in image format) included both the country of origin and the specific region of production it is plausible to assume that, leveraging on the country stereotypes (White, 1978; Liu, 2005) at macro-level and "terroir" (Thode, 1998; Beverland, 2006) at micro-level helped the consumers to make a more informed decision about the quality and the authenticity of the wine.

The same can be said about the PDO logo. In fact, in section 2.3.4.1 it was predicted that including the PDO logo as supplementary information could have had a positive effect on the likelihood of purchase thanks to the effect of the brand extension which stated that consumers could retrieve the quality of the wine by associating it to other quality products that embedded the same logo and in fact borrowing part of their image.

All in all, the fact that both the PDO and geographic region of origin had a significant effect on the likelihood of purchase, it can be interpreted as the result of the mounting attention of consumers towards

that information regarding the very place of production and the authenticity and of what they eat and drink (Dimara & Skuras, 2005).

6 Conclusions and further research

Based on the theory of planned behavior outlined in section 2.2 and in the light of the results (in chapter 5) the *attitude toward behavior (ATB)*, which here was assumed to originate from the label attributes, exerts an important role in the execution of the intended course of action. Among all the attributes on the label, three, in particular, seem to have some kind of effect on the final choice.

First, even if the serial number was shown to have no effect on the likelihood of purchase in model 3 (whilst had a positive impact in model 2), it may be beneficial to study this relationship more closely. Moreover, both PDO and Geographic area (terroir) played an important role when comes to decide which bottle of wine to choose. These two factors together, signal the increasing interest of consumers on information that may work as "quality insurance". Region of origin and PDO labels work exactly in this direction. In fact, both information benefit from the secondary brand association: the former may take the credibility of a given territory/region whilst the latter, may benefit from other products that embed the same certificate of quality issued by the EU.

For what concerns price, clearly, emerges that, contrary to what was predicted at the previous chapters it is indeed a quite important element that negatively influences the likelihood of purchase when taken alone. More importantly, when adding the *subjective norms,* here assumed as the results of external pressure from others, to the ATB, this relationship flips. In fact, when the consumption situation (frame) is public, consumers showed a preference for more expensive wines. The reason for this radical change is due to the fact that consumers seem to adjust their behavior according to other's expectations in order to self-promote and give a better impression. The Anova supported this conclusion and partially gave a hint on who is driving the relationship between price and frame. In fact, non-knowledgeable appears to play a pivotal role, showing a likelihood of purchase similar to who is considered knowledgeable when the situation of consumption is set to be public.

Lastly, even if the logistic regression failed to show the moderating effect of the *perceived behavioral control* (or knowledge) on the execution of certain course of action (final choice), the Anova test showed that it has some impact and surely it needs a further investigation.

6.1 Managerial implications.

In light of the conclusions above, it is possible to outline some managerial implications that producers, distributors, and importers could implement to push the desirability of the bottle of wine.

First, labels should include a clear reference to the region of origin, and leverage on the uniqueness of the terroir, turning it in a unique point of sales. The same applies to the PDO certificate, even if it may seem redundant information it helps consumers non-experts to retrieve the quality of the wine *ex-ante.*

For instance, in Italy, at the MRC[11] among other departments (e.g. Vegetables, Special Needs Food) most of the retailers (e.g. IperCoop, Eataly, and Carrefour) have recently added a well-assorted and dedicated Wine department with the isles and shelves divided by nationality, specific region, and sub-region.

Secondly, even if the price has a negative effect on the likelihood of purchase, the distributor, by which is intended the seller at the wine shop should first try to understand the final intention of purchase. For instance by making questions to the buyer about the occasion of consumption (e.g. informal meal, formal meal, gift, special celebration) in order to better frame the consumer and push on the situation (in case it is public).

If The MRC has developed a dedicated Wine department (often similar to the one in wine shops) it lacks expert clerks that interact with potential wine shoppers, making a more personalized shopping experience. A wine specialist, right at the point of sale may help the consumer in the decision-making process by showing the bottles with the information that fits with the consumption situation.

In both cases (at the wine shop or at the retail store) the figure of a shopping assistant should also be able to discern if the consumer is an expert or a novice and try to adjust his behavior accordingly in order to show the right bottles with the right information.

Lastly, one of the aims of this paper was to understand if the EU was on the right track in the promotion and development of the PDO program. According to the results, consumers indirectly show that they do recognize that the PDO logo works as quality insurance. But would be interesting to know how many of the respondents actually knew about the EU PDO/PGI program aimed for the defense of the quality of the products produced in the EU.

6.2 Limitations.

The present paper has some limitations that may affect the generalizability of the results. Some of the limitations have been discussed throughout the discussion others have been deliberately left open until the section that follows.

First, the experimental design used, namely the non-probability has some disadvantages. In fact, the main limitation posed by this technique lies in the low generalizability of the conclusions, given the subjective nature of this method. Moreover, this technique is more subject to selection bias and therefore does not allow the estimation of sampling errors which undermine the validity of the results.

Second, the use of scenarios in the survey may produce some disturbance in the elaboration and interpretation of the results. Previous studies have criticized the use of such experimental methods as they fail to replicate the rich-life context (Bardsley, 2005; Levitt and List, 2007) since participants are not part of

[11] Mass Retail Channel

the “experience” and thus they do not need to worry about all kind of losses that could happen in a real-life context. Scenarios also suffer the so-called “*experimenter demand effect*” which refers to somewhat forcing respondents to modify their behavior in order to comply with the experimenter’s concept and intended findings (Orne, 1962). Nonetheless, some authors didn’t find significant differences between the results obtained from field and scenario-based studies (Camerer, 2011; Kim, 2014).

Third, the drawbacks of using a Choice-Based-Conjoint are mainly related to the fact that choices indicate just which profile is preferred and do not take into account by how much an option is preferred compared to the other options available. Moreover, since the choice tasks usually include several profiles, each carrying several attributes to be evaluated, respondents can get tired and use simplification strategies leading to missing relevant information. Last but not least, where the possible combinations are too many, an orthogonal design is required in order to reduce the number of profiles to be submitted (see section 3.1.3). If on one hand, this procedure helps to create a more manageable number of profiles, on the other, it implies that the interaction effect does not exist.

All these limitations may contribute to the low generalizability of the results, to the whole population.

6.3 Future researches.

For what concerns the possible developments would be interesting to know whether the decline in the likelihood of purchase for a bottle of wine when the private frame is concerned was due to the fact that wine is not the first choice for private consumption compared to other kinds of drinks (e.g beer, soft drinks, etc.) or the setting of price ranges. (with a starting point at € 16.99).

Moreover, since information like *serial number, history,* and *award* did not show any significative effect on the dependent variable, a deep dive on these variables should be done. Particularly for the *serial number* as this factor was significant in model 2. For *history*, instead, it should be verified whether the length of the description may have negatively affected the possible effect of this information on the likelihood of purchase.

Lastly, it may worth further investigate the moderating role of knowledge in relation to labels attributes on the likelihood of purchase as the logistic regression failed in this sense, whilst the Anova did find knowledge being significative when taken alone and in relationship with frame.

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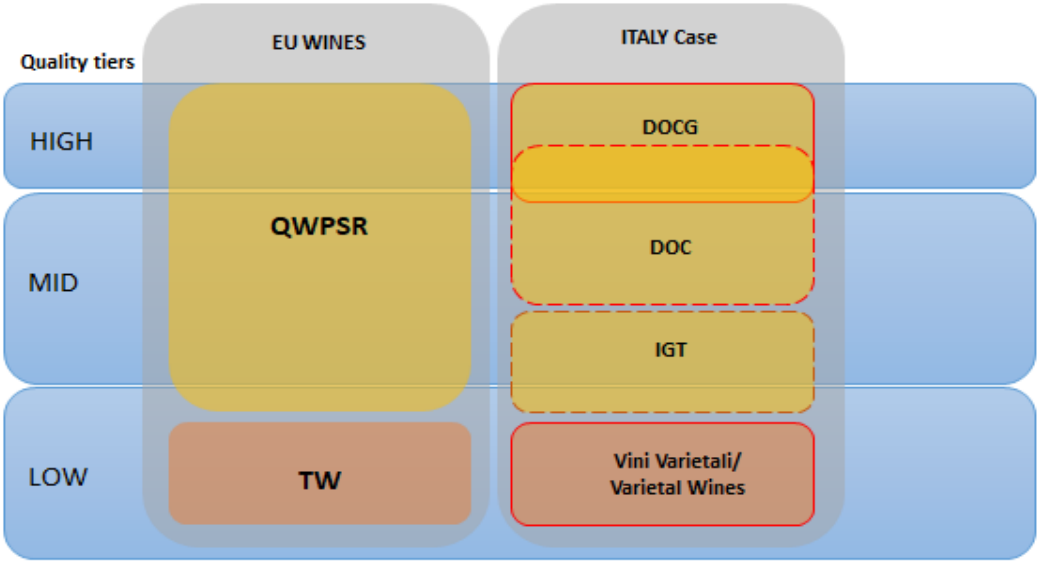
8 Appendix A:

8.1 The EU legal framework for labeling.

The wines produced within the EU are divided into two quality categories, table wines (TW) which are those wines that can be produced anywhere without any specific restriction, and quality wines produced in specific regions (QWPSR). The latter must adhere to specific rules (e.g. grapes used, methods of production, etc.). These two categories are translated into different national wine classification for each European country. Each country may have more than two levels of classification, but all national levels must correspond either to TW or QWPSR regions and are subject to the common minimum standards established in the EU wine regulations. To clarify, **Error! Reference source not found.** shows the traditional classification of wines in Italy[12] as it was until 2008.

Figure 8.1.1 Classification of wines in Italy as it was before reg. 479/08



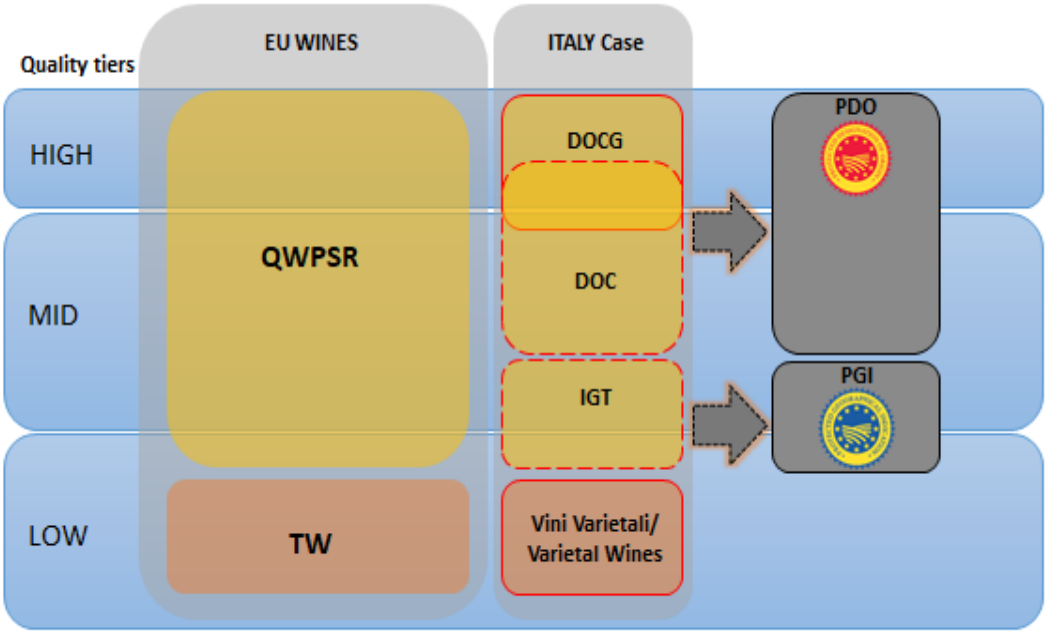
Italy had (and still has) four quality categories of wine, in ascending order: Varietal wines (Generic), IGT (Indicazione geografica Tipica), DOC (Denominazione Origine controllata) and DOCG (Denominazione Origine controllata e Garantita).

In this scenario, the Etna Bianco Superiore would fall into the DOC category, but with an exception. "*Superiore*", in fact, stands for higher standards of production. In practical terms, this wine can be produced only with specific grapes (*Carricante* and *Cataratto*) grown in a small area (Milo) at the foot of the volcano Etna (750 meters above the sea level). Moreover, the cultivation of these grapes and the production processes must adhere to more stringent disciplinary regulations compared to normal DOCs wines.

[12] The Figure is intended for illustrative purpose only

With regulation 479/2008 and successive amendments (538/2011), the EU included wines produced within Europe under the classification system of EU symbols for *protected designations of origin* (PDO) and *protected geographical indications* (PGI). Nevertheless, the law stated that the DOCG, DOC, and IGT acronyms could still be used. The figure (**Error! Reference source not found.**) below is an example of how the new regulation was transposed in Italy after 2008. With the implementation of the new regulation, DOC and DOCG wines flowed under the PDO classification, while IGT wines went under the PGI classification.

Figure 8.1.2 Classification of wines in Italy after the approval of EC reg. 479/08



The European Commission established a set of rules about the information that should be displayed on the labels. In fact, the matter of labeling has been largely tackled by different regulations[13]. These regulations are intended to improve the clarity for end consumers and pose a crystal-clear distinction between mandatory information and voluntary (or optional) information.

To summarize the above, mandatory information is all of the information that each producer is obliged by law to place on the label in order to be able to legitimately sell the wine. This information can be in the format of writings, symbols, or logos, which are used in combination, substitution, and/or completion depending on the specific case. Moreover, such information must be indelible and clearly distinguishable from other signs or pictorials present on the label and, with few exceptions, must be shown in the same visual field.

[13] Reg. EU 479/2008, Reg. EU 607/2009 and Reg. EU 538/2011

Usually, mandatory information is displayed on the front label, but producers may decide where to place the information (either on the front or back label as long as they fall in the same visual field and in accordance with the labeling laws in force in terms of font dimension, logos, symbols).

On the other hand, non-mandatory (or optional) information is all other information that complements the mandatory information but can **NOT** substitute it.

The complete list of mandatory information along with some of the most common optional information can be found in Table 8.2-1 and Table 8.3-1

8.2 Mandatory information for wine labels in the EU.

Table 8.2-1 Mandatory information

INFORMATION	DESCRIPTION
Alcohol Content.	A statement of alcohol content expressed in percent by volume.
The appellation of Origin.	The appellation of origin is simply another name for the place in which the dominant grape variety used to make the wine is grown. It can be the name of a country, state, county, or geographic region called a viticulture area. A country or state appellation on the label means that at least seventy-five (75) percent of the wine is produced from grapes grown in the place mentioned.
Nationality.	The Reg. CE 607/2008 art. 55 specifies that the country of origin must be declared by the terms "Produce of…" or "Produced in…" followed by the name of the member state, in which grapes have been grown, harvested and transformed into wine.
Name (or brand) of the producer, bottler, and importer (in the case of imported wines).	The Reg. UE 607/2008, art. 56 establishes that any brand name is acceptable if it does not mislead the consumer, moreover the name or trade name and address of the bottler or importer must appear on the label.
Presence of allergens.	Any wine intended for interstate commerce that contains ten (10) or more parts per million (ppm) of allergens, must signal the presence of those allergens. Examples are: "contains sulfites", "contains protein of eggs or milk". The regulation Ce 607/2008, art. 51 introduced also a label (see Figure 8.3.2) in order to signal the presence of allergens
Net Contents.	The net content of wine is stated in the metric system of measure and is the amount of product in the container.
Vintage Date.	The vintage date on the label indicates that eighty-five (85) percent or more of the wine in the bottle is produced from grapes grown in that year.
Lot number and/or production code.	The production code and lot number might not be placed on the same visual field of other mandatory information.

8.3 Optional information for wine labels in the EU.

Table 8.3-1 Optional information

INFORMATION	DESCRIPTION
Bottles numbering.	N° of bottles produced on the total, for that specific wine.
Images, symbols, or texts referring to a specific region, town, or sub-region of production.	Usually used when these are particularly known for their quality. (e.g. Etna Bianco Superiore, Milo; Brunello di Montalcino; Montepulciano d'Abruzzo, Terre di Casauria…). See Figure 8.3.1 (below)
Methods of production & History.	In this category fall information such as the type of cultivation, harvest, aging processes, fermentation processes, and history of the winery.
Distinctive symbols.	To this category belong all the awards and/or certificate of excellence, quality and environmental impact which are released by independent third parties/entities. For Instance: associations of producers and consortia (Figure 8.3.3 below), environmental/quality certification e.g: ISO 22000, 9001, 14001 (Figure 8.3.4) and official wine tasting contests (Figure 8.3.6)
Description and expert suggestions.	Usually producers short description of the taste, aftertaste, flavors, and suggestions (e.g. food pairing). Sometimes famous endorsers (e.g. oenologists, chefs ecc.) are also used in order to "explain" the wine to the consumers.
Variety of the grape and traditional names/mention.	It is possible, for PDO and PGI wines, to include traditional names when these names are recognized by the regulations of the European community. Examples are *Passito, Stravecchio, Superiore, Riserva, Chiaretto, Ambra, Classico.*
UE symbols for PDO e PGI (Reg. UE n. 628/2008).	Producers are legitimated to place EU PDO / PGI symbols on the labels as long as the wine is included in these categories (see Figure 8.3.5).

Figure 8.3.1 Symbols referring to specific geographic regions

Figure 8.3.2 EU logos presence of allergens

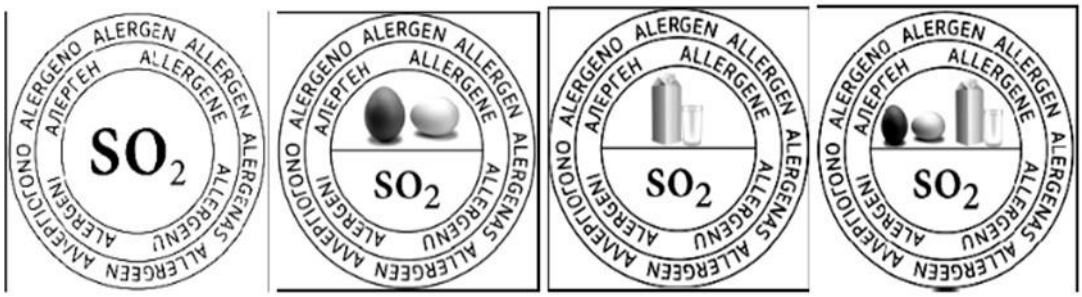


Figure 8.3.3 Examples of distinctive symbols.

Figure 8.3.4 Example of ISO certification.

Figure 8.3.5 EU PDO/PGI labels.

Figure 8.3.6 Example of official wine tasting contest award.

9 Appendix B.

9.1 Ajzen & Fishbein model of attribute measurement.

The equation 12 (Ajzen, 1985) explains that the attitude toward behavior *B* (A_B) is a direct function (α) of the strength of salient subjective beliefs (*b*) that performing *B* will lead to outcome *i* multiplied for the subjective evaluation (*e*) of the goodness/ badness of this outcome. The sum is over the *n* salient beliefs. In this way, we may tend to form a more positive attitude towards behaviors that we believe to produce positive outcomes (consequences) and shun those behaviors associated with negative consequences.

$$A_B \; \alpha \sum_{i=1}^{n} b_i \, e_i$$

Equation 11. Azjen's theory of planned behavior

The same model can be applied to the formation of attitudes toward products. In this case, a multi-attribute model can be deployed in order to understand how consumers use their attribute beliefs in order to form the attitude toward a product which can be seen as a bundle of different attributes. Drawing from the Fishbein's *model of attribute measurement* (1963) the equation above has been amended as follows (equation 13):

$$A_{jk} = \sum_{i=1}^{n} I_{ik} B_{ijk}$$

Equation 12. Amended Fishbein's model of attribute measurement

Where:

- A_{jk} stands for the attitude of consumer *k* toward product *j;*
- I_{ik} stands for the importance consumer *k* do assign to attribute *i;*
- B_{ijk} stands for the belief that consumer *k* holds about the fact that product *j* possess the attribute *i;*
- *k*: respondents/customers;
- *i*: product attribute;
- *j*: product.

9.2 Flynn's five - items questionnaire.

This scale is measured on a seven-point Likert scale where: 1 = "strongly disagree"; 4= "neither agree nor disagree"; 7= "Strongly agree". There are statements in which the scale is "reversed" indicated with "reverse-scored". This means that scores that equal seven are computed as one, six as two, five as three, and so forth.

1) I know pretty much about *wines*.
2) I do not feel very knowledgeable about *wines*. (reverse-scored)
3) Among my circle of friends, I'm one of the "experts" on *wines*.
4) Compared to most other people, I know less about *wines*. (reverse-scored)
5) When it comes to *wines*, I really don't know a lot. (reverse-scored)

9.3 Experimental design: Orthogonal design.

Table 9.3-1 Orthogonal design SPSS

Profile	Bottle Number	Micro-region of origin	History	PDO Logo	International awards	Price
1	included	Included	not included	included	not included	€ 28,99€ to 37,99
2	not included	not included	included	not included	not included	€ 16,99 to 22,99
3	included	not included	not included	not included	not included	€ 22,99 to 28,99
4	included	included	included	included	included	€ 16,99 to 22,99
5	included	not included	included	included	not included	€ 22,99 to 28,99
6	included	included	included	not included	not included	€ 28,99 to 37,99
7	not included	not included	included	included	included	€ 28,99 to 37,99
8	not included	not included	not included	included	not included	€ 16,99 to 22,99
9	not included	included	not included	not included	not included	€ 16,99 to 22,99
10	not included	included	included	not included	included	€ 22,99 to 28,99
11	included	not included	included	not included	included	€ 16,99 to 22,99
12	not included	included	included	included	not included	€ 16,99 to 22,99
13	not included	not included	not included	not included	included	€ 28,99 to 37,99
14	not included	included	not included	included	included	€ 22,99 to 28,99
15	included	not included	not included	included	included	€ 16,99 to 22,99
16	included	included	not included	not included	included	€ 16,99 to 22,99

10 Appendix C:

10.1 Survey structure

First of all “Grazie mille” for taking part in this survey.

You are about to go through a questionnaire that consists of three parts. The questionnaire requires from 5 to 10 minutes to be completed.

In the first one, four general demographic questions will be asked. In the second part, you are asked to complete five questions with scores from 1 to 7. This will help me to understand your personal knowledge about wines. Lastly, in the third section, you will be presented with a scenario, which I kindly ask you to read carefully. When you finish the reading make sure you have understood the scenario. After that, you will be presented with sixteen labels of wine in pairs (8). I ask you to choose the one that appeals to you the most.

One last recommendation: **Please take your time to read and analyze thoroughly the labels presented before making your final choice.**

Before you start: By completing this survey you have the chance to win a bottle of Etna Bianco superior. If you wish to get this chance you have just to send an email with your name and surname to this mail address: marco.patane@outlook.com

First section:

Please select your gender

- Male
- Female

Please select your age range

- 18 to 24 years
- 25 to 34 years
- 35 to 44 years
- 45 to 54 years
- 55 to 64 years
- Age 65 or older

Please select your own education level (highest achieved)

- Middle school graduate (or equivalent)
- High school graduate (or equivalent)
- Some college (1–4 years, no degree)
- Bachelor's degree (BA, BS, etc.)
- Master's degree (MA, MS, etc.),
- Professional or doctorate degree (MD, JD, Ph.D., etc.)

Please select your personal income (€ per year)

- € 0 - 14.999
- € 15.000 - 19.999
- € 20.000 - 24.999
- € 25.000 - 34.999
- € 35.000 - 44.999
- € 45.000 - 54.999
- € 55.000 - 64.999
- € 65.000 - 74.999
- € 75.000 +

Second Section

Please answer the questions below assigning each a score from 1 to 7.

Note that 1 = "strongly disagree" and 7 = "strongly agree".

1) I know pretty much about wines_____

2) I do not feel very knowledgeable about wines_____

3) Among my circle of friends, I'm one of the "experts" on wines_____

4) Compared to most other people, I know less about wines_____

5) When it comes to wines , I really don't know a lot_____

Third Section

You are about to be asked to choose a bottle of wine. In order to make your choice, different labels of the wine will be shown. Therefore, before answering the questions that follow, take your time to read carefully the statement below. Thanks.

Model A:

Imagine a situation in which you want to buy a bottle of wine as a self-reward. It could be paired with your meal or just enjoyed while reading a book or watching a movie and relax after a long day at the university or office.

Your budget is somewhere around 17€ and 50 €. In this regard, you decide to go to the local wine shop where they have the Vigna Parmintazzu.

Model B:

You are invited to a networking dinner with other colleagues and professionals. The person who invited you has said that other colleagues and friends of her/ his are also joining the event and that you had probably never met them before(...). She/he also told you that, usually people bring bottles of wine to this kind of dinner and would be nice if you bring a bottle of wine as well, to share with others.

This can be a good opportunity to get in touch with experienced professionals from various industries and, of course, you don't want to miss the chance to participate and make a good impression.

Your budget is somewhere between 17 € and 50 €. In this regard, you decide to go to the local wine shop where they have the Vigna Parmintazzu.

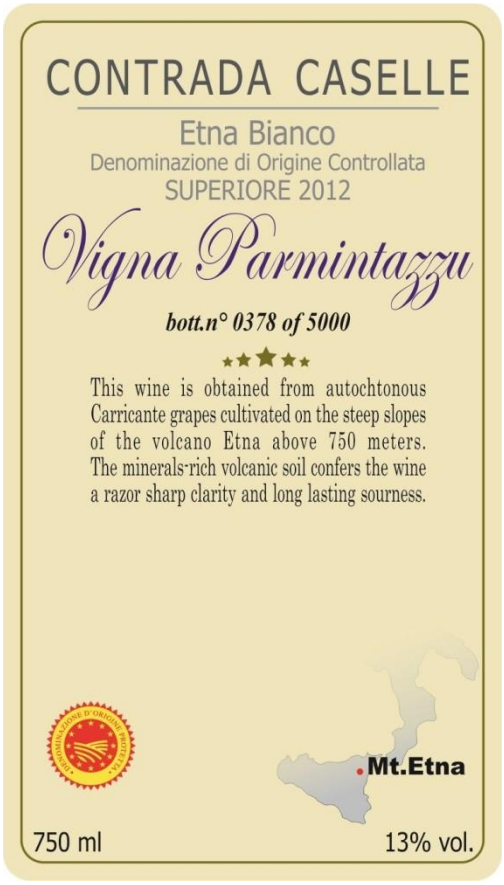
The random question following the presentation of the scenario before moving to the evaluation of the profiles.

- *Given the above, what is the likelihood that you will purchase a wine that is priced between € 16,99 to € 22,99?*
- *Given the above, what is the likelihood that you will purchase a wine that is priced between € 22,99 to € 28,99?*
- *Given the above, what is the likelihood that you will purchase a wine that is priced between € 28,99 to € 37,99?*

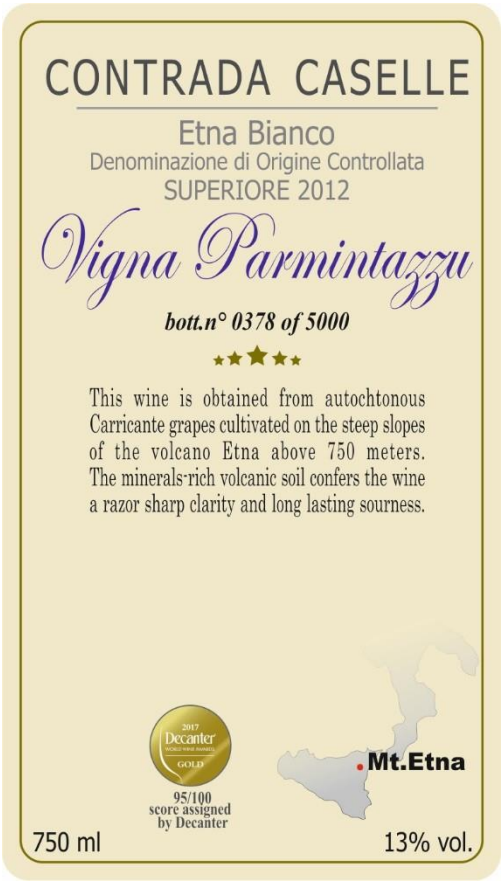
In light of the situation described above, **please take your time to read carefully** the information included on the label and then choose the bottle you would like to purchase. Grazie!

General information about the producer: This wine is produced by a winery established in 1760, based in a little town on the side of the highest active Volcano in Europe, Etna. Its production is limited to a maximum of five thousand bottles per year. The wine results from a single variety of vinification (the grape variety used is Carricante).

1) Profile 1 vs. Profile 16

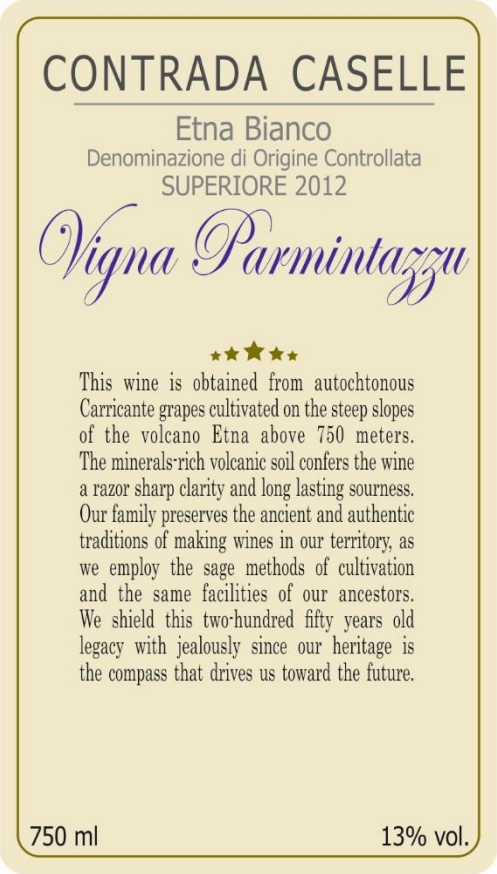


Price Range: € 28,99 to € 37,99

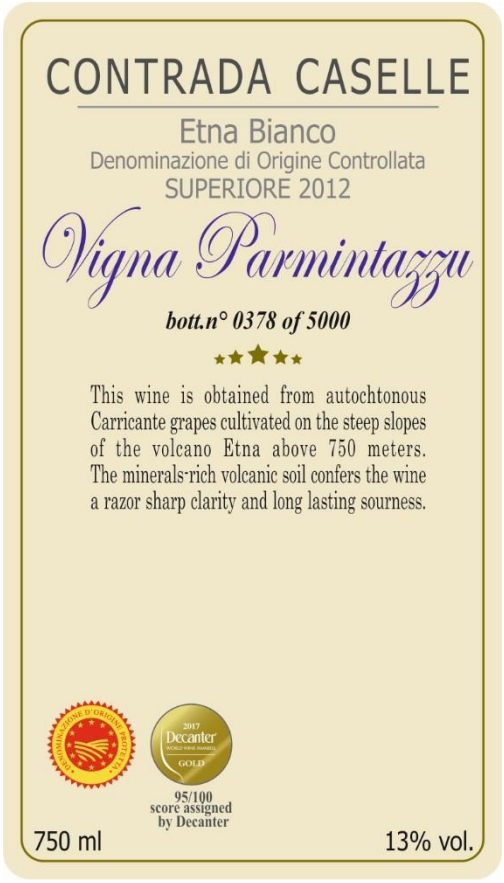


Price Range: € 16,99 to € 22,99

2) Profile 2 vs. Profile 15

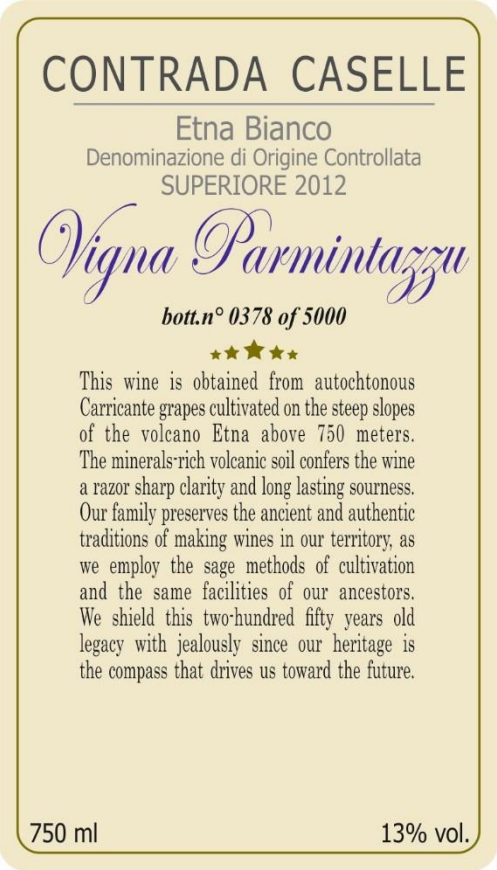


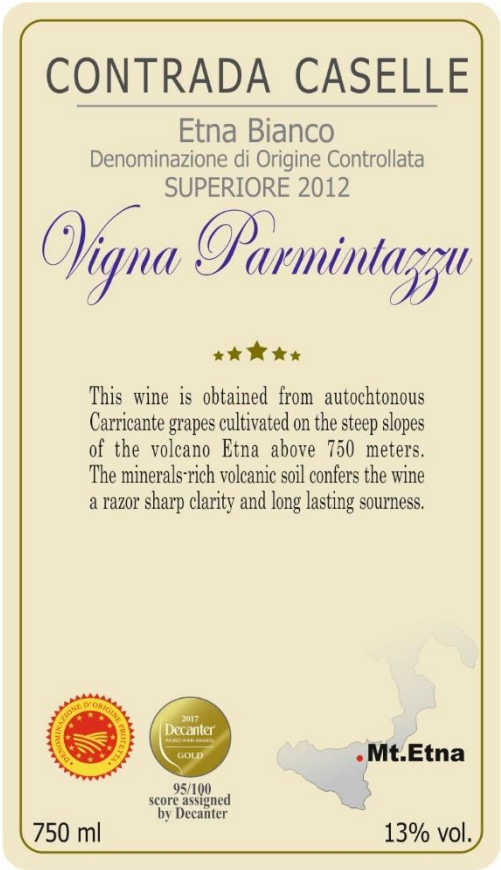
Price Range: €16,99 to €22,99



Price Range: €16,99 to €22,99

3) Profile 3 vs. Profile 14

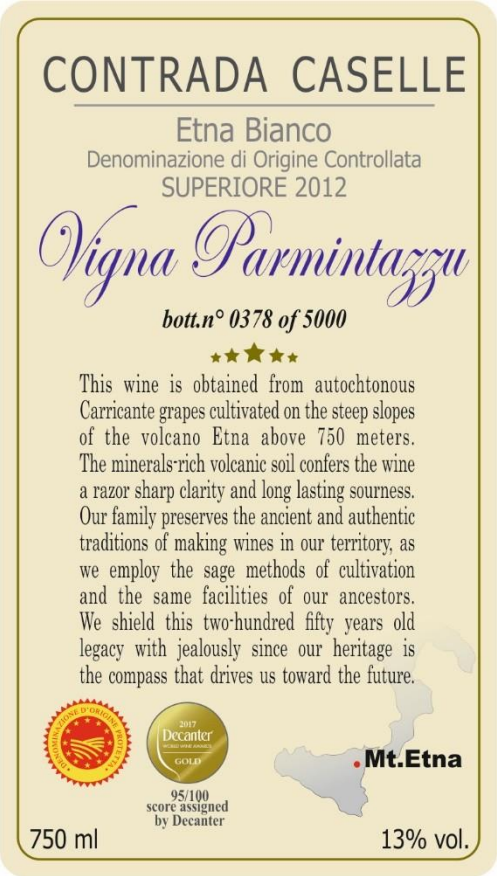




Price Range: €22,99 to €28,99

Price Range: €22,99 to €28,99

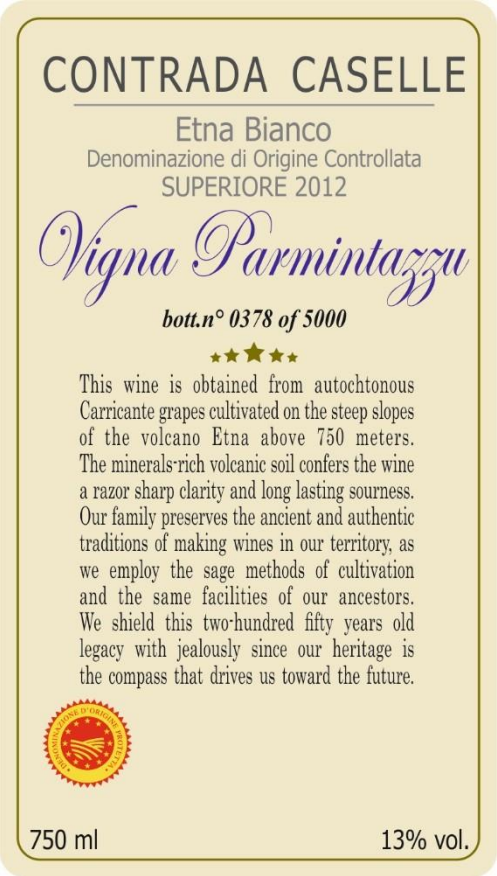
4) Profile 4 vs. Profile 13



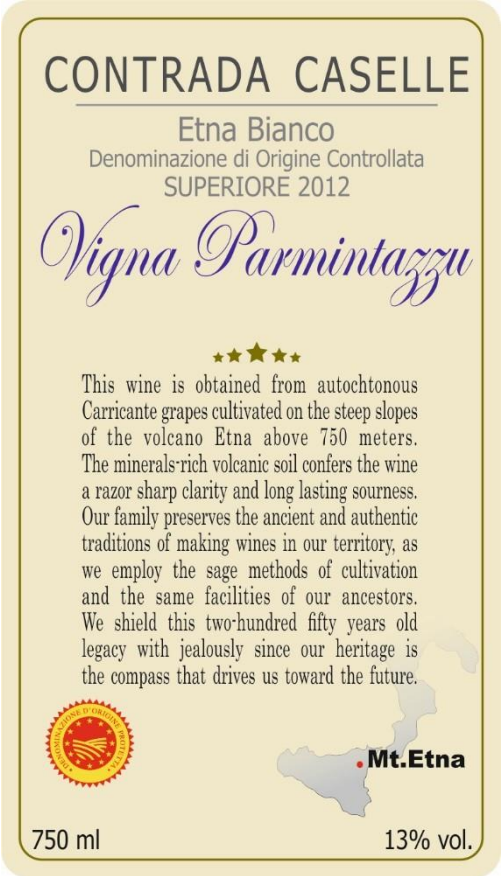
Price Range: €16,99 to €22,99

Price Range: €28,99 to €37,99

5) Profile 5 vs. Profile 12

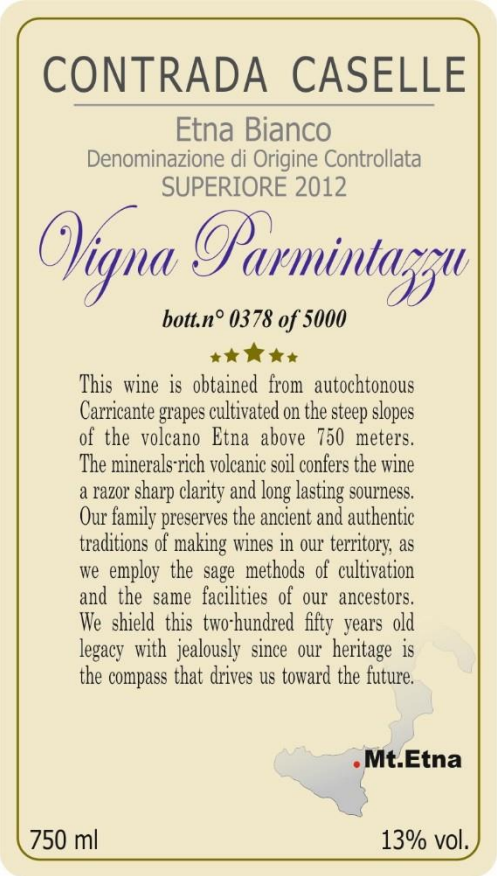


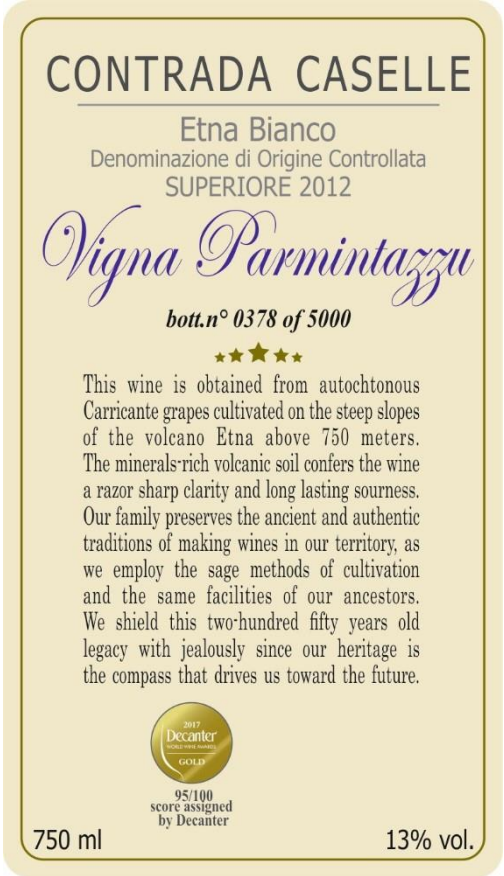
Price Range: €22,99 to €28,99



Price Range: €16,99 to €22,99

6) Profile 6 vs. Profile 11

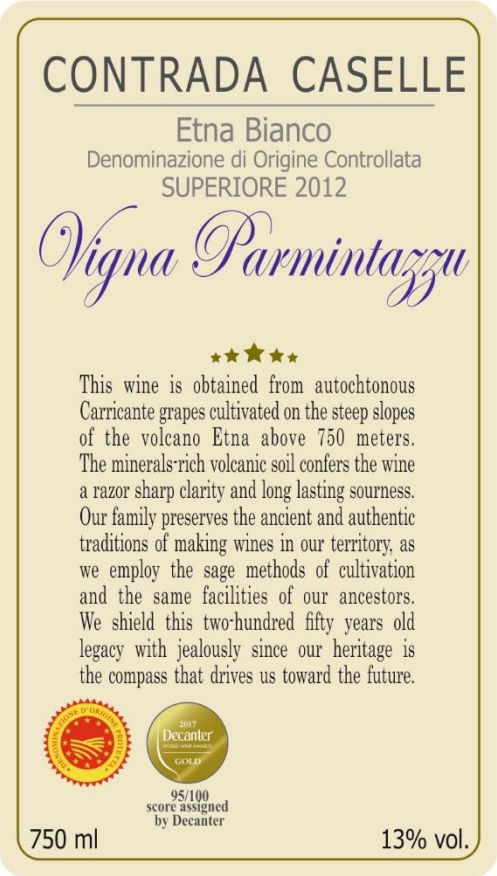




Price Range: €28,99 to €37,99

Price Range: €16,99 to €22,99

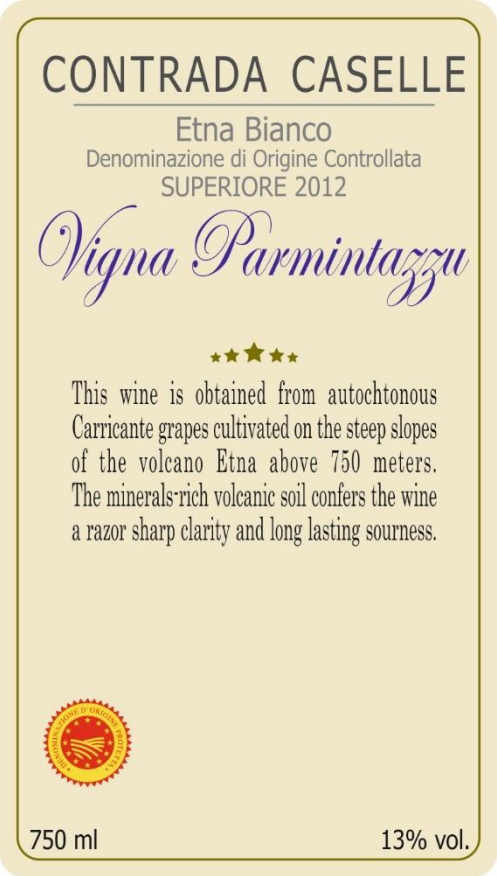
7) Profile 7 vs. Profile 10



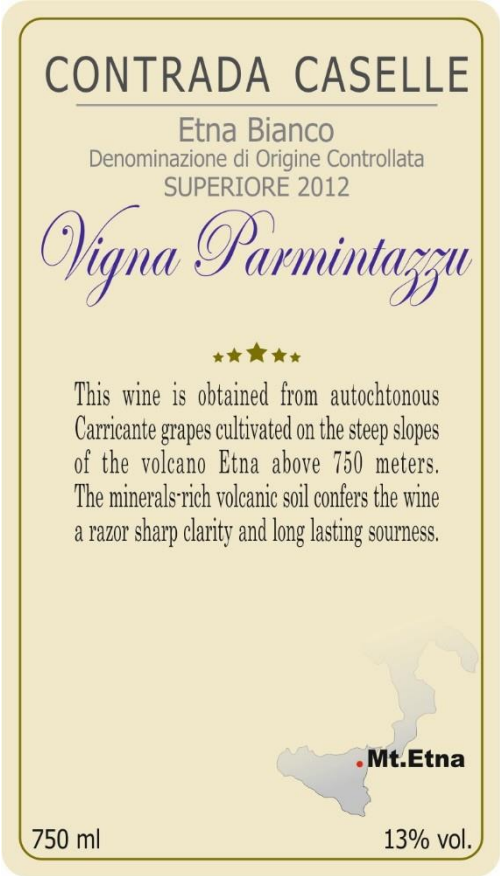
Price Range: €28,99 to €37,99

Price Range: €22,99 to €28,99

8) Profile 8 vs. Profile 9



Price Range: €16,99 to €22,99



Price Range: €16,99 to €22,99

Conclusion

Done...

Thank you for your precious help!

Before you go… remember that If you want to participate in the draw of the bottle of wine you have to send your name and surname to marco.patane@outlook.com

Good luck!

11 Appendix D:

11.1 Tables and Figures of the results.

Table 11.1-1 Demographics.

Variable	Levels	N	Frequency	Average	Range	SD
Income		208				
	0 - 14.999	61	29,3%			
	15.000 - 19.999	28	13,5%			
	20.000 - 24.999	28	13,5%			
	25.000 - 34.999	38	18,3%			
	35.000 - 44.999	23	11,1%			
	45.000 - 54.999	8	3,8%			
	55.000 - 64.999	5	2,4%			
	65.000 - 74.999	4	1,9%			
	75.000 +	13	6,3%			
Frame/Setting						
	Private =1	107	51,4%			
	Public = 0	101	48,6%			
Age						
	18 to 24	25	12,0%			
	25 to 34	90	43,3%			
	35 to 44	55	26,4%			
	45 to 54	24	11,5%			
	55 to 64	12	5,8%			
	65 or older	2	1,0%			
Gender						
	Male	121	58,2%			
	Female	87	41,8%			
Knowledge score				**24,54**	**5-35**	**7,24**
	Knowledge	114	54,8%			
	Non-knowledge	94	45,2%			
Reading Back Labels						
	No	23	11,1%			
	Yes	185	88,9%			
Education level						
	Middle school	5	2,4%			
	High school	25	12,0%			
	Some college	32	15,4%			
	Bachelor's degree	59	28,4%			
	Master's degree	74	35,6%			
	Professional or doctorate degree	13	6,3%			

Table 11.1-2 Group statistics for Frame

Group Statistics

	Frame_Type	N	Mean	Std. Deviation	Std. Error Mean
Gender_Num	Public	101	,42	,495	,049
	Private	107	,42	,496	,048
Age_range_Num	Public	101	2,50	1,055	,105
	Private	107	2,67	1,114	,108
Edu_level_Num	Public	101	3,91	1,209	,120
	Private	107	4,11	1,208	,117
Income_Num	Public	101	3,39	2,311	,230
	Private	107	3,35	2,299	,222

Table 11.1-3 T-test for Frame

Independent Samples Test

		Levene's Test for Equality of Variances		**t-test for Equality of Means**						
									95% Confidence Interval of the Difference	
		F	**Sig.**	t	df	**Sig. (2-tailed)**	Mean Difference	Std. Error Difference	Lower	Upper
Gender_Num	Equal variances assumed	**,019**	**,891**	-,069	206	**,945**	-,005	,069	-,140	,131
Age_range_Num	Equal variances assumed	**,033**	**,855**	-1,181	206	**,239**	-,178	,151	-,475	,119
Edu_level_Num	Equal variances assumed	**,005**	**,944**	-1,200	206	**,231**	-,201	,168	-,532	,129
Income_Num	Equal variances assumed	**,062**	**,803**	,126	206	**,900**	,040	,320	-,590	,671

Table 11.1-4 Group statistics for Knowledge

Group Statistics

	Know_Dum	N	Mean	Std. Deviation	Std. Error Mean
Gender_Num	non_Knowledgeable	102	,45	,500	,050
	Knowledgeable	106	,39	,489	,048
Age_range_Num	non_Knowledgeable	102	2,40	1,007	,100
	Knowledgeable	106	2,76	1,134	,110
Edu_level_Num	non_Knowledgeable	102	4,02	1,251	,124
	Knowledgeable	106	4,01	1,175	,114
Income_Num	non_Knowledgeable	102	2,92	1,838	,182
	Knowledgeable	106	3,79	2,607	,253

Table 11.1-5 T-test for Knowledge

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	**Sig.**	t	df	**Sig. (2-tailed)**	Mean Difference	Std. Error Difference	Lower	Upper
Gender_Num	Equal variances assumed	**3,032**	**,083**	,936	206	**,351**	,064	,069	-,071	,199
Age_range_Num	Equal variances assumed	**2,032**	**,156**	-2,431	206	**,016**	-,362	,149	-,656	-,068
Edu_level_Num	Equal variances assumed	**,976**	**,324**	,060	206	**,952**	,010	,168	-,321	,342
Income_Num	Equal variances not assumed	**7,550**	**,007**	-2,775	206	**,006**	-,871	,314	-1,490	-,252

Table 11.1-6: Coefficients table VIF

Coefficients								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	**Tolerance**	**VIF**
1	(Constant)	,946	,488		1,937	,054		
	Gender	-,893	,234	-,245	-3,820	,000	,983	1,017
	Age	,469	,106	,283	4,443	,000	,999	1,001
	Education	,331	,096	,223	3,469	,001	,983	1,017

Table 11.1-7: Correlation Matrix

Coefficient Correlations					
Model			Education	Age	Gender
1	Correlations	Education	1,000	,024	-,128
		Age	,024	1,000	-,021
		Gender	-,128	-,021	1,000
	Covariances	Education	,009	,000	-,003
		Age	,000	,011	-,001
		Gender	-,003	-,001	,055

Table 11.1-8: Collinearity check

Collinearity Diagnostics							
				Variance Proportions			
Model	Dimension	Eigenvalue	Condition Index	(Constant)	Gender	Age	Education
1	1	3,351	1,000	,00	,03	,01	,01
	2	,492	2,610	,01	,95	,03	,01
	3	,122	5,235	,02	,02	,73	,24
	4	,035	9,763	,97	,00	,24	,75

Table 11.1-9 Structure of the 3x2 ANOVA study (Frame*Price)

Between-Subjects Factors			
Variables		Value Label	N
Price_Category	1	Price_range_Low	68
	2	Price_range_Mid	64
	3	Price_range_High	76
Frame_Type	0	Public	101
	1	Private	107

Table 11.1-10 Price*Frame interaction effect (3x2 ANOVA)

Price * Frame					
Dependent Variable: Prob_Purchase					
				95% Confidence Interval	
Price_Category	Frame_Type	Mean	Std. Error	Lower Bound	Upper Bound
Price_range_Low	Public	4,941	,411	4,131	5,751
	Private	5,706	,411	4,896	6,516
Price_range_Mid	Public	5,300	,437	4,437	6,163
	Private	4,971	,411	4,160	5,781
Price_range_High	Public	6,108	,394	5,331	6,885
	Private	4,718	,384	3,961	5,474

Table 11.1-11 Structure of the 3x2x2 ANOVA study (Frame*Price*Knowledge)

Between-Subjects Factors			
		Value Label	N
Price_Category	1	Price_range_Low	68
	2	Price_range_Mid	64
	3	Price_range_High	76
Frame_Type	0	Public	101
	1	Private	107
Know_Dum	0	non_Knowledgeable	102
	1	Knowledgeable	106

Table 11.1-12 Analysis of Residuals (based on the results of the first seventy records)

Statistics	Expected value	Check of conformity
COO	<1	
LEV	(k+1)/N* ; Values should be close to:	
	.003 (Model 1) **.006 (Model 2)** **.013 (Model 3)**	
DFBETAs	<1	
ZRE	Less than 5% of values <-1.96 & >1.96	
	Not more than 1% of values <-2.58 & >2.58	

**K= n° of predictors; N=n° of cases; Cases that have twice or three times the value of estimated value worth a further investigation (Field, 2013)*