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DE CATALUNYA
BARCELONATECH

Marketing Catalan wine from a value chain approach

by

Cristina Escobar González

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Ph.D. Thesis

Marketing Catalan Wine from a Value Chain Approach



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by Cristina Escobar González

**Ph.D. Program: Sustainability
Universitat Politècnica de Catalunya
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Institut de Sostenibilitat IS.UPC

Ph.D. Thesis:

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To my husband Kobe
For his patience and encouragement

Table of Contents

<i>Abstract</i>	VII
<i>Resumen</i>	IX
<i>Resum</i>	XI
<i>Acknowledgements</i>	XIII
Chapter 1: Introduction	1
References	9
Chapter 2: Assessing the impact of a Christmas advertisement campaign on Catalan wine preference using Choice Experiments	11
2.1 Introduction	12
2.2 Methods	14
2.2.1 The Choice experiments	14
2.2.2 The Econometric model.....	16
2.3 Empirical application	19
2.3.1. Preferences Heterogeneity of wine consumers	22
2.4 Results	24
2.4.1. Heterogeneity analysis results	29
2.5 Discussion	36
References	37
Annex 2.1: Definition and coding of the socio-economic and behavioral variables in the models	41
Annex 2.2: Choice sets of the experiment	42
Chapter 3: Analysis of Consumers' Preferences for a Special-Occasion Red Wine: A Dual Response Choice Experiment Approach	43
3.1. Introduction	44
3.1.1. Consumers' preferences towards wine	46
3.1.1.1. Wine as a difficult product to choose	46
3.1.1.2. Major cues for wine choice	47
3.1.1.3. Risk Reduction Strategies (RRS) in wine choice	48
3.1.1.4. Wine involvement	49
3.1.2. Forced versus non-forced choice.....	50
3.1.2.1. Under which conditions should a researcher include a fixed option?	50
3.1.2.2. What are the econometric implications of both approaches?	51
3.1.2.3. Why do respondents select a fixed alternative as their preferred option?	51
3.1.2.4. Are there other sorts of implications when including a fixed option?	52
3.2. Methods	53
3.2.1 The Dual Response Choice Experiment Design	53
3.2.2 Empirical application	55
3.2.2.1. Sample	55

3.2.2.2.	Attributes and levels	55
3.2.2.3.	Preference heterogeneity variables	57
3.3.	Results	58
3.3.1.	Sample description.....	58
3.3.2.	Estimating aggregate consumer preferences	60
3.3.3.	Estimating the preference heterogeneity	63
3.4.	Discussion	69
3.5.	Conclusions.....	72
	References	73
Chapter 4: Consumers' Wine Preferences in a Changing Scenario.....		79
4.1.	Introduction.....	80
4.1.1.	Catalonia as a Wine Region	80
4.1.2.	Socio-Economic Context in Catalonia.....	81
4.2.	Consumers' preferences towards wine.....	82
4.3.	Methodology: Econometric Modelling of the DCE.....	83
4.4.	Empirical application	86
4.4.1.	Sample	86
4.4.2.	Attributes and Levels	87
4.5.	Results and discussion	89
4.6.	Conclusions.....	93
	References	94
Chapter 5: Marketing Channels for Small Wineries: a Means – End Chain approach.....		99
5.1.	Introduction.....	100
5.2.	Theoretical framework	103
5.2.1.	Business relationships	103
5.2.2.	The Means-End Chain (MEC) theory	105
5.3.	Methodology	106
5.3.1.	The Laddering interview	106
5.3.2.	Data collection.....	108
5.4.	Results and Discussion.....	111
5.5.	Conclusions.....	115
	References	116
Chapter 6: The wine business in the restaurants in Catalonia and the role of the wine distributor.....		121
6.1.	Introduction.....	122
6.2.	Wine and Restaurants	123
6.3.	Empirical Application.....	126

6.4. Results	127
6.4.1. Restaurants' wine list	128
6.4.2. Wine purchases of the restaurants	130
6.4.2.1. Wine PDOs at the restaurant's wine list.....	130
6.4.2.2. The Restaurant's wine supplier	131
6.4.3. Vertical differentiation of the service – Wine supply	132
6.5. Conclusions.....	135
References	137
Annex 6.1. Attributes–Consequences and Consequences–Personal Values Matrices	140
Annex 6.2. Presence and Relevance of the PDOs in the restaurants of the city of Barcelona.....	142
<i>Chapter 7: Conclusions</i>	<i>145</i>
References	150
<i>Thesis' Glossary and Acronyms.....</i>	<i>151</i>

List of Tables

Table 2.1: Survey technical sheet.....	20
Table 2.2: Attributes and levels for consumers' wine preference	22
Table 2.3: Socioeconomic characteristics of the samples in the pre and post experiment ...	24
Table 2.4: Variables related to wine consumption, behavior and knowledge of the samples in the pre and post experiment	25
Table 2.5: Results of HEV model for the pre and post advertisement.	26
Table 2.6: Implicit price of attributes and levels.....	27
Table 2.7: relative change of IP between pre and post advertisement	28
Table 2.8: Results of the HEV model for the Gender (GEN) variable.....	30
Table 2.9a: Average implicit prices (€) of the HEV models for Origin attribute	33
Table 2.9b: Average implicit prices (€) of the HEV models for Grape variety attribute	34
Table 2.9c: Average implicit prices of the HEV models for Wine knowledge attribute	35
Table 3.1: Wine consumption, behavior and attitudes of the sample towards wine	59
Table 3.2: Results of the HEV model for forced and non-forced models using the DRCE design	61
Table 3.3: Implicit price of attributes and levels.....	62
Table 3.4: HEV model for the wine purchase frequency variable using the DRCE design.	64
Table 3.5a: Average implicit prices (€) of the HEV models for ORIGIN attribute	66
Table 3.5b: Average implicit prices of the HEV models for WINE REFERENCES attribute	67
Table 3.5c: Average implicit prices (€) of the HEV models for GRAPE VARIETY attribute	68
Table 4.1: Socioeconomic characteristics of the samples from the experiments performed before and during the economic crisis.....	88
Table 4.2: The GMNL model parameter estimates and goodness of fit	90
Table 4.3: Relative importance (%) of each attribute (origin of the wine, grape variety, wine references and price) obtained from the random parameters estimates of the GMNL model from both DCE: before and during the economic crisis.....	91
Table 4.4: Standard deviations of random parameter distributions of the GMNL model....	92
Table 5.1: Marketing channels for small and medium wineries in Catalonia. Distribution of the wine (%) allocated to each channel. Frequency of use for each marketing channel (%).	101
Table 5.2: Sampling Technical Details	109
Table 5.3: Attribute – Consequences matrix	110
Table 5.4: Consequences – Values matrix	111
Table 5.5: Sample Descriptive Statistics.....	112

Table 5.6: Criteria to include a wine in the product portfolio. Likert scale from 0 (not important) to 10 (very important).....	112
Table 6.1: Sample technical sheet	127
Table 6.2: Sample descriptive statistics. Results are expressed as an average (and standard deviation) or in percentage terms.	129
Table 6.3: Wine list descriptive: Location and Frequency of changes. Results are expressed in percentage terms.	129
Table 6.4: Restaurateurs' criteria to include a wine on their wine list. Results are expressed in percentage terms.	130
Table 6.5: Average and standard deviation (between brackets) of the number of PDOs present in a restaurant, and the number of PDOs important for the restaurant's wine sales.	131
Table 6.6: Number of wine distributors per restaurant and Satisfaction level with the wine distributors –measured on a Likert scale from 0 to 10-. Results express the mean and the standard deviation (between brackets).	131
Table annex 6.1a: Attributes – Consequences matrix	140
Table annex 6.1b: Consequences – Values matrix.....	141
Table annex 6.2a: Presence of the PDOs in the restaurants. Results are expressed in percentage terms over the restaurants included in each category (per total sample and per restaurants' range). Catalan PDOs are shadowed.	142
Table annex 6.2b: PDOs declared to be important in wine sales in the restaurants. Results are expressed in percentage terms over the restaurants included in each category (per total sample and per restaurants' range). Catalan PDOs are shadowed.	143

List of Figures

Figure 1.1. Structure of the thesis	8
Figure 2.1: Example of a choice set	15
Figure 2.2: Summary of the experiment stages	19
Figure 3.1: The Dual Response Choice Experiment Design	53
Figure 5.1: Hierarchical Value Map for wine wholesalers. Cut-off point= 14	115
Figure 6.1: Wine purchases of the restaurants allocated to different types of wine distributors. Aggregated results as an average of percentages (N=170).	132
Figure 6.2: Hierarchical Value Map for restaurateurs related to wine distributors' service. Cut-off point= 30.....	134

Abstract

Wine production has an important contribution to the agro-food sector in Catalonia. PDO wines lead the production; however, their market share in Catalonia is rather low. The overall objective of this thesis is to explore the attitudes towards Catalan wines in Catalonia from a value chain approach. The first part of the thesis focuses on consumers' wine preferences in Catalonia. To tackle this issue, DCE have been applied. The second part of the thesis aims to identify the attributes of a wine supply service that help to develop stable relationships among the actors along the value chain. This part of the research has embraced the main agents of the OOH-consumption, namely wine distributors and restaurateurs. For this analysis the means-end-chain (MEC) methodology has been implemented.

Referring to a red wine for a special occasion, our findings have shown that consumers prefer a Catalan wine made from the *Cabernet Sauvignon* variety and previously tasted by the consumer. However, consumers' preferences are highly heterogeneous. Advertising increased consumer awareness for local wines, but creating taste opportunities could increase the notoriety of Catalan wines in a more profitable way. Methodologically, we have analysed the preference heterogeneity between forced and non-forced choices in a within-sample approach. To do so, a variation of the Dual Response Choice Experiments (DRCE) design has been implemented. This design is an appropriated approach when researchers are faced with the decision of whether to force respondents to choose or to allow them to opt out. On the other hand, the economic crisis may have changed consumers' wine preferences: the price became the most important attribute while the Catalan origin was one of the few that remained significant. Methodologically, the GMNL model has appeared to be an appropriated model to provide more information about the source of consumers' heterogeneity.

Our results from the MEC analysis have shown that a trustful relationship with the winery is the main central issue for wine distributors. The most important personal values for the wine distributors are not business driven and, this is an important finding for small wineries that cannot compete in the market with low(er) prices. From the restaurateur's point of view, our results showed again that trust is a central issue of a business relationship. A wide range of Catalan wines was noted as a way of achieving customers' satisfaction. However, the importance of a wide range of Spanish and world wines was found to have an even stronger connexion with customers' satisfaction.

Resumen

La producción de vino en Catalunya contribuye al sector agroalimentario de manera importante. Sus vinos con DOP lideran la producción, sin embargo, su cuota de mercado en Catalunya es relativamente baja. El objetivo general de esta tesis es explorar las actitudes hacia los vinos catalanes en Catalunya enfocándonos en su cadena de valor. La primera parte de la tesis se centra en las preferencias del consumidor de vino, abordando este asunto a partir de Experimentos Discretos de Elección. La segunda parte identifica qué atributos del servicio de suministro de vino ayudan a desarrollar relaciones estables entre los principales actores de la cadena de valor de consumo extradoméstico, distribuidores de vino y restauradores. Metodológicamente, este análisis se ha implementado a partir de la cadena de Medios-Fin.

En relación a un vino tinto para una ocasión especial, se ha identificado que el consumidor escoge un vino Catalán, de uva *Cabernet Sauvignon* y ya experimentado previamente. Sin embargo, las preferencias del consumidor son muy heterogéneas. La publicidad puede aumentar el conocimiento de los vinos locales. No obstante, generar oportunidades de cata podría aumentar su notoriedad de manera más rentable. Metodológicamente, se ha analizado la heterogeneidad de las preferencias entre elecciones forzadas y no forzadas dentro de una única muestra. Para ello se ha implementado una variación de los Experimentos de Elección de Doble Respuesta (DRCE). Los resultados recomiendan utilizar este diseño cuando los investigadores deben decidir si forzar o permitir la opción de no elección. Por otro lado, la crisis económica puede haber afectado a las preferencias de los consumidores: el precio pasa a ser el atributo más importante mientras que el origen catalán es uno de los pocos que se ha mantenido significativo. Metodológicamente, el modelo GMNL ha demostrado ser un modelo apropiado para proporcionar mayor información acerca de la heterogeneidad de los consumidores.

Respecto al análisis Medios-Fin, para el distribuidor de vino, se han demostrado que, la confianza en la bodega ocupa una posición central y que sus principales valores personales no tienen una motivación económica. Esta es una conclusión importante para las bodegas pequeñas que no pueden competir en el mercado con precios (más) bajos. Según el restaurador, la confianza ocupa de nuevo una posición importante en las relaciones de negocios. Por otro lado, para satisfacer a los clientes es importante disponer de una amplia gama de vinos catalanes. No obstante, la importancia de una amplia gama de vinos españoles y del mundo ha sido aún mayor.

Resum

La producció de vi a Catalunya contribueix al sector agroalimentari de manera important. Els seus vins amb DOP lideren la producció, tanmateix, la seva quota de mercat a Catalunya és relativament baixa. L'objectiu general d'aquesta tesi és explorar les actituds vers els vins catalans a Catalunya amb un enfocament de cadena de valor. La primera part de la tesi es centra en les preferències del consumidor de vi, abordant aquesta qüestió a partir d'Experiments Discrets d'Elecció. La segona part de la tesi ha identificat quins atributs del servei d'aprovisionament de vi ajuden a desenvolupar relacions estables entre els principals actors de la cadena de valor de consum extradomèstic, distribuïdors de vi i restauradors. Metodològicament, aquest anàlisi s'ha implementat a partir de la cadena de Mitjans-Fi.

En relació a un vi negre per a una ocasió especial, s'ha identificat que el consumidor escull un vi català, de la varietat *Cabernet Sauvignon* i ja tastat anteriorment. Tanmateix, les preferències del consumidor han estat molt heterogènies. La publicitat pot fer augmentar el coneixement dels vins locals. No obstant, generar oportunitats de tast podria augmentar la notorietat dels vins catalans de manera més rendible. Metodològicament, s'ha analitzat l'heterogeneïtat de les preferències entre eleccions forçades i no forçades dins d'una única mostra. Per tal de fer-ho, s'ha implementat una variació dels Experiments d'Elecció de Doble Resposta (DRCE). Els resultats recomanen utilitzar aquest disseny quan els investigadors han de decidir si forçar o permetre l'opció de no elecció. D'altra banda, la crisi econòmica pot haver afectat les preferències dels consumidors: el preu ha passat a ser l'atribut més important mentre que l'origen català és un dels pocs que s'ha mantingut significatiu. Metodològicament, el model GMNL ha demostrat ser un model apropiat per proporcionar major informació sobre l'heterogeneïtat dels consumidors.

Respecte a l'anàlisi Mitjans-Fi, pel distribuïdor de vi, s'ha posat de manifest que la confiança en el celler ocupa una posició central i que els seus principals valors personals no tenen una motivació econòmica. Aquesta conclusió és important pels cellers petits que no poden competir en el mercat amb preus (més) baixos. Segons el restaurador, la confiança ha ocupat de nou una posició important en les relacions de negocis. D'altra banda, per tal de satisfer els clients, és important disposar d'una àmplia gamma de vins catalans. No obstant, la importància d'una àmplia gamma de vins espanyols i del món ha estat superior.

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Chapter 1: Introduction

Spain ranks as the third wine producing country in the world, after Italy and France. With 24.0 million hectolitres in 2015, Spain is the largest world exporter in volume which represented 23.1% of the world's wine exports (OIV, 2016). In many areas of Spain, the vineyard is a key crop for sustainable development.

Catalonia accounts for 8.74% of the wine production in Spain (year 2015): more than 3.2 million hectolitres are produced every year (average 2011-15) (OIV, 2016; OVVC, 2016a). Its production is highly specialized in quality wines, as more than 90% of the grape-growing surface is inscribed as one of the 12 Protected Designations of Origin (PDO) from the region (IDESCAT, 2013). Its main specialised areas are located in the provinces of Barcelona and Tarragona, which produce more than 90% of all the Cava (sparkling wine) from Spain (PDO Cava). The wine sector in Catalonia, as it is in Spain, represents an important fraction of the agriculture and the food industry. The relevance of the sector is multifunctional: not only in its contribution to the economy, but also to the social identity, and to the landscape (Kallas *et al.* 2012).

Wine consumption in Catalonia has been showing a continuous downward trend for decades. From 2000 to 2015, household wine consumption decreased by 34.0%: from 21.86 litres to only 14.50 litres per capita. But in spite of this negative trend, the consumption of quality wines has increased during the same period by 36.9%, up to 4.50 litres per capita (MAPAMA, 2016). From these data we can thus conclude that consumers are changing their habits: the demand for higher-quality wines is increasing while the consumption of other wines, more specifically the consumption of table wines, decreases.

Despite these trends, Catalan PDO wines only represent 32.5% of the total quality wine consumed in Catalonia (INCAVI, 2016); a rather small market share. Their main competitors are the Spanish quality wines, particularly those from *La Rioja* (Kallas *et al.*, 2013). This low positioning occurs while Catalan wine production orientates towards quality and its wines are internationally acknowledged (IDESCAT, 2013; Tolosa and Antúnez, 2014). This situation also occurs for the Out-of-home (OOH) consumption: Catalan PDO wines in the Hotels, Restaurants and Cafeterias (HORECA) sector gather collectively a relatively low market share, specifically 32.6% (INCAVI, 2016).

The Catalan wine industry could greatly benefit from achieving successful relationships with the HORECA sector in Catalonia. The restaurateur is the key figure

to promote wines in a restaurant situation and his/her recommendations have an influence on the restaurant' wine sales (INCAVI, 2007). Marketing wines for the OOH consumption greatly relies on the wine distributor and their importance cannot be overemphasized; also from the wineries' point of view. Small and medium wineries' depend greatly on the wine distributors to access the market. Especially smaller wineries in Catalonia, many of which have suffered a situation of economic losses in the last years (OVVC, 2016b), need to establish good business relationships with the actors in charge of providing them a marketing channel.

The overall objective of this thesis is to explore the attitudes towards Catalan wines in Catalonia from a value chain approach. The reasons that cause such a low market share for the Catalan wines, which quality has been internationally acknowledged, are unclear. In this thesis we aim to shed some light about the present situation and to develop strategies to increase the consumption of Catalan wines in Catalonia. In the literature there are many studies that explore a market situation, or reveal the underlying reasons for achieving more or less market success. However, these studies generally focus on consumers or on a single step in the value-chain. To our knowledge, this is the first study that approaches a value chain perspective of the marketing of the wine sector in Catalonia. In this way, this thesis covers a standpoint on household and on out-of-home wine consumption in Catalonia.

This overall objective of the thesis is doubly-addressed. The first part of the thesis aims to shed some light on consumers' wine preferences in Catalonia. Our focus is specifically addressed towards red wines for special occasions, paying attention to the origin of the wine. This thesis is therefore relevant to consumer behaviour associated with wine purchases in Catalonia, where the place-based and the region-of-origin branding attempt to influence the consumers' decisions.

The second part of this thesis aims to identify the attributes of a wine supply service that help to develop stable relationships among the actors along the value chain. This part of the research has embraced the main agents of the OOH-consumption marketing chain, namely wine distributors and restaurateurs. In this way, the wine supply service is taken as a case of study; a topic on which little literature is available.

The present thesis applies two methodologies according to our two different targets of study: the analysis of consumers' wine preferences is implemented by means of Discrete Choice Experiments (DCE), while for the analysis of a service in a business

to business relationship (wine supply), a means-end-chain (MEC) approach has been performed.

The DCE have been widely used in the literature to obtain consumers' and/or citizens' preferences towards market and non-market goods and services. They belong to the stated preference type of methods and they are based on the creation of a hypothetical market for the analysed goods and services. The DCE rely on Lancaster's Theory of Value (Lancaster, 1966). The theory proposes that the utility of a product can be decomposed into separable utilities associated to the product's characteristics or attributes. The DCE are also based on the Random Utility Theory (Thurstone, 1927) which proposes that individuals choose among alternatives according to a utility function, which they try to maximize within a budgetary restriction. The utility function involves two main components: a systematic (observable) component and a random error term (non-observable).

The DCE indirectly identify the individual's utility function by examining the trade-offs of attributes associated to a product when making choice decisions. This is achieved by facing consumers with choice sets that confront several alternatives of a product. The product is described with several attributes with varying levels. Consumers are asked to select which alternative do they prefer within each choice set, thereby revealing his/her preferences for certain attributes and levels. Subsequently, the relative importance of the attributes can be indirectly retrieved from consumers' choices. Consumers' or/and citizens' preferences are obtained by means of probabilistic choice models applied to the data obtained from the DCE.

The Multinomial Logit Model (MNL) is one of the most employed models for dealing with CE-sampled data (Adamowicz *et al.*, 1998). However, several assumptions underlie the formulation of this model. In this thesis, the Heteroskedastic Extreme Value (HEV) model and the recently developed Generalized Multinomial Logit model (GMNL) are applied.

These models overcome the limitations of the MNL that imply that: (1) there are no common unobserved factors affecting the utilities of the various alternatives (IIA, Independence of Irrelevant Alternatives restrictive assumption), and; (2) that the extent of variation in the unobserved factors affecting utility is the same across all alternatives (IID, the random components of the utilities of different alternatives are Independent and Identically distributed). In this sense, the HEV model relaxes these assumptions

allowing for a non-identical random components distribution (Bhat, 1995 and 2000). Besides, concerning the recently developed GMNL model, its implementation can provide further information about the unobserved heterogeneity of the results. An objective of this thesis is to implement these advances in the modelling of DCE to assess consumers' preferences of wine in Catalonia.

In the application of the CE, researchers usually use two approaches for the construction of their choice sets. The first approach relies on forcing participants to select a product from a set of alternatives, whereas the second approach includes a "fixed alternative" in the choice set and thus allows a no-choice response. This option can be defined as an opt-out option (null-option or outside option), in which neither the hypothetical product nor the alternatives are preferred. This thesis presents a variation of the "Dual Response Choice Experiment" (DRCE) design which provides a comparison between forced and non-forced choices in a within-sample approach (chapter 3). This is one of the contributions of this thesis to the literature related to the DCE design.

The analysis of the wine supply service in a business to business relationship has been tackled by means of the Means-End chain (MEC) approach. This methodology identifies the linkages that the purchaser establishes between the attributes of the service (wine supply), the benefits they symbolize and the personal values they try to realize through them. Thus, the wine distributors and the restaurateurs have assessed the wineries and the distributors' attributes, respectively, in order to achieve their desired end states. In other words, the purchaser will point out which sellers' attributes provide a greater success in their relationship. This methodology allows to determine more appropriate ways to develop stable relationships among the actors along the value chain. Furthermore, the MEC approach is especially interesting for exploring highly saturated markets in which achieving a proper distribution becomes more difficult.

The main body of this dissertation is organized in five chapters, which are briefly described below. The first three chapters focus on consumers' wine preferences in Catalonia, while the other two are dedicated to the wine marketing channels in Catalonia. To guide the reader, a structure of the thesis is shown in figure 1.1.

Regarding consumers, chapter 2 studies the relative importance of several wine attributes to describe consumers' preferences to purchase wine. The study also assesses

the impact of information and advertisement on consumers' preferences for wines to be consumed in a special occasion (Christmas). To our knowledge this was the first study of wine preferences that was performed in Catalonia. To model the CE data the Heteroskedastic Extreme Value (HEV) model was employed to analyse aggregated consumer preferences and preference heterogeneity. The HEV model allows relaxing the Independence of Irrelevant Alternatives (IIA) restrictive assumption. The application of this newer model is one of the contributions of this chapter.

In addition, Chapter 3 continues exploring consumers' wine preferences for a special occasion in Catalonia by means of DCE and applying the HEV model. In this case, a variation of the "Dual Response Choice Experiment" (DRCE) design is applied. This is a main contribution to the few empirical works that analyse the preference heterogeneity between forced and non-forced choices in a within-sample approach. Moreover, the paper develops two indexes that measure consumers' wine involvement and their attitudes toward the local product. These indexes can perform as variables for consumer segmentation.

In chapter 4, consumers' wine preferences from two different scenarios are compared. The chapter employs the CE data from chapters 2 and 3, which were obtained before the economic crisis. Its results are compared to consumers' wine preferences that were obtained during the economic crisis. To our knowledge this is the first application in the literature of wine preferences to measure the impact of the contextual changes (economic and political) in Catalonia. This paper contributes to the literature of the Discrete Choice Modelling (DCM) by using the recently developed Generalised Multinomial Logit (GMNL) model. The GMNL model provides additional information about the source of consumers' unobserved heterogeneity.

The following two chapters -chapters 5 and 6- focus on the main agents of the OOH-consumption marketing supply chain, namely wine distributors and restaurateurs. In both cases, the MEC methodology was applied. Chapter 5 explores the wine distributor's main business motivations, and how to pursue these in his/her business relationships with the wineries. These results will allow us to develop marketing strategies aimed to achieve that small units in the wine sector gain competitive advantages in front of the wine distributor.

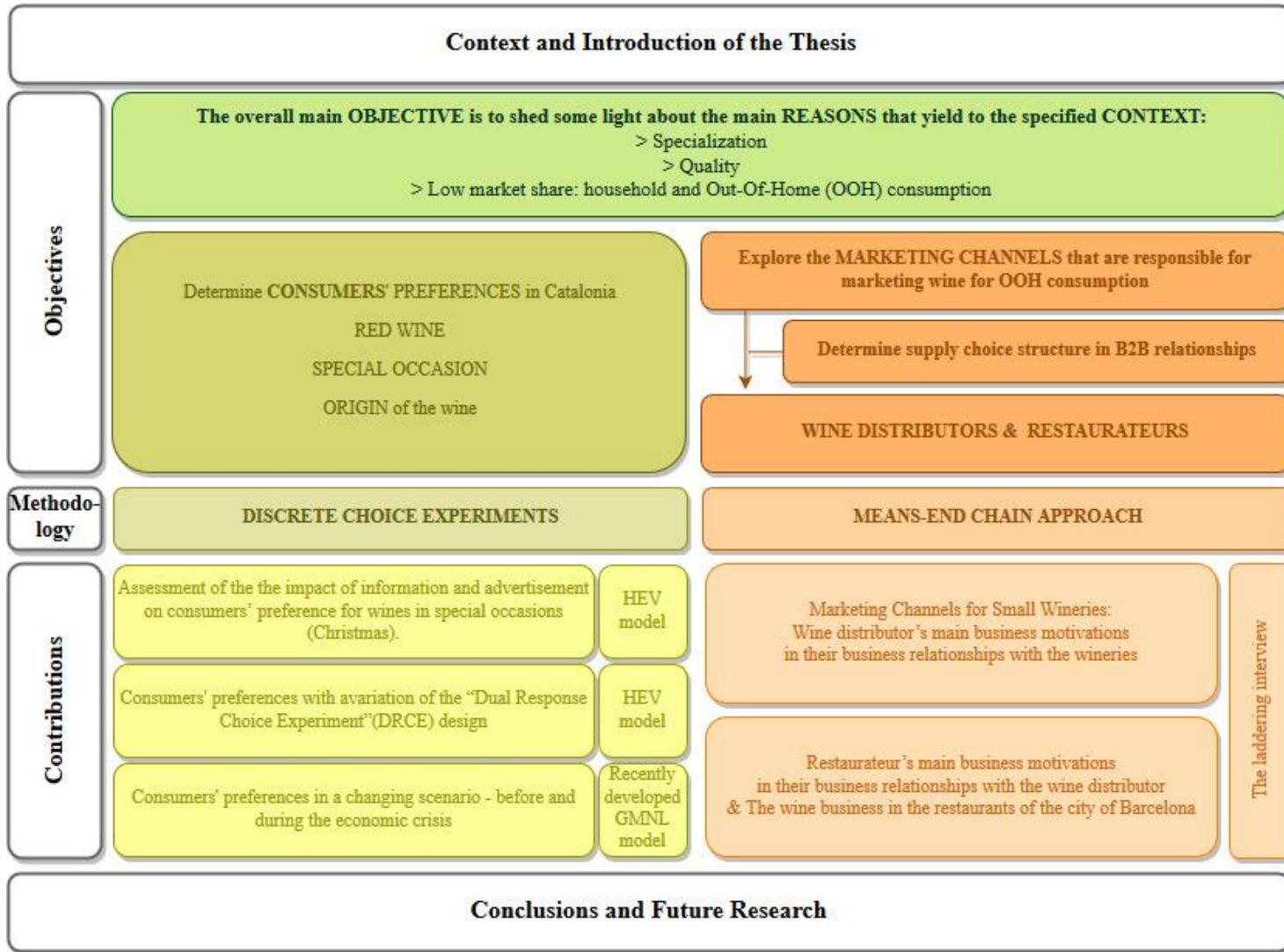
Chapter 6 follows a vertical differentiation for the wine distribution service as in chapter 5. However, in this occasion, the analysis is performed from the restaurateur's

point of view. Little research has explored the wine supply as a service and this is a part of our contribution to the literature. Chapter 6 also explores the restaurants' wine business of the city of Barcelona, which to our knowledge is the first study in Catalonia of this kind.

The dissertation chapters above mentioned (chapters 2 to 6) have been written as a scientific article and are published or have been submitted for publication consideration in different scientific journals. The first paper, chapter 2, assesses the impact of a Christmas advertisement campaign on Catalan wine preference using Choice Experiments. The paper has been published in *Appetite* (Kallas, *et al.*, 2012). The second paper, chapter 3, analyses consumers' preferences for a special-occasion red wine, following a dual response choice experiment approach. The paper has been published in *Food Quality and Preference* (Kallas, *et al.*, 2013). The third paper, chapter 4, analyses consumers' wine preferences in a changing scenario, before and during the economic crisis. The article is currently being considered for publication in the *British Food* journal (first round review). These three chapters compile the research of the present thesis related to consumers' preferences.

Chapters 5 and 6 explore the actors of the value chain that are in charge of marketing wine for the out-of-home consumption, such as wine distributors and restaurateurs. Both papers follow a means-end-chain methodology. Chapter 5 explores the marketing channels for small wineries, focusing on the wine distribution. This paper has been published in *New Medit* (Escobar and Gil, 2016). Chapter 6 explores the wine business of the restaurateurs of the city of Barcelona, focusing on the wine distribution service. The article will be sent for publication in a peer review journal from the area of hospitality management.

Figure 1.1. Structure of the thesis



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**Chapter 2: Assessing the impact of a Christmas advertisement
campaign on Catalan wine preference using Choice
Experiments**

2.1 Introduction

Wine is a difficult and confusing product for consumers to choose (Lockshin *et al.*, 2006). This difficulty lies on the immense number of cues that hang from wine in comparison with many other products. To start with, wine differentiates by type: red, white, rosé, sparkling, liquored or others. Within each category, the amount of cues is yet very large, ranging from the country of origin - and for European wines also the Designations of Origin -, to the brand name, price, its awards or its packaging and labels. Intrinsic cues are also relevant in the wine market, such as quality and taste, vintage, grape variety – or varieties –, and/or alcohol content. As a consequence, the large range of wines available in the market makes consumer choices more complex than the choice of many other food products. Such complexity generates some difficulties when trying to determine the key factors that intervene in the consumer's decision making.

Price is a commonly used attribute to infer the quality of a product. Generally it will perform as a proxy when the product cannot be evaluated or when the perceived risk of making a wrong choice is high (Lockshin and Hall, 2003; Spawton, 1991; Mitchell and Greatorex, 1988; 1989; Zeithaml, 1988). The risk or the quality required for the consumer, nevertheless, changes depending on the consumption occasion (Quester and Smart, 1998; Lockshin and Hall, 2003). Therefore, consumers' willingness to pay will vary with the occasion. Hall and Lockshin (2000) determined that high price was important when a consumer was purchasing wine in order to impress a business associate or to celebrate a special anniversary. Low price was important, when the situation was to relax at home by oneself, or for entertaining at an informal party or BBQ.

Brand name is also used to diminish the risk or as a proxy of the quality, even considered as the key unit of decision (Ehrenberg, 1988, in Lockshin and Hall, 2003). Consumers' minds in our super-communicated societies reject to store the information that they are not able to assimilate (Ries and Trout, 1981). Therefore, the amount of information that consumers use to make a decision is small (Foxall, 1983; Olshavsky and Granbois, 1979; Lockshin and Hall, 2003). Consumers are shown to develop a small brand repertoire, which may well be a collection of true brands and generic types (Lockshin and Hall, 2003; Gluckman, 1990). This generic type might build itself based on the region of origin and/or grape variety.

The origin of the wine plays also a key role in the consumers' decision making process (Keown and Casey 1995; Gluckman, 1990; Skuras and Vakrou, 2002). In addition, the designation of origin is also determining (Angulo *et al.*, 2000; Gil and Sánchez, 1997; Quester and Smart, 1998; Rasmussen and Lockshin, 1999), although its importance depends on the country of study (Lockshin *et al.*, 2006; Goodman *et al.* 2007). In Spain, Angulo *et al.* (2000) claimed that the region and the vintage are the main determinants of wine prices. Other studies (Mtimet and Albisu, 2007; Sánchez and Gil, 1997; Gil and Sánchez, 1997) have also shown the relevance of the region of origin, although none of these were located in Catalonia.

Spain is the third wine producing country in the world, after France and Italy. In 2006 Spain produced more than 38 million hectolitres of wine (OIV, 2006). The wine sector in Catalonia, as in overall Spain, represents an important fraction of its agriculture and food industry. Its relevance lies on its contribution to the economy as well as on the social identity and on the landscapes that it confers. In Catalonia there are 12 Protected Designations of Origin (PDO), including the PDO Cava¹. They represent more than 90% of the grape growing surface in Catalonia (IDESCAT, 2007), which means that wine production is specialised in quality wine or, in its European terminology, Quality Wines Produced in Specified Regions (QWPSR).

Wine household consumption in Catalonia has diminished from 21.1 litres per capita in 1999 to 13.2 in 2009 (MAPAMA, 2010). Nevertheless, for the same period, quality wine consumption has risen 14.2%. Thus, the consumer seems to be experiencing a change of habits, diminishing the frequencies of wine consumption, but demanding higher quality wines. Along with the previous data, the market share of Catalan PDO wines in retailer channels and in the HORECA sector in Catalonia is low, concentrating all together the 27.1% in the rolling year ended in September 2007 (INCAVI, 2007).

Under this environment, the local wine authority of Catalonia (INCAVI, the Catalan Vine and Wine Institute) has approved a strategic plan to highlight the "origin" attribute of the Catalan wine as a relevant factor for consumers' decisions. Thus, in Christmas 2007 an advertising campaign for local wines was launched. The campaign took place before and during Christmas holidays to stimulate local wine consumption in those dates, as well as to improve Catalan wine notoriety and fidelity amongst local

¹ The PDO Cava exclusively produces Cava, which is a quality sparkling wine produced by the Traditional method (sometimes referred as Champenoise method, although that terminology was outlawed in Europe in 1994).

consumers. It consisted of a television advertisement and the exhibition of posters placed on the urban city buses of Barcelona².

In this paper we compare wine stated preferences of 699 Catalan wine consumers, by means of a Discrete Choice Experiment (DCE), before and after the above mentioned campaign. Our main goal is to determine consumers' preferences towards wine consumed in a special occasion as well as to find out whether they have been modified after the advertising campaign. In particular, we will focus our interest in those preferences regarding the origin attribute of the wine.

The chapter is structured as follows: in section 2.2 we discuss the methodological framework. The empirical application is commented in section 2.3. The main results are discussed in Section 2.4 and the chapter ends with some concluding remarks.

2.2 Methods





2.2.1 The Choice experiments

The CE belongs to the stated preference type of methods and is based on the creation of a hypothetical market for the analyzed goods and services. Individuals are asked which product they would buy from a set of competitive products at different prices. The application of the CE implies the presentation to “*subjects*” of an array of “*choice sets*” representing different possible states of the good of interest. Subjects are asked to choose the “*alternative*” that they consider the best within each choice set. An example of a choice set for wine alternatives can be seen in Figure 2.1.

In the construction of the choice sets, researchers usually face two approaches: a) in the first one, respondents are given the possibility to choose neither of the products offered in the choice sets, allowing for a non-forced choice task. In this case a new alternative is included in the choice set known as “no-election”, “no-option” or “opt-out” alternative that allow respondents not choose any of the products. As this alternative is constant among all offered choice sets it is also identified in CE literature as “fixed alternative”. b) The second approach relies on excluding from the choice sets the abovementioned alternative imposing consumers to select their preferred product in a forced choice task.

² We are able to send the spot under request.

Figure 2.1: Example of a choice set

ELECTION # 1	Alternative "A"	Alternative "B"
Origin (A ₁) 	Catalonia	Spain
Knowledge (A ₂) 	Personal experience	Recommended
Variety (A ₃) 	Merlot	Cabernet Sauvignon
Price (A ₄) 	€6	€10
Supposing these options are the only ones available, which would you buy?	<input type="checkbox"/>	<input type="checkbox"/>

The issue of including or excluding the “opt-out” alternative in choice experiments has been addressed by several studies highlighting among others Dhar, 1997; Dhar and Simonson, 2003, and; Haaijer *et al.*, 2001. The decision to include or not a forced option depends on the objective of the study (Dhar, 1997; Dhar and Simonson, 2003; Bech and Gyrd-Hansen, 2005; Carlsson *et al.*, 2007). While, the non-forced choice increases the realism of the hypothetical simulated market (Batsell and Louviere, 1991; Carson *et al.*, 1994), the forced choice can be a valid option when: a) the interest of the study is to compare levels and attributes or alternatives (Carlsson *et al.*, 2007), b) the procrastination of the choice is damaging, i.e. the cost of delay is high or the product is needed (Dhar and Simonson, 2003) and c) to avoid potential “greater easy way out” (Blamey and Bennett, 2001). Further details of this methodology can be found in Hensher *et al.*, 2005; Bennett and Blamey, 2001; Louviere *et al.*, 2000; and, Adamowicz *et al.*, 1998; among others.

In this chapter we have principally used the forced choice approach due to the three reasons found out from the literature, as previously mentioned. First, as we try to analyze the position of the “origin” attributes compared to the other descriptors, as well the relevance of the advertisement campaign on the magnitude of this attribute, our interest of study falls under the category of comparing levels and attributes or alternatives (Carlsson *et al.*, 2007). Second, we suppose that the procrastination of the choice is damaging, since the timing of the experiment is Christmas and consumers are “forced” to buy wine for celebrations. Thus the cost of delay is high since the product is

needed (Dhar and Simonson, 2003). Third, since our objective is to compare the pre and post experiment results, we need to control the potential “greater easy way out” obtained from the no-choice option (Blamey and Bennett, 2001). In this context, we hypothesize, that consumers in the post experiment (after Christmas) are more likely to choose the non-choice option as the interest of celebration has passed.

In choice experiments, subjects choose among alternatives from a choice set according to a utility function with two components: a systematic (observable) component and a random term (non-observable) as follows:

$$U_{in} = V_{in}(X_i, S_n) + \varepsilon_{in} \quad [1]$$

where U_{in} is the utility provided by alternative i to subject n , V_{in} is the systematic component of the utility, X_i is the vector of attributes of alternative i , S_n is the vector of socio-economic characteristics of the respondent n , and ε_{in} is the random term.

Due to the presence of the random component in the utility function, the researcher will never be able to perfectly predict the subjects’ preferences. As a consequence, we deal with a stochastic problem that can be solved by defining the “probability of election”. Thus, the probability that an individual n chooses the alternative i rather than the alternative j (for any i and j belonging to the space of alternatives considered, C_n), is equivalent to the probability that U_i is greater than U_j . This condition is given by:

$$\Pr(i/C_n) = \Pr[U_{in} > U_{jn}] = \Pr(V_{in} + \varepsilon_{in} > V_{jn} + \varepsilon_{jn}) \quad \forall j \in C_n \setminus \{i\} \quad [2]$$

Which is equivalent to:

$$\Pr(i/C_n) = \Pr[(V_{in} - V_{jn}) > (\varepsilon_{jn} - \varepsilon_{in})] \quad \forall j \in C_n \setminus \{i\} \quad [3]$$

According to this equation, since the random components are not observable, it is enough that analysts estimate the probability that $(V_{in} - V_{jn})$ is greater than $(\varepsilon_{jn} - \varepsilon_{in})$.

2.2.2 The Econometric model

Among the probabilistic choice models, the Multinomial Logit Model (MNL) is one of the most employed models for dealing with CE-sampled data (Adamowicz *et al.*, 1998). Several assumptions underlie the formulation of this model. One of the most important is that the random components of the utilities of the different alternatives are independent and identically distributed (IID) with a type I extreme-value (or Gumbel)

distribution. Such a distribution in the error term allows for the verification of the independence of irrelevant alternatives (IIA) property, known as Luce's axiom (Luce, 1959), which implies that the ratio of the probabilities of choosing any pair of alternatives i and j [$\Pr(i/C_n)/\Pr(j/C_n)$] is not dependent on the systematic utility of any other alternative within the set of alternatives C_n . The assumption of independence implies that there are no common unobserved factors affecting the utilities of the various alternatives. The assumption of identically distributed (across alternatives) random utility terms implies that the extent of variation in unobserved factors affecting utility is the same across all alternatives. Another important assumption is that the error variance-covariance structure of the alternatives is identical across individuals (Bhat, 1995).

To overcome the assumptions mentioned above, different models for discrete choice experiments have been defined. From those, we have used in this study the Heteroskedastic models that relax the identically distributed (across alternatives) error term assumption. Out of this class of models, we will use the so-called "Heteroskedastic Extreme Value" (HEV) model which allows for a non-identical random components distribution (Bhat, 1995 and 2000). The HEV model assumes that the alternative error terms are distributed with a type I extreme value distribution and the variances of the alternative error terms are allowed to be different across all alternatives. Such circumstances are used to normalize the error terms of one of the alternatives by having a scale parameter of one for identification. In other words, the HEV model relaxes the restrictive IIA (Independence of Irrelevant Alternatives) property of the MNL model by allowing different scale parameters across alternatives. This model has been used in various application: a) at methodological level as a tool for the appropriate selection of tree structures in hierarchical choice models (Hensher, 1999), b) in the environmental studies, to analyze individual environmental consciousness for transport mode choices (Shen *et al.*, 2008), c) in transport choice analysis to identify intercity mode choice (Bhat, 1995) and d) in food consumers' preferences to analyze the effect of in-store displays and advertising on tuna purchase (Allenby and Ginter, 1995) and to assess consumer choice for goods branded package (Baltas and Doyle, 1998). In addition, the HEV model has been used to measure the economic value of cultural heritage (Mazzanti, 2003).

For the HEV model, the probability that an individual n will choose alternative i is similar to the MNL (McFadden, 1974) with the exception that the scalar parameter μ

is different across alternatives (μ_i). This scale parameter represents uncertainty associated with the expected utility (the observed part of utility) of an alternative. Therefore, the lower is the scale parameter; the higher is the uncertainty (Louviere *et al.*, 2000). In this case, the probability is formulated as:

$$P_{in} = \frac{e^{\mu_i V_{in}}}{\sum_{i=1}^{i=I} e^{\mu_i V_{in}}} \quad \forall i \in C_n, \quad [4]$$

where V_{in} is the systematic component of the utility provided by alternative i which is given by the following expression:

$$V_{in} = \sum_k \beta_k X_{kin} \quad [5]$$

where:

$i = 1 \dots I$, representing the selected alternative i within the set of alternatives (C_n);

$k = 1 \dots K$, representing the attributes which characterize alternative i ;

β_k = model parameter of attribute k ;

X_{ki} = value of attribute k in alternative i ;

Once parameters are estimated, they represent the marginal utility of attributes and its contribution to the total utility function. Thus Marginal Rate of Substitution (MRS) between attributes can be obtained. In this context, as one of the attributes is expressed in monetary term (i.e. the price), it is possible to determine its “implicit price” (IP) or part-worth as follows:

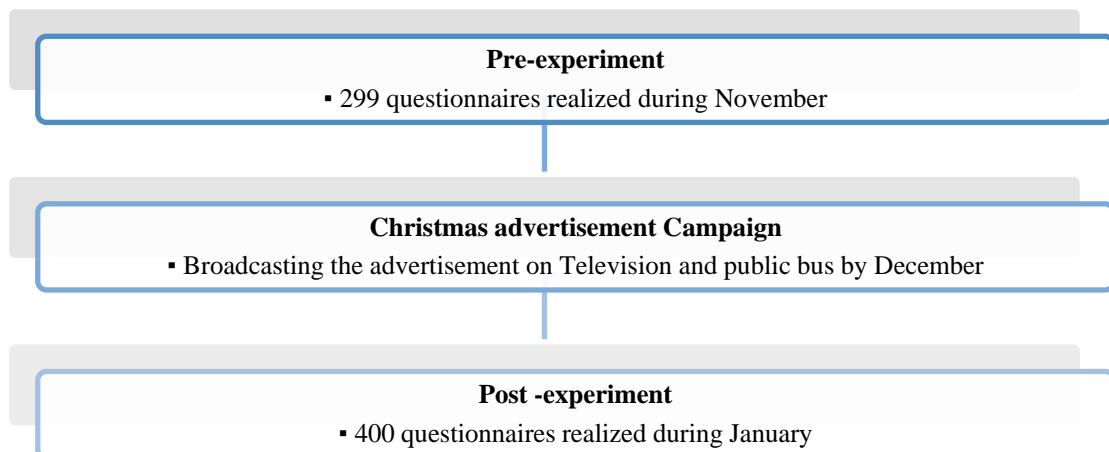
$$IP_{\text{Product_attribute}} = - \left(\frac{\beta_{\text{Product_attribute}}}{\beta_{\text{monetary_attribute}}} \right) \quad [6]$$

2.3 Empirical application

Data used in this analysis was obtained from two face-to-face questionnaires that collect: a) extensive information on socio-economic characteristics of consumers, b) their attitudes and opinions towards wine consumption, c) their perceptions towards quality wines, d) their knowledge about wines with Designation of Origin (spontaneous notoriety, fame and fidelity), e) their attribute preferences for Catalan wines and purchasing intentions and f) consumers' willingness to pay for wine's attributes and to analyze possible changes in preferences after the advertising campaign. The surveys have been conducted in two stages: before and after the Christmas campaign (pre and post experiment) with 299 and 400 consumers respectively. Participants were qualified by having purchased a bottle of wine in the last 3 months. The purchase was defined for a red quality wine for home consumption during Christmas. This was done in order to avoid possible consumers' misspecifications, such as respondents thinking of different specific occasions or different wine products, which could result in biased responses. Moreover, we aimed at testing the effect of the promotional campaign during Christmas.

Both questionnaires were identical with the exception that the second one contained multimedia information (videos and graphical documents of the advertisement campaign) presented to consumers in the post experiment to recall them the launched campaign on television. Figure 2.2 summarizes our experiment stages.

Figure 2.2: Summary of the experiment stages



In both cases, a stratified sampling method by age and postal districts using proportional percentage to the number of persons by stratum was used. The population represents consumers over 18 years who regularly purchase food and beverages and are

residents in the metropolitan area of Barcelona. Table 2.1 shows a summary of the technical sheet of the survey.

A key element in choice experiments is the experimental design. Following the approach mentioned above, the first step has been the determination of main attributes and levels that consumers take into account when purchasing wine for a special occasion such as Christmas. To tackle this issue, we used results from previous literature. The identified attributes were subsequently discussed in a focus group involving university lecturers in the field of marketing as well as representatives from consumer associations in Catalonia. The attributes finally included in our experiment were endorsed by all participants.

Table 2.1: Survey technical sheet

	Pre experiment	Post experiment
Population	Consumers over 18 years who purchase regularly food and are residents in the metropolitan area of Barcelona.	
Sample Design	Stratified sample by age and postal districts using proportional affixation to the number of persons by stratum.	
Field	Metropolitan area of Barcelona	
Sample Size	299	400
Confidence interval	± 5.66	± 4.9
Confidence level	95.5% (k=2)	95.5% (k=2)
Control measure	Pilot survey (25 questionnaires)	
Date of field work	November	January

The discussion showed that the “origin” of the wine is the most relevant attribute to determine if the advertising campaign promoting local wine could modify consumer’s preferences. Because of the generality of the campaign we chose “*Catalan wine*”, as an attribute level, instead of a specific Catalan PDO. In the same way, Spanish wines were generalized as “*Spanish wine*” – understanding by this any wine produced in Spain except those produced in Catalonia –. The third level chosen was “*Foreign wine*”. The grape variety can also be considered as a generic brand. In the New World it is a major factor in wine choice (Lockshin and Hall, 2003). For Spain we have found mixed results. Angulo *et al.* (2000) found that it was not important to determine wine prices of red quality wine, while Mtimet and Albisu (2007) in his choice experiment found out that consumers chose rather for the only possible French variety that was presented (Cabernet Sauvignon). In our experiment we added two French varieties, Cabernet Sauvignon and Merlot, and a typical traditional Spanish variety,

which is Grenache. By including a second French variety we aim to determine if the preference is for French varieties in general, or specific for the Cabernet Sauvignon grape.

Other attributes that could have been included were the vintage, the wine awards, the alcohol content and the labeling and packaging. Due to obvious reasons we had to limit the amount of attributes but, notwithstanding, the validity of the information that could have obtained using some of these attributes might have not been relevant. In the case of the vintage, the older the wine the more likely consumers will choose it. This result has been previously obtained for the Spanish consumer (Angulo, *et al.* 2000; Mtimet and Albisu, 2007) and, in any case, is known as part of the popular wine culture. The attributes related to the possible awards or the wine alcohol content were tested beforehand in a pilot test and found not to be so relevant for the consumer. Besides, according to Angulo *et al.* (2000), alcoholic content is not an important determinant of red quality wine price. Another cue that turned out to be not relevant in our pilot test was the packaging. By packaging we refer to the bottle and label characteristics. Previous research (Mueller and Szolnoki, 2010) has found that these attributes are relevant only if they are visible in the experiment, but not recorded if they are not mentioned or explicitly included.

The last attribute included in our experiment was the knowledge of the wine that consumers have in the pre-purchase stage. The levels included were: (1) previous knowledge of the wine, when consumers have previously tasted the wine; (2) recommended wine and, (3) prestigious wine. According to Thach (2008), consumers use prior tasting experience and recommendations as their main selection cues when buying wine in retail stores. By the third level we try to ascertain the effect of a known brand name (prestigious) in front of the other two alternatives. Thus, the final set of attributes was: origin, knowledge, variety and price. A pilot questionnaire was implemented to check for consistency. The final attributes and levels are shown in Table 2.2.

Following a full factorial design, a total of 81 hypothetical products can be generated by combining the above mentioned attribute levels generating a potential $3^4 \times 3^4$ (6,561) possible combinations or choice sets. To make the analysis more affordable we have carried out an orthogonal fractional factorial design considering only all attributes' main effects. This decision was based on the evidence that main effects explained 90% of the variance of the choice model. Interaction effects explained

only the remaining variance, which is usually considered as irrelevant (Dawes and Corrigan, 1974). The above design enables us to reduce the number of choice sets from the initial 6,561, in the full design, to nine choice sets only. Figure 2.1 shows one of these sets.

Table 2.2: Attributes and levels for consumers' wine preference

Attributes	Attributes symbols	Levels		Levels symbol
Origin	A ₁	Catalonia (regional)	(CAT)	L _{1,1} *
		Spain (national)	(SPN)	L _{1,2}
		Imported (international)	(FRG)	L _{1,3}
Knowledge	A ₂	Own Experience	(EXP)	L _{2,1} *
		Recommendation	(REC)	L _{2,2}
		Prestige	(PRS)	L _{2,3} *
Variety	A ₃	Cabernet Sauvignon	(SAU)	L _{3,1} *
		Grenache	(RNC)	L _{3,2}
		Merlot	(MER)	L _{3,3} *
Price	A ₄	€8.00		L _{4,1}
		€10.00		L _{4,2}
		€12.00		L _{4,3}

*: are base levels of the attributes

2.3.1. Preferences Heterogeneity of wine consumers

To cope with preference heterogeneity, we include the relationship between the valuations of attributes and respondents' socio-demographic and behavioral variables. This relation should be introduced into the utility function interacting attributes and respondent characteristics, since these variables remain constant among the different choice sets that face each respondent. The utility specification for the heterogeneity preference analysis is:

$$V_{in} = \sum_k \beta_k X_{ki} + \sum_k \sum_p \alpha_{kp} (X_{ki} \times S_{pn}) \quad [7]$$

where

$p = 1 \dots P$, represents the socio-economic and behavioral characteristics of individual n ;

α_{kp} = coefficient of interaction between the attribute k and the socio-economic characteristic p ;

$X_{ki} \times S_{pn}$ = combined effect of attribute k in alternative i (X_{ki}) by socio-economic characteristic p of individual n (S_{pn}).

A model for each social, economic and behavioral variable was built introducing interaction for each variable with all attributes levels as follow:

$$V_{jn} = \beta_{ORIG1} ORIG_{1i} + \beta_{ORIG2} ORIG_{2i} + \beta_{KNW1} KNW_{1i} + \beta_{KNW2} KNW_{2i} + \beta_{VRT1} VRT_{1i} + \beta_{VRT2} VRT_{2i} + \beta_{PRIC} PRIC_i + \sum_k \alpha_k \cdot [(X_{ki}) \times (One\ social,\ economic\ and\ behavioral\ variable)] \quad [8]$$

The social and economic variables included in the analysis are: gender (GEN), age (AGE), household social class (SC) and place of birth (BRT). Some of the behavioral variables are related to wine involvement such as wine purchase frequency (FRQ) and reading the information about wine published on the press (INF), and others related to individual attitude towards Catalan wines. To measure consumers' attitudes we considered consumers' valuations on the following aspects: (1) Catalan wines have good flavor, texture and palate (FLAV), (2) Catalan wines possess well-known brands and have public prestige (PRST) and, (3) Catalan wines are reasonably priced (REAS) (see Annex 1 for the codification details).

As an example, the specification of utility function for the gender variable (GEN) takes the following form:

$$V_{in} = \beta_{ORIG1} \cdot ORIG_{1i} + \beta_{ORIG2} \cdot ORIG_{2i} + \beta_{KNW1} \cdot KNW_{1i} + \beta_{KNW2} \cdot KNW_{2i} + \beta_{VRT1} \cdot VRT_{1i} + \beta_{VRT2} \cdot VRT_{2i} + \beta_{PRIC} \cdot PRIC_i + \beta_{ORIG1 \times GEN} \cdot ORIG_{1i} \times GEN_n + \beta_{ORIG2 \times GEN} \cdot ORIG_{2i} \times GEN_n + \beta_{KNW1 \times GEN} \cdot KNW_{1i} \times GEN_n + \beta_{KNW2 \times GEN} \cdot KNW_{2i} \times GEN_n + \beta_{VRT1 \times GEN} \cdot VRT_{1i} \times GEN_n + \beta_{VRT2 \times GEN} \cdot VRT_{2i} \times GEN_n + \beta_{PRIC \times GEN} \cdot PRIC_i \times GEN_n \quad [9]$$

Once the parameters are estimated, in this case the “implicit price” in this case is obtained as follow:

$$IP_{non-market_attribute} = - \left(\frac{\beta_{non-market_attribute} + \alpha_{non-market_attribute} \times S_1 + \dots + \alpha_{non-market_attribute} \times S_p}{\beta_{monetary_attribute} + \alpha_{monetary_attribute} \times S_1 + \dots + \alpha_{monetary_attribute} \times S_p} \right) \quad [10]$$

2.4 Results

In order to characterize consumers in both experiments, Table 2.3 represents a summary of the most important socio-demographic variables. It is important to mention that in both samples the proportion of each stratum is in accordance with the Catalan population. As can be seen there are no significant differences between both samples.

Other variables related to wine consumption, behavior and knowledge are shown in Table 2.4. Results show no significant differences between the samples from the pre- and the post- experiment. Wine consumers from the metropolitan area of Barcelona purchase wine mainly several times a month. Nevertheless, a weekly purchase frequency also obtained a high percentage. Catalan consumers' concept of designations of origin relates mostly to the origin of the wine and the grapes, as well as to its quality. Their behavior towards wine, specifically their behavior in order to collect information about wine, is not elaborated. Most of the consumers only read the information printed on the label.

Table 2.3: Socioeconomic characteristics of the samples in the pre and post experiment

<i>Variables</i>	Pre experiment	Post experiment	Population
	<i>Mean</i>	<i>Mean</i>	<i>Mean 2001</i>
	<i>%</i>	<i>%</i>	<i>%</i>
<i>Gender</i>			
Man	58.2%	58.2%	48.7%
Women	41.8%	41.8%	51.3%
<i>Birth Place</i>			
Catalonia	73.2%	71.8%	59.9%
Rest of Spain	17.1%	12.5%	29.0%
European Union	2.3%	1.55	11.1%
Rest of countries	7.4%	14.3%	
<i>Age</i>			
[18 - 34] years	34.1%	34.8%	34.5%
[35 - 44] years	21.4%	20.8%	23.7%
[45 - 59] years	27.8%	27.3%	27.2%
[60 - 70] years	16.7%	17.3%	14.5%
<i>Social class</i>			
High social class	3.7%	2.5%	16.6%
Middle-high social class	25.1%	28.5%	31.0%
Middle social class	52.8%	51.5%	36.5%
Low social class	18.4%	17.5%	15.9%

Source: IDESCAT and IERMB

Table 2.4: Variables related to wine consumption, behavior and knowledge of the samples in the pre and post experiment

Variables*	Pre – Experiment	Post – Experiment
	Mean / %	Mean / %
How often do you usually Buy wine?		
Several times a week	8.0%	6,0%
Every week	23.7%	24,8%
Several times a month	29.1%	34,3%
Once a month	17.1%	20,5%
Each 2 / 3 months	13.4%	9,8%
Less often	8.7%	4,8%
To what extent do you agree / disagree that a wine designation of origin is related to...? (0: strongly disagree; 10: strongly agree)		
The origin of the wine from a specific area	8.26	8.19
The use of a specific grape varieties	7.64	7.65
The requirement of a quality control	7.63	7.66
A symbol of prestige	7.11	7.09
Ensuring that the wine contains no harmful substances to health	6.77	6.57
The use of environmental friendly production methods	6.73	6.76
The promotion of rural development in the production area	6.73	6.46
A more complete and detailed information	6.70	6.54
The promotion of cultural and traditional values of the area	6.68	6.17
The emotional feeling towards the production area	5.85	5.62
A wine with a higher price	5.52	5.32
A sophisticated product	5.49	5.39
Behavior towards wine (0: strongly disagree; 10: strongly agree)		
I like to read the information that is on the label	7.02	7.09
I visit / I like to visit wineries in the production areas	5.60	5.69
I read the information about wines published in the press	5.17	5.48
I attend / I like to attend wine tasting courses	4.04	4.45
I read wine journals	3.83	4.15
I regularly receive wine information sheets or catalogues	3.79	4.12
I look up information on the Internet wine sites	3.48	3.99

Results from the HEV model are shown in Table 2.5. Overall, the model is highly significant and the goodness of fit is acceptable. Results show that in both models (pre and post experiment) all parameters (variables coefficients and scale parameters) are statistically significant with the exception of the level “Recommended”, indicating that almost all attributes and levels considered are significant determinants of consumer’s welfare. The positive (negative) sign of the parameters indicates a positive (negative) contribution to utility.

Scale parameters are significantly different from 1.0 at 1% showing variance variability among alternatives. In addition, it implies that the assumption of independently and identically distributed (IID) across alternatives is violated, confirming that the specified model in this study is appropriate.

Table 2.5: Results of HEV model for the pre and post advertisement.

<i>Pre advertisement</i>				<i>Post advertisement</i>			
<i>Variables</i>	β	<i>Std. error</i>	<i>p-value</i>	<i>Variables</i>	β	<i>Std. error.</i>	<i>p-value</i>
Spain	0.152	0.037	0.000	Spain	0.082	0.039	0.037
Foreign	-0.470	0.049	0.000	Foreign	-0.521	0.058	0.000
Recommended	0.047	0.036	0.19	Recommended	-0.029	0.040	0.469
Prestige	-0.101	0.036	0.005	Prestige	-0.106	0.040	0.008
Grenache	-0.165	0.037	0.000	Grenache	-0.194	0.042	0.000
Merlot	-0.112	0.037	0.002	Merlot	-0.099	0.041	0.015
Price	-0.086	0.017	0.000	Price	-0.166	0.021	0.000
<i>Scale Parameters of Extreme Value Distribution</i>				<i>Scale Parameters of Extreme Value Distribution</i>			
θ_A	0.864	0.109	0.000	θ_A	0.585	0.068	0.000
θ_B	1.000	Fixed Parameter		θ_B	1.000	Fixed Parameter	
<i>Std Dev for HEV distribution</i>				<i>Std Dev for HEV distribution</i>			
σ_A	1.484	0.187	0.000	σ_A	2.193	0.255	0.000
σ_B	1.282	Fixed Parameter		σ_B	1.282	Fixed Parameter	
<i>N</i>	5,382 (299 consumers \times 2 alternatives \times 9 choice sets)			<i>N</i>	7,200 (400 consumers \times 2 alternatives \times 9 choice sets)		
<i>LL(0)</i>	-1,865.26	LL(0)	-1,725.80	LL(0)	-2,495.33	LL(0)	-2,305.72
<i>LLR</i>	278.91 (0.000)	pseudo R²	0.074	LLR	379.23 (0.000)	pseudo R²	0.076

For the purposed economic interpretation of parameters, the implicit prices (IP) are calculated for each attribute as well as their confidence intervals using the Krinsky and Robb (1986) procedure. Coefficients of the reference level (β_0) are calculated as $\beta_1 \times (-1) + \beta_2 \times (-1)$ following the effect coding procedure. Almost all implicit prices in Table 2.6 are statistically different from zero with the exception of “recommended” in pre and post advertising and “experience” in *pre* advertising. Moreover, comparing pre and post results, the analyzed spot has demonstrated a null impact on attributes ranking between the two samples. Thus, for the origin attribute, consumers prefer the Catalan origin followed by the Spanish and Foreign wines. For Knowledge, consumers assign higher utility to previous own experience as the best source of information when purchasing wine for a special occasion, followed by “recommendation” and “overall prestige”. Finally, regarding to varieties, the most preferred is the Cabernet Sauvignon followed by the Grenache and Merlot.

Table 2.6: Implicit price of attributes and levels

<i>Attributes levels</i>	<i>Pre advertising</i>	<i>Post advertising</i>	<i>% of IP difference from pre to post</i>	<i>t-value of IP difference</i>
	<i>Implicit Price</i>	<i>Implicit Price</i>		
Catalonia	3.70 (1.62; 8.96)	2.65 (1.31; 4.38)	-28.31%***	26.785
Spain	1.77 (0.67; 4.30)	0.50 (0.03; 1.02)	-72.04%***	61.518
Foreign	-5.48 (-13.13; -3.26)	-3.15 (-4.96; -2.06)	42.48%***	-51.064
Experience	0.63 (-0.90; 2.71)	0.81 (0.18; 1.56)	30.34%***	-7.308
Recommended	0.55 (-0.66; 1.93)	-0.17 (-0.78; 0.45)	-131.46%***	43.241
Prestige	-1.18 (-3.08; -0.04)	-0.64 (-1.41; -0.05)	-45.62%***	-32.228
Cabernet Sauvignon	3.23 (1.32; 6.94)	1.77 (0.81; 3.17)	-45.10%***	44.866
Grenache	-1.92 (-5.03; -0.68)	-1.18 (-2.03; -0.44)	-38.79%***	-34.668
Merlot	-1.31 (-3.54; -0.19)	-0.60 (-1.29; -0.12)	-54.34%***	-38.659

Note 1: IP are measured in €, which is the willingness to pay for each attribute levels.

Significance levels: *** p<0.01; **p<0.05; * p< 0.10.

Analyzing the magnitude of differences between IP, results show the presence of highly significant differences between the pre and post experiment. In the post experiment, all values are lower. Thus, there is a general decrease of the willingness to pay for all attributes after the advertising in absolute values. This fact has to do with the time when the post experiment was carried out (January). This month is conditioned by two issues. First, households must accommodate from the high expenditure related to

Christmas. Second, the winter sales start. As a consequence, consumers' overall WTP for food and beverage is low. Thus, results have to be interpreted in relative terms (the percentage change of IP between levels within the pre and post advertising campaign, respectively). This allows us to analyze the relative change of valuation between levels independent from the obtained value of the willingness to pay. Results are shown in Table 2.7.

As is shown in Table 2.7, consumers' valuation for the Catalan origin of wine compared to the Spanish origin is relatively more important in the post experiment. Results show a 81.31% premium between the Catalan and the Spanish wine in the post treatment, when it was 52.07% in the pre advertising period. This is especially relevant due to the competitive positioning of Spanish wines in Catalonia, particularly those from La Rioja. Taking this result into account we can conclude that the promotion campaign has succeeded in increasing the positive image of Catalan wines amongst the local population.

Regarding knowledge, we highlight the relative importance of the overall prestige of the wine in the post advertising experiment compared to previous experience and recommendation. The relative difference between recommended wine and prestige has decreased from 313.05%, in the pre-test, to -268.14%. Finally, no significant changes have been detected in relation to grape varieties.

Table 2.7: relative change of IP between pre and post advertisement

Percentage change of IP between Levels	PRE advertisement	POST advertisement	Sig.
Catalonia compared to Spain	52,16%	81,13%	***
Catalonia compared to Foreign	248,11%	218,87%	***
Spain compared to Foreign	409,60%	730,00%	***
Experience compared to Recommended	12,70%	120,99%	***
Experience compared to Prestige	287,30%	179,01%	***
Recommended compared to Prestige	314,55%	-267,47%	***
Cabernet Sauvignon compared to Grenache	159,44%	166,67%	-
Cabernet Sauvignon compared to Merlot	140,56%	133,90%	-
Grenache compared to Merlot	31,77%	49,15%	-

Significance levels: *** p<0.01; **p<0.05; * p< 0.10. -: Non-significant differences between IP

2.4.1. Heterogeneity analysis results

In order to evaluate the heterogeneity of wine consumers' preferences we estimate a specific HEV models for each social, economic and behavioral variables mentioned in the empirical application. All obtained models are significant and show a good fit with highly significant likelihood ratios. For example, in the case of the gender variable (GEN) results can be shown in Table 8³. In almost all analyzed variables, the most preferred attributes for red wine in Catalonia is the Catalan origin from the Cabernet Sauvignon grape. In addition, wines that have been previously tasted and experienced by the consumer seem to be preferred over recommended or prestigious wines.

For the economic interpretation of the models obtained, the IP have been calculated following Expression (10). Tables (2.9a, 2.9b, 2.9c) show the average IP obtained from the pre and post advertisement for the analyzed variables. It is important to be aware that estimating the HEV models for each social, economic and behavioral variable separately ignores the *ceteris paribus* condition. Therefore, the conclusions drawn for each variable should be treated with caution. However, this is an unavoidable limitation due to the loss of degrees of freedom that an analysis integrating all kind of interactions would require.

As can be shown in Tables (2.9a, 2.9b, 2.9c), results show that the preferences for red wine for a special occasion as Christmas are highly heterogeneous. Nevertheless, results from pre and post advertisement show a general trend toward the most preferred attributes and levels. In this context, the main trends are highlighted stressing the principal differences found amongst analyzed segments. Differences found amongst specific segments and the whole sample results are also pointed out. For a better understanding of heterogeneity results, readers are recommended to keep in mind the results obtained of the whole respondents on average (Table 2.6). Following we will comment the results focusing in each, economic, demographic and behavioral variable:

a) Gender

- As can be seen, male show more consistent results than Female. Male results indicate a clear preference for the Catalan origin and the Cabernet sauvignon

³ Results of the individual HEV models for the other variables included in the utility specification, [i.e. age (AGE), household social class (SC), place of birth (BRT), wine purchase frequency (FRQ), reading the information about wine (INF), Catalan wines have good flavor, texture and palate (FLAV), Catalan wines have well-known brands and prestige (PRST) and Catalan wines are reasonably priced (REAS) were not included to avoid overwhelming the reader and due to space restriction. However, these results are available for interested readers under request.

grape. On the contrary, Female preferences do not show such a clear pattern, which indicates a greater dispersion of preferences amongst them.

Table 2.8: Results of the HEV model for the Gender (GEN) variable

Pre Advertisement				Post Advertisement			
Variables	Estimates	Std. error	p-value	Variables	Estimates.	Std. error.	p-value
Spain	0.1417	0.0567	0.0125	Spain	0.1154	0.0599	0.0543
Foreign	-0.6537	0.0752	0.0000	Foreign	-0.6952	0.0833	0.0000
Recommended	0.1057	0.0580	0.0686	Recommended	0.0523	0.0627	0.4045
Prestige	-0.0714	0.0565	0.2061	Prestige	-0.1403	0.0621	0.0239
Grenache	-0.2447	0.0594	0.0000	Grenache	-0.1609	0.0618	0.0092
Merlot	-0.1959	0.0596	0.0010	Merlot	-0.1472	0.0635	0.0204
Price	-0.10901	0.0750	0.1699	Price	-0.1817	0.0301	0.0000
Spain × GEN	0.0266	0.0725	0.7139	Spain × GEN	-0.0568	0.0778	0.4656
Foreign × GEN	0.2938	0.0785	0.0002	Foreign × GEN	0.2988	0.0838	0.0004
Recommended × GEN	0.1267	0.0734	0.0843	Recommended × GEN	-0.1334	0.0815	0.0915
Prestige × GEN	0.1371	0.0748	0.0668	Prestige × GEN	0.0598	0.0795	0.4524
Grenache × GEN	-0.0874	0.0740	0.2378	Grenache × GEN	-0.0548	0.0792	0.4887
Merlot × GEN	-0.0487	0.0727	0.5027	Merlot × GEN	0.0807	0.0807	0.3174
Price × GEN	-0.0948	0.0326	0.0037	Price × GEN	0.0279	0.0349	0.4234
Scale Parameters of Extreme Value Distribution				Scale Parameters of Extreme Value Distribution			
θ_A	0.8709	0.1074	0.000	θ_A	0.5920	0.0684	0.000
θ_B	1.0000	Fixed Parameter		θ_B	1.0000	Fixed Parameter	
Std Dev for HEV distribution				Std Dev for HEV distribution			
σ_A	1.4727	0.18161	0.000	σ_A	2.1663	0.2504	0.000
σ_B	1.2825	Fixed Parameter		σ_B	1.2825	Fixed Parameter	
N= 5,382 (299 consumers ×2 alternative ×9 choice sets)				N= 7,200 (400 consumers ×2 alternative ×9 choice sets)			
Log-likelihood (0) -1,865.259				Log-likelihood (0) -2,495.33			
Log-likelihood (θ) -1,704.327				Log-likelihood (θ) -2,308.863			
Log-likelihood Ratio Test 321.864 (0.000)				Log-likelihood Ratio Test 372.933 (0.000)			
pseudo R² 0.086				pseudo R² 0.0775			

b) Age

- Consumers' preferences for Catalan origin and for the Cabernet Sauvignon variety increase with age. The former can be explained as the national feelings are more pronounced with ages in Catalonia, while the latter is because the Sauvignon variety is one of the world's best varieties highly rich in polyphenols⁴.

- The youngest segment shows the highest IP for a previously experienced wine. This can be explained due to their higher uncertainty when purchasing wine. A previously experienced wine grants the consumer with the certainty that their election will be likable. Therefore, younger and more inexperienced people tend to choose a product that they know, in order to diminish risk uncertainty in their purchase decisions. In this respect, we would recommend wine fairs addressed to youngsters in order to increase their wine knowledge and, thus, feel less insecure in their wine purchases.

c) Social class

- Low social class tends to show the lowest IPs compared to the other classes. These results are in general in accordance to the theory showing that consumers are less willing to pay as their budgets decrease.

- Middle class is the only segment that shows significant positive IP for the Spanish wines. We hypothesized that this segment could be related to having his place of birth outside Catalonia and therefore, they would prefer the Spanish rather than any other wine. However, non-significant results were found.

- For the grape variety attribute, the lower class, unlike the other classes, do not show a negative significant IP for Grenache. This could be explained taking into account that this variety is the cheapest one compared to the other varieties.

d) Place of birth

- Catalan natives show the highest IP for the origin attribute, followed by Spanish and foreign natives. In the same way, Catalan natives also show the highest IP for grape variety, while foreign natives show the lowest. This behavior is repeated for the knowledge attribute. Therefore, people born out of Spain show less interest for the product. We could think that this is because the nonexistence of

⁴ They are a group of chemical substances found in plants that help in preventing cardiovascular diseases and some cancers, among other health benefits.

wine culture in their countries of origin, or they could have other priorities and interest for their income expenditure.

- Spanish natives show a higher preference for Spanish wines as expected, although this only occurs in the pre advertisement sample.

e) Wine purchase frequency

- For grape variety, both low and high frequency buyers show higher preference for the most popular grape (Cabernet Sauvignon). However, high frequency buyers are indifferent towards Grenache and Merlot, in comparison to the rest. For the knowledge attribute, high frequency buyers show lower IP. Compared to the whole sample, the experienced wine is not significant for them. This segment reveals lower uncertainty when purchasing wine due to greater information, together with a more open attitude for new experiences.

f) Reading information about wine in the press

- Also related to wine involvement, the segment that reads the information shows a higher IP for the origin attribute. They are more willing to pay for a Catalan origin of the wine. For the other analyzed attributes, those that do not read the information in the press follow the results of the whole sample, while those that read it do not. For the grape variety they show non-significant results for Merlot, while for the knowledge attribute it is not clear if they rather a previously experienced wine or a recommended one. Moreover, prestigious wines are not relevant for them (nor negative nor positively influencing). Their results, thus, manifest a stronger influence by wine articles and advertisement as a consequence of their reading.

g) Attitudes towards Catalan wines [(1) Catalan wines have good flavor, texture and palate; (2) Catalan wines are well known and have public prestige, and (3) Catalan wines are reasonably priced]

- Those who agree with the proposed statements reveal higher IP's for Catalan wines. On the contrary, those who disagree show higher IP's when the origin is Spain. A previously tasted wine tends to be the preferred level in general, but especially for those who disagree with the statements proposed.

Table 2.9a: Average implicit prices (€) of the HEV models for Origin attribute

ORIGIN VARIABLES	CATALAN								SPANISH								FOREIGN							
	PRE_ Advertisement				POST_ Advertisement				PRE_ Advertisement				POST_ Advertisement				PRE_ Advertisement				POST_ Advertisement			
Gender	Male	Female			Male	Female			Male	Female			Male	Female			Male	Female			Male	Female		
	0.94 (0.01; 2.78)	4.70 (-8.77; 27.9)	2.20 (1.73; 2.98)	3.19 (2.50; 4.43)	0.83 (0.07; 2.56)	1.30 (-3.06; 5.84)	0.38 (-0.13; 0.96)	0.63 (0.10; 1.30)	-1.77 (-5.10; -0.75)	-6.00 (-26.1; 17.4)	-2.58 (-3.60; -1.86)	-3.83 (-5.23; -2.93)												
Age	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70				
	2.05 (1.4; 4.0)	2.56 (1.8; 4.2)	2.27 (-5.8; 2.3)	5.32 (1.3; 23.1)	1.86 (1.4; 2.7)	3.06 (2.2; 5.0)	2.08 (1.6; 2.8)	6.25 (3.7; 16.1)	1.07 (0.1; 2.7)	1.41 (0.6; 2.9)	1.59 (0.3; 3.8)	0.74 (-0.8; 3.6)	0.27 (-0.4; 1.0)	0.35 (-0.4; 1.3)	0.80 (0.2; 1.4)	0.54 (-1.1; 2.9)	-3.12 (-6.2; -1.7)	-3.97 (-6.7; -2.6)	-3.86 (-8.4; -2.2)	-6.06 (-8.5; -2.1)	-2.13 (-3.3; -1.3)	-3.40 (-5.5; -2.2)	-2.88 (-4.0; -2.1)	-6.79 (-18.1; -3.7)
Social class	High	Average	Low		High	Average	Low		High	Average	Low		High	Average	Low		High	Average	Low		High	Average	Low	
	5.16 (2.7; 16.2)	2.88 (2.12; 4.36)	4.71 (2.63; 15.02)	2.21 (1.75; 2.95)	3.51 (2.62; 5.23)	2.08 (1.53; 3.30)	1.57 (-0.15; 6.08)	1.90 (1.01; 3.18)	1.46 (-0.42; 5.94)	-0.08 (-0.53; 0.44)	1.03 (0.25; 1.92)	0.62 (-0.22; 1.57)	-6.73 (-21.5; -3.2)	-4.78 (-7.26; -3.35)	-6.17 (-19.7; -3.24)	-2.14 (-2.96; -1.54)	-4.55 (-6.80; -3.22)	-2.69 (-4.36; -1.73)						
Place of birth	Cat.	Spain	Foreign		Cat.	Spain	Foreign		Cat.	Spain	Foreign		Cat.	Spain	Foreign		Cat.	Spain	Foreign		Cat.	Spain	Foreign	
	4.55 (2.9; 9.19)	3.55 (2.46; 6.16)	1.81 (1.24; 3.39)	3.61 (2.87; 4.82)	1.50 (1.09; 2.32)	0.16 (0.12; 0.27)	3.05 (1.65; 6.40)	0.87 (-0.16; 2.17)	-0.15 (-1.33; 0.92)	0.41 (-0.03; 0.95)	0.91 (0.02; 1.96)	0.38 (-0.54; 1.41)	-7.6 (-14.8; -4.8)	-4.42 (-7.5; -2.84)	-1.65 (-3.29; -0.68)	-4.02 (-5.28; -3.17)	-2.40 (-4.07; -1.43)	-0.55 (-1.56; 0.26)						
Purchase frequency	Low	High			Low	High			Low	High			Low	High			Low	High			Low	High		
	5.15 (2.85; 17.98)	3.20 (2.42; 4.75)	2.31 (1.78; 3.26)	2.87 (2.27; 3.85)	2.41 (0.69; 8.27)	1.56 (0.80; 2.65)	0.69 (0.12; 1.41)	0.38 (-0.11; 0.93)	-7.55 (-26.49; -3.98)	-4.76 (-7.05; -3.47)	-3.00 (-4.24; -2.20)	-3.24 (-4.36; -2.48)												
Read information in the press	Yes	No			Yes	No			Yes	No			Yes	No			Yes	No			Yes	No		
	4.91 (3.27; 9.47)	2.79 (2.00; 4.56)	4.02 (3.02; 5.89)	1.59 (1.29; 2.06)	2.13 (0.92; 4.72)	1.48 (0.67; 2.87)	0.50 (-0.14; 1.29)	0.51 (0.07; 1.01)	-7.04 (-14.15; -4.51)	-4.27 (-7.07; -2.93)	-4.52 (-6.63; -3.30)	-2.10 (-2.79; -1.58)												
Catalan wines have good flavor, texture and palate	Agree	Disagree			Agree	Disagree			Agree	Disagree			Agree	Disagree			Agree	Disagree			Agree	Disagree		
	2.78 (-5.92; 13.86)	2.12 (0.34; 12.02)	3.07 (2.54; 3.90)	-0.6 (-1.19; -0.40)	1.13 (-1.66; 6.01)	4.23 (-16.74; 21.76)	0.42 (0.03; 0.86)	1.04 (-0.11; 2.77)	-3.91 (-16.76; -1.15)	-6.35 (-33.17; 26.84)	-3.49 (-4.39; -2.82)	-0.44 (-1.80; 0.63)												
Catalan wines are well-known and have public prestige	Agree	Disagree			Agree	Disagree			Agree	Disagree			Agree	Disagree			Agree	Disagree			Agree	Disagree		
	4.17 (3.14; 6.28)	0.60 (-2.08; 4.20)	3.13 (2.59; 3.97)	-0.50 (-0.99; -0.34)	1.85 (-7.65; 11.12)	1.23 (-1.05; 6.15)	0.35 (0.39; 3.38)	1.48 (-0.04; 0.78)	-6.02 (-8.93; -4.42)	-1.83 (-9.06; 4.69)	-3.48 (-4.37; -2.82)	-0.98 (-2.56; 0.01)												
Catalan wines are reasonably priced	Agree	Disagree			Agree	Disagree			Agree	Disagree			Agree	Disagree			Agree	Disagree			Agree	Disagree		
	4.13 (3.14; 6.12)	0.28 (-0.68; 1.70)	3.37 (2.73; 4.37)	0.47 (0.36; 0.69)	1.52 (0.78; 2.59)	3.64 (-8.14; 19.50)	0.42 (-0.03; 0.91)	0.77 (0.13; 1.55)	-5.65 (-8.24; -4.18)	-3.92 (-20.74; 7.12)	-3.78 (-4.90; -2.99)	-1.24 (1.81; 2.78)												

Shaded cells are statistically significant at 90 %.

Table 2.9b: Average implicit prices (€) of the HEV models for Grape variety attribute

VARIETY	CABERNET SAUVIGNON								GRENACHE								MERLOT							
	PRE_ Advertisement				POST_ Advertisement				PRE_ Advertisement				POST_ Advertisement				PRE_ Advertisement				POST_ Advertisement			
VARIABLES	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female				
Gender	0.87 (0.05; 2.77)	4.04 (-14.2; 19.9)	1.84 (1.96; 3.36)	1.70 (1.33; 2.35)	-0.58 (-2.13; 0.27)	-2.25 (-12.4; 5.4)	-1.40 (-3.23; -0.82)	-0.89 (-1.62; -0.33)	-0.29 (-1.52; 0.67)	-1.80 (-7.56; 6.76)	-0.43 (-1.80; 0.56)	-0.81 (-1.42; -0.25)												
Age	18-34 2.19 (1.5; 4.3)	35-44 1.55 (1.1; 2.6)	45-59 2.05 (1.6; 10.3)	60-70 5.13 (1.9; 27.9)	18-34 1.52 (1.1; 2.2)	35-44 1.88 (1.4; 3.1)	45-59 1.64 (1.8; 2.3)	60-70 2.80 (1.7; 7.4)	18-34 -2.27 (-4.7; -1.8)	35-44 -1.05 (-2.3; -0.2)	45-59 -0.82 (-7.1; 1.2)	60-70 -1.81 (-5.4; -0.3)	18-34 -1.38 (-2.4; -0.7)	35-44 -1.74 (-3.1; -0.9)	45-59 -0.46 (-1.2; 0.15)	60-70 -1.68 (-5.8; -0.1)	18-34 0.07 (-1.1; 1.4)	35-44 -0.50 (-1.6; 0.5)	45-59 -1.24 (-9.2; 0.4)	60-70 -3.32 (-17.; 3.3)	18-34 -0.14 (-0.9; 0.6)	35-44 -0.14 (-1.1; 0.8)	45-59 -1.19 (-1.9; -0.6)	60-70 -1.12 (-4.1; 0.5)
Social class	High 5.18 (2.7; 16.3)	Average 2.95 (2.2; 4.4)	Low 1.64 (0.37; 2.1)	High 1.56 (1.2; 2.08)	Average 2.33 (1.7; 3.5)	Low 1.25 (0.6; 1.24)	High -3.36 (-11.4; -1.1)	Average -2.06 (-3.34; -1.21)	Low 0.47 (-1.37; 3.23)	High -1.03 (-1.69; -0.51)	Average -1.79 (-2.90; -0.99)	Low -0.45 (-1.30; 0.32)	High -1.82 (-6.56; 0.21)	Average -0.89 (-1.89; -0.08)	Low -2.11 (-7.7; -0.3)	High -0.53 (-1.09; -0.02)	Average -0.54 (-1.41; 0.21)	Low -0.80 (-1.77; -0.04)						
Place of birth	Cat. 4.81 (3.16; 9.7)	Spain 2.77 (1.92; 4.81)	Foreign 0.02 (1.18; 3.23)	Cat. 2.12 (1.68; 2.83)	Spain 1.91 (1.38; 2.96)	Foreign 0.43 (1.40; 3.16)	Cat. -3.10 (-6.79; -1.66)	Spain -0.97 (-2.16; -0.02)	Foreign -0.28 (-1.39; 0.76)	Cat. -1.27 (-1.97; -0.74)	Spain -1.06 (-2.08; -0.19)	Foreign -0.98 (-2.01; -0.15)	Cat. -1.71 (-3.79; -0.54)	Spain -1.81 (-3.66; -0.72)	Foreign 0.26 (-0.83; 1.29)	Cat. -0.85 (-1.40; -0.34)	Spain -0.85 (-1.99; 0.04)	Foreign 0.55 (-0.31; 1.47)						
Purchase frequency	Low 5.46 (3.02; 19.07)	High 2.45 (1.87; 17.93)	Low 1.06 (0.82; 1.50)	High 2.22 (-0.02; 4.51)	Low -3.18 (-11.75; -1.23)	High -1.48 (-3.55; -0.25)	Low -0.61 (-1.35; -0.01)	High -1.54 (-2.31; 0.11)	Low -2.28 (-7.90; -0.55)	High -0.97 (-1.68; 1.46)	Low -0.45 (-1.08; 0.14)	High -0.68 (-0.92; 1.46)												
Read information in the press	Yes 2.85 (2.33; 6.75)	No 3.48 (2.50; 5.69)	Yes 2.39 (2.00; 3.90)	No 1.28 (1.04; 1.67)	Yes -1.32 (-7.53; -1.26)	No -2.33 (-4.12; -1.40)	Yes -1.75 (-4.77; -1.37)	No -0.73 (-1.27; -0.29)	Yes -1.53 (-2.58; 2.13)	No -1.15 (-2.23; -0.31)	Yes -0.64 (-1.37; 1.55)	No -0.55 (-1.02; -0.09)												
Catalan wines have good flavor, texture and palate	Agree 2.43 (-9.78; 25.10)	Disagree 1.85 (-7.83; 11.17)	Agree 1.75 (0.20; 4.74)	Disagree 1.95 (1.31; 3.87)	Agree -1.41 (-6.07; 0.52)	Disagree -1.60 (-10.15; 7.97)	Agree -1.03 (-5.29; -1.50)	Disagree -2.28 (-4.75; -1.14)	Agree -1.02 (-6.14; 1.24)	Disagree -0.25 (-9.06; 7.54)	Agree -0.71 (-1.50; 2.03)	Disagree 0.33 (-0.84; 1.81)												
Catalan wines are well-known and have public prestige	Agree 3.48 (1.89; 12.19)	Disagree 1.71 (0.14; 7.35)	Agree 1.51 (3.13; 4.79)	Disagree 3.39 (2.28; 6.71)	Agree -2.14 (-7.85; 0.20)	Disagree -0.46 (-4.17; 1.68)	Agree -0.96 (-4.27; -1.06)	Disagree -2.54 (-5.20; -1.37)	Agree -1.34 (-6.32; 2.38)	Disagree -1.24 (-5.61; 0.99)	Agree -0.55 (-2.81; 0.30)	Disagree -0.86 (-2.30; 0.27)												
Catalan wines are reasonably priced	Agree 3.18 (-21.36; 25.83)	Disagree 3.67 (-8.85; 22.00)	Agree 1.95 (0.22; 2.56)	Disagree 1.23 (0.94; 1.78)	Agree -1.99 (-2.44; 2.48)	Disagree -1.35 (-9.20; 4.36)	Agree -1.13 (-4.46; -0.97)	Disagree -1.33 (-2.26; -0.68)	Agree -1.20 (-4.50; 0.64)	Disagree -2.32 (-13.42; 2.65)	Agree -0.82 (-1.57; 1.65)	Disagree 0.10 (-0.54; 0.82)												

Shaded cells are statistically significant at 90 %.

Table 2.9c: Average implicit prices of the HEV models for Wine knowledge attribute

KNOWLEDGE VARIABLES	EXPERIENCED				RECOMMENDED				PRESTIGIOUS				
	PRE_ Advertisement		POST_ Advertisement		PRE_ Advertisement		POST_ Advertisement		PRE_ Advertisement		POST_ Advertisement		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Gender	0.50 (-0.35; 2.12)	-0.31 (-2.91; 1.32)	1.05 (0.32; 0.55)	0.48 (0.38; 0.67)	0.09 (-1.59; 5.80)	0.97 (-0.94; 1.14)	-0.53 (-1.14; 1.10)	0.29 (-0.28; 0.92)	-0.59 (-2.11; 0.19)	-0.65 (-3.96; 1.51)	-0.52 (-1.50; 0.74)	-0.77 (-1.44; -0.19)	
Age	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70	18-34 35-44 45-59 60-70
	2.32 -0.35 -0.12 -0.81 (1.6; 4.5) (-0.6; -0.2) (-3.0; 1.8) (-6.5; 3.0)	1.40 0.54 0.67 -0.08 (1.1; 2.1) (0.4; 0.9) (0.5; 0.9) (-0.2; -0.1)	0.40 0.53 0.22 1.00 (-0.7; 1.7) (-0.4; 1.5) (-5.8; 9.4) (0.31; 1.84)	-0.35 0.37 -0.15 -0.71 (-1.1; 0.3) (-0.5; 1.8) (-0.8; 0.5) (-3.08; 0.8)	-2.72 -0.18 -0.10 -0.19 (-5.4; -1.4) (-1.2; 0.8) (-7.6; 7.1) (-2.5; 1.5)	-1.04 -0.90 -0.52 0.79 (-1.9; -0.3) (-2.1; -0.02) (-1.19; 0.1) (-1.0; 3.2)							
Social class	High Average Low	High Average Low	High Average Low	High Average Low	High Average Low	High Average Low	High Average Low	High Average Low	High Average Low	High Average Low	High Average Low	High Average Low	
	1.68 0.61 -0.60 (0.89; 5.28) (0.45; 0.92) (-1.93; 0.34)	0.66 1.44 0.10 (0.52; 0.87) (1.07; 2.15) (0.07; 0.16)	-1.15 0.84 1.60 (-5.05; 0.84) (0.03; 1.77) (-0.17; 6.26)	-0.42 -0.02 -0.02 (-1.02; 0.10) (-0.83; 0.71) (-0.84; 0.89)	-0.53 -1.45 -0.99 (-3.14; 1.53) (-2.54; -0.64) (-4.27; 0.75)	-0.23 -0.14 -0.08 (-0.77; 0.25) (-2.47; -0.64) (-0.95; 0.70)							
Place of birth	Cat. Spain Foreign	Cat. Spain Foreign	Cat. Spain Foreign	Cat. Spain Foreign	Cat. Spain Foreign	Cat. Spain Foreign	Cat. Spain Foreign	Cat. Spain Foreign	Cat. Spain Foreign	Cat. Spain Foreign	Cat. Spain Foreign	Cat. Spain Foreign	
	1.16 0.29 -0.38 (0.76; 2.33) (0.20; 0.50) (-0.72; -0.26)	0.91 1.07 0.17 (0.72; 1.22) (0.78; 1.67) (0.12; 0.27)	0.30 1.13 0.51 (-1.00; 1.66) (0.06; 2.49) (-0.49; 1.82)	-0.14 -0.53 0.05 (-0.69; 0.37) (-1.55; 0.30) (-0.81; 1.03)	-1.46 -0.16 -0.13 (-3.50; -0.32) (-2.93; -0.43) (-1.23; 0.93)	-0.77 -0.19 0.22 (-1.34; -0.27) (-1.51; 0.37) (-1.14; 0.63)							
Purchase frequency	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	
	2.24 (1.24; 7.84)	0.06 (-0.55; 0.65)	1.00 (0.78; 1.42)	0.69 (-0.39; 1.77)	0.86 (-1.11; 4.49)	0.45 (-0.74; 2.25)	0.01 (-0.61; 0.65)	-0.29 (-2.00; 0.38)	-3.10 (-11.83; -1.13)	-0.51 (-3.25; 0.10)	-1.01 (-1.80; -0.39)	-0.40 (-2.66; -0.21)	
Read information in the press	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	
	0.09 (-1.07; 0.37)	1.03 (0.74; 1.69)	1.21 (0.70; 1.37)	0.52 (0.42; 0.67)	0.57 (0.70; 6.36)	0.50 (-0.33; 1.58)	-0.80 (-1.16; 1.68)	0.33 (-0.11; 0.82)	-0.66 (-5.45; 0.01)	-1.54 (-2.96; -0.66)	-0.41 (-2.82; 0.21)	-0.84 (-1.37; 1.55)	
Catalan wines have good flavor, texture and palate	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	
	0.09 1.83 (-8.14; 10.33) (-6.99; 10.50)	0.90 0.11 (0.05; 2.70) (0.07; 0.22)	0.48 -0.76 (-2.68; 3.88) (-9.36; 7.50)	-0.25 0.37 (-0.21; 3.96) (-0.84; 1.81)	-0.85 -1.07 (-5.35; 1.98) (-8.84; 8.87)	-0.65 -0.48 (-3.46; 0.06) (-2.01; 0.68)							
Catalan wines are well-known and have public prestige	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	
	0.51 1.22 (-4.73; 5.64) (0.20; 4.93)	0.88 0.41 (-0.33; 3.12) (0.27; 0.80)	0.47 0.58 (-2.18; 3.58) (-5.80; 6.58)	-0.19 -0.12 (-0.05; 3.04) (-1.39; 1.13)	-1.10 -1.69 (-4.80; 0.99) (-7.37; 0.53)	-0.69 -0.29 (-3.69; 1.00) (-1.66; 0.93)							
Catalan wines are reasonably priced	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	Agree Disagree	
	0.44 1.93 (-4.55; 5.22) (-4.65; 11.55)	0.99 0.31 (0.20; 4.93) (0.24; 0.45)	0.70 -0.49 (-4.04; 1.07) (-5.12; 5.93)	-0.24 0.03 (-0.37; 3.02) (-0.66; 0.74)	-1.14 -1.43 (-3.12; 1.84) (-11.01; 2.80)	-0.74 -0.33 (-3.30; -0.01) (-1.04; 0.33)							

Shaded cells are statistically significant at 90 %.

2.5 Discussion

Our study has used the Discrete Choice Experiments method using a Heteroskedastic Extreme Value (HEV) to assess the impact of information and advertising on consumers' preferences for wine in Catalonia (Spain) as well as to analyze the position of several wine attributes, especially the origin of the wine.

In Catalonia local wines compete strongly with wines produced in the rest of Spain. Thus, in the analyzed Christmas occasion an advertising campaign was designed to stimulate local wine consumption in that period, as well as to improve Catalan wine notoriety and fidelity amongst local consumers. The data used in this analysis were obtained from two face to face questionnaires before and after the Christmas campaign with 299 and 400 consumers, respectively.

Results suggest that the proposed spot does not affect the ranking of the preferred attributes. However this preference is highly heterogeneous and it depends on social, demographic and behavioral variables. The most preferred product is a Catalan wine made from the "Cabernet Sauvignon" variety and previously tasted by the consumer. However, the magnitude of the marginal utilities has revealed significant differences. After the advertising, the relative importance of the "Catalan" level has increased compared to the Spanish one. This is especially relevant due to the competitive positioning of Spanish wines in Catalonia, particularly those from La Rioja. Thus we can conclude that advertising is a key factor to increase consumer awareness for local wines.

As previously found out by Mtimet and Albisu (2007), Spanish consumers seem to prefer the French variety Cabernet Sauvignon over other Spanish varieties. In our study, we have included a second French variety to examine if the preference is for French varieties in general, or specific for the Cabernet Sauvignon grape. Our results show that the preference is specific for this variety, as the Merlot variety generated a negative utility for the consumer.

Our results also show consumer's preference towards a previously tasted wine (own experience) over a prestigious or recommended one. The consumer may be open to try different wines but, when buying, a previously tasted one will prevail to diminish his uncertainty. This shows the paramount importance of wine fairs and public tastings as a marketing strategy to let local wines be known by the consumer. Results suggest that instead of big promotion campaigns focused in special consumption occasions,

smaller pieces of information along the year could be more effective in increasing consumer knowledge towards Catalan wines and promote initial tasting. As previous experience is a key factor in wine consumer behavior, these campaigns could generate increasing fidelity towards Catalan wines. It is worth mentioning that the difference-in-differences (DID) approach is an interesting technique to assess the effect of advertisement on consumers' preferences. A comparison of results obtained from CE and this alternative remains for future research.

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


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Annex 2.1: Definition and coding of the socio-economic and behavioral variables in the models





Attributes		
Description	Acronym	Codification
Origin	ORIG0	Catalonia
	ORIG1	1= Spain; -1= otherwise
	ORIG2	1= Foreign; -1= otherwise
Knowledge	KNW0	Experience
	KNW1	1= Recommended; -1= otherwise
	KNW2	1= Prestige; -1= otherwise
Variety	VRT0	Cabernet Sauvignon
	VRT1	1= Grenache; -1= otherwise
	VRT2	1= Merlot; -1= otherwise
Price	PRIC	Continuous coding
Socio-economic and Behavioral variables		
Gender	GEN	1= male =; 0= female
Age	AGE0	18-34 years
	AGE1	1= 35-44 years; 0= otherwise
	AGE2	1= 45-59 years; 0= otherwise
	AGE3	1= 60-70; 0= otherwise
Social class	SC0	High and Middle-high social classes
	SC1	1= Middle social class; 0= otherwise
	SC2	1= Low social class; 0= otherwise
Place of Birth	BRT0	Catalonia
	BRT1	1= Rest of Spain; 0= otherwise
	BRT2	1= Foreign (European Union and Rest of countries); 0= otherwise
Purchase Frequency	FREQ	1= High (Several times a week, every week, Several times a month) 0= Low (Once a month, Every 2 / 3 months, Less frequently)
Information in the press	INFO	1= They read =; 0= They do not read
Catalan wines have good flavor, texture and palate	FLA V	1= Agree =; 0= Disagree
Catalan wines are well-known and have public prestige	PRST	1= Agree =; 0= Disagree
Catalan wines are reasonably priced	REAS	1= Agree =; 0= Disagree





Annex 2.2: Choice sets of the experiment





ELECTION # 1	Alternative "A"	Alternative "B"
Origin 	Catalonia	Spain
Knowledge 	Personal Experience	Recommended
Variety 	Cabernet Sauvignon	Grenache
Price 	€6	€14





ELECTION # 1	Alternative "A"	Alternative "B"
Origin 	Catalonia	Spain
Knowledge 	Recommended	Prestigious
Variety 	Grenache	Merlot
Price 	€10	€6





ELECTION # 1	Alternative "A"	Alternative "B"
Origin 	Catalonia	Spain
Knowledge 	Prestigious	Personal Experience
Variety 	Merlot	Cabernet Sauvignon
Price 	€14	€10





ELECTION # 1	Alternative "A"	Alternative "B"
Origin 	Spain	Foreign
Knowledge 	Recommended	Prestigious
Variety 	Merlot	Cabernet Sauvignon
Price 	€6	€14

ELECTION # 1	Alternative "A"	Alternative "B"
Origin 	Spain	Foreign
Knowledge 	Prestigious	Personal Experience
Variety 	Cabernet Sauvignon	Grenache
Price 	€10	€6

ELECTION # 1	Alternative "A"	Alternative "B"
Origin 	Spain	Foreign
Knowledge 	Personal experience	Recommended
Variety 	Grenache	Merlot
Price 	€14	€10

ELECTION # 1	Alternative "A"	Alternative "B"
Origin 	Foreign	Catalonia
Knowledge 	Prestigious	Personal experience
Variety 	Grenache	Merlot
Price 	€6	€14

ELECTION # 1	Alternative "A"	Alternative "B"
Origin 	Foreign	Catalonia
Knowledge 	Personal experience	Recommended
Variety 	Merlot	Cabernet Sauvignon
Price 	€10	€6

ELECTION # 1	Alternative "A"	Alternative "B"
Origin 	Foreign	Catalonia
Knowledge 	Recommended	Prestigious
Variety 	Cabernet Sauvignon	Grenache
Price 	€14	€10

**Chapter 3: Analysis of Consumers' Preferences for a Special-
Occasion Red Wine: A Dual Response Choice Experiment
Approach**

3.1. Introduction

After France and Italy, Spain is the third largest wine-producing country in the world. In 2010, Spain produced more than 35 million hectolitres of wine (OIV, 2011). Wine production in Catalonia accounts for more than 3.4 million hectolitres and has slightly increased in recent years (DAAM, 2010). The wine sector in Catalonia, as well as that in overall Spain, accounts for an important fraction of the agriculture and food industry of the country. Its relevance is multifunctional and lies in its contribution to the economy, the social identity, and the landscape. In Catalonia, there are 12 Protected Designations of Origin (PDO), including the PDO Cava⁵. The Catalan PDOs represents more than 90% of the grape-growing surface (IDESCAT, 2007), which exhibit specialised production for quality wine.

The household wine consumption in Catalonia has decreased from 21.86 litres per capita in 2000 to only 12.42 litres in 2012 (MAPAMA, 2013). However, during the same period, the consumption of quality wine increased by 10.7%. These data show how consumers are experiencing a change of habits by increasing their demand for higher-quality wines while decreasing their consumption of other wines, specifically table wines. Furthermore, the market share of the Catalan PDO wines in retailer channels and in the HORECA sector in Catalonia is low. Catalan PDO wines represent 27.7% of the total quality wine consumption in Catalonia (INCAVI, 2008). Thus, although consumers are shifting their preferences to high-quality wines, the demand for quality Catalan wines in Catalonia is low, and their main competitors are (some) Spanish quality wines, such as "La Rioja".

In turn, the exportation of Catalan quality wines has maintained an increasing trend in recent years both in volume and value (DATACOMEX, 2012), which shows how Catalan quality wines are appreciated beyond our borders. However, despite this growth and the change in the consumers' preferences toward the consumption of more quality wines, the Catalan quality wines represent a low market share in Catalonia. Therefore, we are interested to analyse the wine preferences of consumers in Catalonia to understand why Catalan wines have such a relatively small market share. Specifically, we focused on the preference heterogeneity toward a red wine for a special occasion, such as Christmas, and paid special attention to the origin of the wine.

⁵ The PDO Cava exclusively produces Cava, which is a quality sparkling wine produced using the Traditional method (also called the *Champenoise* method, although this terminology was outlawed in Europe in 1994).

The objectives of this study are twofold: (1) to analyse the consumers' red wine preferences for a special occasion and the heterogeneity of these preferences, particularly with respect to the relative importance of the origin of the wine, and (2) to analyse the impact of forcing or not consumers in their choice using the Dual Response Choice Experiment (DRCE) approach in Choice Experiment (CE). This study is relevant to consumer behaviour associated with wine purchases in Catalonia, where the place-based and the region-of-origin branding attempt to influence the consumers' final decisions.

The CE was used in this study due to its suitability for the analysis of consumers' preferences toward "complex" goods (i.e., goods that include several descriptors or attributes). We followed a variation of the DRCE design proposed by Brazell *et al.* (2006) that allowed us to compare the results obtained from forced and non-forced responses. The heterogeneity of the consumers' preferences for a special-occasion red wine in Catalonia was determined based on that respondents' socio-demographical variables (S), the wine consumption frequency (C), the wine involvement (I), and the attitude toward Catalan wines (A).

This study relies on a previous empirical application that aimed to analyse the impact of advertising on consumers' preferences for red wine in a special occasion, such as Christmas, through a forced choice experiment scenario. We refer to chapter 2 and, therefore, the sampling data will be referred to the previous chapter. However, certain reservations regarding the obtained results have been stated due to the latent unrealism of the hypothetical simulated market (i.e., excluding the opt-out option). In this context, the present study attempts to address this drawback using a variation of the DRCE design as it allows both forced and non-forced choice (Kallas and Gil, 2012). To the best of our knowledge, this paper is the first attempt that analyses the preference heterogeneity using the DRCE design for a complex product, such as a special-occasion red wine. Furthermore, this is the first study that analysed the impact of the preference heterogeneity for wine on forced and non-forced choices using the DRCE. In addition, we set up two indexes variables to measure the consumers' wine involvement and their attitudes toward the local product. The consumers' preferences related to these index variables were also determined.

3.1.1. Consumers' preferences towards wine

3.1.1.1. Wine as a difficult product to choose

It is been stated that consumers face certain difficulties and confusion when choosing a wine (Lockshin *et al.*, 2006). The main reason for this difficulty is the immense number of cues that are associated with wine compared with many other products. First, wine can be differentiated by its type: red, white, rosé, sparkling, liquored, and others. However, the amount of cues is still very large within these categories. Wine cues range from the country and the region of origin to the brand name, price, awards, and packaging. Intrinsic cues, such as quality and taste, grape variety (or varieties), vintage, and alcohol content, are also relevant. The varied nature of wine as a product contributes to the high risk associated with the wine purchase decision compared with other alcoholic drink choices (e.g., beer and spirits) (Lacey *et al.* 2009). Thus, because many consumers perceive wine as a complex product, some form of risk reduction behaviour is likely to be exhibited during its purchase (Johnson and Bruwer, 2004).

Taste is the main factor of choice for wine consumers (Lockshin and Hall, 2003). More specifically, when wine is linked to a specific consumption situation, such as its consumption in a restaurant, taste is the primary reason why consumers select a specific wine (Hall *et al.*, 2001; Jaeger *et al.*, 2010; Bruwer *et al.*, 2011). However, wine is an experience product: its quality (taste) cannot be assessed until the product has actually been consumed (Mueller *et al.*, 2010, Bruwer *et al.*, 2011; amongst others). Therefore, consumers will rely on extrinsic cues for the assessment of wine quality (Lockshin and Hall, 2003; Lockshin and Halstead, 2005; Lockshin *et al.* 2006; Remaud and Lockshin, 2009) and will make their decision based on the information available on the label and bottle (which are proxies or indications of what lies inside the bottle). Moreover, wine consumption can be explicitly related to a specific situation and to context (Bruwer *et al.* 2002); thus, consumers will demand a different quality according to the occasion during which they plan to consume the wine (Quester and Smart, 1998; Lockshin and Hall, 2003). It is been noted that different consumption situations can amplify or mute the importance of different wine attributes, such as price (Lockshin and Hall, 2003; Lockshin *et al.* 2006). Hall and Lockshin (2000) determined that low prices were determinant when the occasion was to relax at home by oneself or for entertaining at an informal party or BBQ and that high prices were relevant when the consumer

wanted to create an impression on a business associate or to celebrate a special anniversary.

3.1.1.2. *Major cues for wine choice*

Consumers only use a small amount of the information available to make a decision (e.g., Foxall, 1983; Lockshin and Hall, 2003). Taking this into account, brand names are capable of acting as a surrogate for a number of attributes (including quality) and might help address risk while providing product cues (Lockshin and Hall, 2003). Brand names have even been considered to be the key unit of the decision making process (Ehrenberg, 1988). Consumers develop a small brand repertoire, which may well be a collection of true brands and generic types (Lockshin and Hall, 2003; Gluckman, 1990). Generic types can be built on the region of origin and/or the grape variety. Lockshin and Halstead (2005) determined that an unknown brand lessens the likelihood of purchase when well-known brands are also available for purchase, and the same is true for regions of origin.

The origin of the wine also plays a key role in the consumers' decision-making process (Gluckman, 1990; Skuras and Vakrou, 2002). Consumers use the origin of the wine as one indicator of the overall quality of the product. Some regions of origin have become luxury brands in themselves (Remaud and Lockshin, 2009). There is a broad consensus of research that contends that the wine region of origin adds value in the consumers' eyes (Gil and Sánchez, 1997; Quester and Smart, 1998; Angulo *et al.*, 2000; Lockshin *et al.*, 2006; Remaud and Lockshin, 2009, amongst others), although its importance depends on the country of study (Lockshin *et al.*, 2006; Goodman *et al.*, 2007; Lockshin and Halstead, 2005).

Price has been shown to be a very important attribute that affects wine choice. It is an important cue used to infer the quality of a product when there are a small number of other cues available, when the product cannot be evaluated before purchase, and when there is some degree of risk of making a wrong choice (Lockshin and Hall, 2003; Mitchell and Greatedorex, 1988; 1989). Batt and Dean (2000) found that price was the most important factor that influences the consumer's decision to purchase wine from retail liquor stores in Australia. However, price was more important for those consumers who drank wine less frequently and for those who tend to purchase more inexpensive wines. In a recent study, Bruwer and Buller (2012) showed that Japanese consumers consider price to be the most significant extrinsic wine attribute, which

indicates that it is an important factor that has a strong influence in the wine buying decision.

As previously stated, a generic type or brand may also be built upon grape varieties. These are a major factor in the wine choice in the New World (Lockshin and Hall, 2003). In Spain, these do not determine the prices of quality red wine (Angulo *et al.*, 2000); however, according to Mtimet and Albisu's (2006) choice experiment, consumers prefer Cabernet Sauvignon over other Spanish grapes. Other possible attributes of relevance for consumers are the wine's vintage, the alcohol content, the presence of awards, and the labelling and packaging.

3.1.1.3. *Risk Reduction Strategies (RRS) in wine choice*

Amongst other factors, all of the complexities that wine encompasses, the enormous amount of labels that are available in the market, and the perceived formality of wine have led to the suggestion that the choosing of a wine can be intimidating (Lockshin and Halstead, 2005). In 1988, Mitchell and Greatorex conducted the first structured research study to identify the types of risk that affect wine consumers in the UK. Four types of risks were identified, and a fifth was included later (Schifman and Kanuk, 2006 in Bruwer and Rawbone-Viljoen, 2012). Because many consumers perceive wine as a complex product (Bruwer *et al.* 2011), some form of risk reduction behaviour is likely to be exhibited during its purchase (Johnson and Bruwer, 2004). In a recent work, Bruwer and Rawbone-Viljoen (2012) compiled the main risk reduction strategies (RRS) for wine choice from the literature. These are summarised below:

- Information search: The information is obtained from assistants, waiters, wine editorials, tasting notes, product packaging, word-of-mouth, family and friends, and opinion leaders (Mitchell and Greatorex, 1988). Information seeking is largely dependent on the level of consumer involvement.
- Brand loyalty: Brand loyalty is also closely correlated with involvement. Uniformed buyers possess small brand repertoires and gravitate toward the safety of bigger brands that offer consistency in taste and quality (Lockshin and Spawton, 2001). Wine enthusiasts are likely to be more experimental.
- Store image: This becomes more important when looking for expensive and infrequently purchased items (Hisrich *et al.*, 1972).

- Well-known brands. These brands are more likely to be trusted when consumers have no experience with the product (Mitchell and Greatorex, 1989).
- Price: Price becomes more important when no other information about the product is available (Mitchell and Greatorex, 1989). If the consumer perceives a high price to quality relationship, he/she will buy a more expensive wine with the belief that it will have a higher quality (Gluckman, 1986). A common fallacy is that knowledgeable consumers always spend generously, but these consumers often recognize good value and trade down (Bruwer *et al.*, 2002).
- Seeking reassurance: Reassurance is sought mainly through tastings and information seeking behavior. The very act of wine tasting should be regarded as information gathering (Mitchell and Greatorex, 1989). Batt and Dean (2000) found that prior experience had the most influence on the purchase of wine. Although sales assistants can play an important advisory role, some studies have shown that sales people are often held in low esteem (Bruwer and Johnson, 2005).

3.1.1.4. *Wine involvement*

Involvement can be defined as the personal relevance of a purchase decision to a buyer (Rothschild, 1984). In the case of wine, the consumer's level of involvement will condition his/her attitudes toward the product (Charters and Pettigrew, 2006). In the literature, high- and low-involvement wine buyers have been shown to behave differently (Lockshin, *et al.*, 2006). Lockshin *et al.* (2001) compared French and Australian wine consumers and demonstrated that involvement was a better predictor of wine choice behavior than the nationality of the wine consumers. The level of product involvement affects the strength of the attributes in the wine choice behavior (Lockshin and Halstead, 2005). More-involved consumers utilise more information and are interested in learning more, whereas low-involved consumers tend to simplify their choices and use risk reduction strategies (Lockshin and Hall, 2003; Lockshin *et al.* 2006). Thus, different levels of involved consumers use wine cues differently, and it would be advisable to study these groups of consumers separately (Lockshin and Hall, 2003).

3.1.2. Forced versus non-forced choice

To fulfil our second goal, a review about the implications of forced and non-forced choice has been carried out. In the application of the CE, researchers usually use two approaches for the construction of their choice sets. The first approach relies on forcing participants to select a product from a set of alternatives, whereas the second approach includes a “fixed alternative” in the choice set and thus allows a no-choice response. This option can be defined as an opt-out option (null-option or outside option), in which neither the hypothetical product nor the alternatives are preferred. The use of a forced versus a non-forced-choice in the CE technique used to analyse consumers’ preferences has been addressed by several studies over the past decades (e.g., Batsell and Louviere, 1991; Huber and Pinnell, 1994; Dhar, 1997; Dhar and Simonson, 2003; Brazell *et al.*, 2006; Vermeulen *et al.*, 2008; Parker and Schrifft, 2010). Based on a literature review, the implications of forcing or not forcing consumers in their choices can be summarized in the answer to the following questions:

3.1.2.1. *Under which conditions should a researcher include a fixed option?*

The use of forced or non-forced CE will depend on the objective of the study (Dhar, 1997; Dhar and Simonson, 2003), although it is now a common practice to include a no-choice option in most CE studies⁶ (Parker and Schrifft, 2010). The forced choice option is applied when the following conditions are present: (1) the interest of the study is to compare levels and attributes (2) the cost of delaying the choice is damaging, i.e., the product is needed in a very short term (Dhar and Simonson, 2003; Parker and Schrifft, 2010), and (3) the potential “greater easy way out” is to be avoided (Parker and Schrifft, 2010). However, a “no-purchase” option is important to measure market penetration and to examine the shift from a usually purchased product to the analyzed one. An opt-out option is also included when researchers need to increase the realism of the hypothetical simulated market (Batsell and Louviere, 1991) and to be consistent with demand theory (Batsell and Louviere, 1991).

⁶ Some types of valuations can only be realistically performed using forced choice experiments, e.g., Hensher *et al.* (2005) and Rigby *et al.* (2010).

3.1.2.2. *What are the econometric implications of both approaches?*

Including or excluding the opt-out alternative in choice experiments also has some econometric implications on the marginal trade-off between the attributes' levels (Kontoleon and Yabe, 2003). The introduction of a fixed alternative may cause correlation across the use of the alternatives and thus violate the IID assumption (error term is distributed independently and identically) underlying the Multinomial Logit Model. As a result, the IIA (Independence of Irrelevant Alternatives) property also tends to be violated when the fixed alternative is introduced because this fixed alternative tends to eliminate a greater share from certain options rather than from others that individuals tend to select under forced-choice conditions (Dhar, 1997; Dhar and Simonson, 2003; Brazell, *et al.*, 2006). Another econometric implication of excluding the fixed alternative is the overstatement of the likelihood that individuals would actually choose one alternative from a choice set (Boyle *et al.*, 2001; Ruby *et al.*, 1998). Therefore, the non-forced approach improves the statistical efficiency of the estimated choice parameters (Anderson and Wiley, 1992).

3.1.2.3. *Why do respondents select a fixed alternative as their preferred option?*

Respondents may choose the opt-out option for several reasons. According to rational theory, individuals reject making a choice when there is no compelling rationale for that choice. This can be caused by the difficulty associated with selecting the best alternative, either because neither alternative is relevant (Dhar and Simonson, 2003; Dhar, 1997) or due to the desire to save time and effort (Dhar and Simonson, 2003). In addition, when the choice options are not sufficiently different (i.e., a choice set containing relatively homogeneous options or not meeting a minimum acceptable standard for the respondents), the respondents may also choose the opt-out option (Huber and Pinnell, 1994). This can occur despite the presence of sufficiently good alternatives when no clear best alternative exists, which reveals preference uncertainty (Dhar, 1997). In this context, according to psychological theory, when respondents are uncertain of their choices, they may tend to select the fixed alternative because it is less likely to be observed as an error (Simonson and Tversky, 1992). In other words, respondents may prefer the consequences of inaction rather than those of wrong action, and the opt-out option can be used as an easy way to not answer (Vermeulen *et al.*, 2008).

When respondents are confronted with a forced-choice set, they will try to choose the best available option (i.e., picking the winner), which would therefore reveal the consumers' preference structure. In this case, an attribute-based evaluation may take place, and respondents choose between alternatives by comparing them attribute-by-attribute (Parker and Schrifft, 2010). In such an approach, some options may not be taken into account, e.g., when options in the choice set have some shared and some unique features (Dhar and Nowlis, 2004). In contrast, when the opt-out option is available, respondents not only need to determine which alternative is the winner but also whether any or all of the alternatives are worth choosing (Parker and Schrifft, 2010). As such, facing a non-forced-choice should trigger a relatively more evaluative type of judgment, in which the consumer evaluates each alternative one at a time in a holistic way. Thus, respondents are focused on determining whether each individual alternative should be chosen at all (Parker and Schrifft, 2010). This type of judging is known as alternative-based evaluation.

3.1.2.4. Are there other sorts of implications when including a fixed option?

There are other miscellaneous implications of the inclusion of the "no-choice" option. First, this option provides a less conflicted decision-making process and releases the respondents from negative emotions (Luce, 1998) and psychological discomfort (Dhar and Simonson, 2003). In addition, if the choice is difficult, respondents may behave by selecting a) a compromised alternative, b) a dominating alternative, or c) a high-quality, high-price alternative. Additionally, the presence of the opt-out option allows the modelling of the choice between the attributes and the levels while determining the respondents' will to participate in the choice (Batsell and Louviere, 1991). Furthermore, when the opt-out option is not included, the results may be biased by the masking of the individual's true preferences (Dhar and Simonson, 2003; Dhar, 1997; Huber and Pinnell, 1994). Moreover, non-forced choice makes the implementation of the experimental design easier (Anderson and Wiley, 1992; Brazell *et al.*, 2006). However, the optimal designs for CE with or without the no-choice option are equal (Street and Burgess, 2004).

3.2. Methods

3.2.1 The Dual Response Choice Experiment Design

Following the classical DRCE design, respondents are first asked to choose from a set of available alternatives in a forced-choice task (without a no-choice option). Later in the same questionnaire, the choice exercise is repeated with the no-choice option. Brazell *et al.* (2006) empirically compared this DRCE design with the traditional Single-Stage Free-Choice Experiment design and obtained more efficient coefficient(s)⁷ in the former approach. In this study, we used a variation of the original DRCE design. Similarly to the protocol described by Kallas and Gil (2012), the respondents were first asked to select their preferred alternative in a forced-choice scenario and then whether they are willing to purchase the selected alternative within the same exercise (Figure 3.1).

Figure 3.1: The Dual Response Choice Experiment Design

Choice set	Alt. "A"	Alt. "B"
Attribute 1 (A ₁)	Level 1 (L _{1,1})	Level 2 (L _{1,2})
⋮	⋮	⋮
Attribute n (A _n)	Level 3 (L _{4,3})	Level 1 (L _{4,1})
<p>1. Considering that "A" and "B" are the only available products, which product would you choose? "A" <input type="checkbox"/> "B" <input type="checkbox"/></p> <p>2. Would you purchase your chosen product? Yes <input type="checkbox"/> No <input type="checkbox"/></p>		

Introducing a follow-up question in the DRCE, after forcing consumers to select their preferred product (i.e. step 2 in Figure 1) is significant because it allows the respondents to face a "purchase/no-purchase" decision, which may have the following advantages:

- The purchase/no-purchase scenario may better mimic the circumstances under which actual choices are made in a market situation (Ryan and Skatun, 2004) and the choice process of consumers. In the presence of unsatisfied needs, the consumer behaviour in the marketplace typically entails making two decisions, and the actual

⁷ Brazell *et al.* (2006) measured the efficiency by the root mean squared error of the individual coefficients. However, their results were based on simulation exercises. In this sense, further research on this field would be required to assess whether the DRCE design improves the efficiency.

choice is a joint consequence of these decisions (Dhar and Nowlis, 2004). The first decision is related to the selection of the preferred choice of the available options (step 1 in the DRCE), and the second decision is which of the preferred alternative(s) will be purchased (step 2 in the DRCE) (Dhar and Nowlis, 2004).

- This approach (in comparison with the traditional CE design) is able to analyze both what consumers really “would purchase” and what they “would prefer” from a choice set. For example, if I am forced to choose between two products (A and B), A costs €5 and B costs €6, and my maximum willingness to pay is €4, then, in the traditional CE design, I would select the opt-out option (neither of them). However, I may “prefer” one over the other (Ryan and Skatum, 2004). Thus, “preferred” options may not match the respondents’ willingness to purchase (Hu and Cox, 2009). Therefore, the inclusion of the purchase/no-purchase scenario within the DRCE allows researchers to analyze both aspects, i.e., what consumers “would choose” and what they “would prefer”.

- The purchase/no-purchase decision after a forced-choice increases the share of the no-choice option compared with when it is available in the initial choice set (Dhar and Simonson, 2003). This can be explained by the respondents’ greater commitment to an option when it is selected freely (Dhar and Simonson, 2003). Thus, an advantage of the DRCE design may be derived from a smaller degree of the respondents’ commitment to any of the options.

- Asking consumers whether they are willing to purchase the product emphasises the purchasing context, which leads the respondents to focus more on their budget constraints by considering the price. In contrast, in the traditional single-stage CE, the respondents can be driven by reason and logical arguments rather than by price considerations (McKenzie, 1993).

- The respondents are more likely to decide their preferred option using a holistic alternative-based evaluation (Dhar and Nowlis, 2004) rather than an attribute-based approach, which minimises the undesired lexicographic preferences⁸ in Choice Experiments.

Finally, for the econometric modelling we applied the Heteroscedastic Extreme-Value (HEV) model. This model allows relaxing the restrictive assumption of the

⁸ Lexicographic preferences were observed when respondents choose alternatives based on a single criterion or attribute. These respondents always choose the alternative with the higher or lower value of a certain attribute, regardless of the values of the other attributes.

standard CE models known as the IIA property (Independence of Irrelevant Alternatives) which is seldom respected. This assumption implies that the extent of variation in the unobserved factors that affect the utility is the same all of the alternatives. This model has been recently introduced in food economics applications in studies on beefsteak (Lusk and Schroeder, 2004), canola oil (Hu *et al.*, 2006), functional children's snacks (Krystallis and Chrysochou, 2011), rabbit meat (Kallas and Gil, 2012), and wine (Kallas *et al.*, 2012). More information about the CE method and the HEV model can be found in Louviere *et al.*, 2001; Hensher *et al.*, 2005; and Greene, 2003; among others.

3.2.2. Empirical application

3.2.2.1. Sample

Data were obtained from 400 consumers who provided responses to a structured face-to-face questionnaire over a 4-week period. We used a quota sampling procedure stratified by gender, age, and postal districts with proportional allocation to each stratum. The selection criteria were that respondents should be at least 18 years of age (legal drinking age), should have purchased a bottle of wine within the last 3 months, and should be the main wine purchase decision makers in their household. The respondents were recruited in major supermarkets and in one of the central streets of the city of Barcelona. The fieldwork was subcontracted to a company specialized in marketing research. Each respondent was given 20€ to participate in the experiment⁹. The questionnaire was pretested a total of four times using a pilot sample of six different consumers each time and subsequently revised to improve readability and understanding.

3.2.2.2. Attributes and levels

The first important step is the identification of the main attributes and levels that consumers consider when purchasing wine. The literature review performed allowed us to identify a set of major attributes that affect the wine choice. However, some of these attributes had to be eliminated because the design complexity of a choice experiment exponentially increases with the number of attributes and levels. Thus, to reduce the wine choice complexity, we delimited our wine selection by focusing on a red wine

⁹ A summary of the survey technical sheet is shown in Table 2.1 (Chapter 2). The sample that was used for the present study is named after "post experiment".

purchased for a special occasion, such as Christmas. By specifying when the wine will be consumed, we lead our respondents to think of the same context. Subsequently, the identified attributes were discussed in a focus group formed by university lecturers in the field of marketing and representatives from consumers' associations in Catalonia to determine the final set of attributes used in the study.

The wine origin is the factor that interested us the most, and "Catalan wine" was used as an attribute level. The other introduced levels were "Spanish wine", which implies any wine produced in Spain with the exception of those produced in Catalonia, and, as a third level, "foreign wine". The grape variety was also considered. Mtimet and Albisu (2006) found that the consumers chose the only possible French variety that was presented (Cabernet Sauvignon). In our choice experiment, two French varieties were introduced (Cabernet Sauvignon and Merlot), and a typical traditional Spanish variety (Grenache). Through these options, we aimed to determine whether the consumers' preferences are for French wines in general or for the Cabernet Sauvignon grape in specific.

Some strategies of risk reduction are likely to be exhibited during wine purchase (Johnson and Bruwer, 2004). Johnson and Bruwer (2004) concluded that the main risk reduction strategies (RRS) used by consumers when purchasing high-priced wines are reassurance and information seeking. Because our wine is a product to be consumed at Christmas reassurance and information seeking may be the main RRS. Therefore, some wine characteristics that influence risk reduction were included as the third attribute of our experiment with the following levels: a previously known wine, a recommended wine, and a prestigious wine. Through this last level, we attempted to ascertain the effect of a known brand name (prestigious) on the other two alternatives. There was no context specified for the "recommended wine", i.e., it could have been recommended by any person. We decided not to specify this because recommendations have been found to act as a RRS (risk reduction strategy) regardless of the source, e.g., assistants, waiters, word-of-mouth, family, and friends. This third attribute was denoted "Wine References".

The set of attributes included in our experiment were the following: Wine Origin (Catalonia (regional), Spain (national), and imported (international)), Wine References (previously experienced, recommended, and prestigious), Grape Variety (Cabernet Sauvignon, Grenache, and Merlot), and Price (€6.00, €10.00, and €14.00). The price levels were chosen based on the fact that the purchase was meant for a special occasion,

such as Christmas, and therefore do not reflect the mean wine market prices in Spain for conventional wines¹⁰. These identified attributes and levels were endorsed by all of the participants of the focus group. A pilot questionnaire was then implemented to check for consistency. Following a full factorial design, a total of 81 hypothetical products were generated, which resulted in a set of $3^4 \times 3^4$ (6,561) possible combinations (choice sets). Finally, an orthogonal fractional factorial design was applied considering all of the main effects of the attributes, which enabled us to reduce the number of choice sets to nine.

3.2.2.3. *Preference heterogeneity variables*

The notion of a single, homogeneous market is both a stereotype and a fictional market concept that never really existed (Bruwer *et al.* 2002). Thus, an aggregated analysis of consumers' wine preferences can mask the interesting heterogeneity in a consumer sample. In our work, the heterogeneity of the consumers' preferences was determined based on the respondents' socio-demographical variables (S; gender, age, social class, and place of birth), wine consumption frequency (C), wine involvement (I), and attitude toward Catalan wines (A). The gender was included as a dummy variable (male and female). The social class was obtained as a combination of the education level of the person in the household with the highest income and his or her working position, and three main social classes were therefore determined: high, average, and low. The age was divided into four groups, and the consumption frequency was codified as a dummy variable (low and high frequency).

To determine the wine involvement (I), we developed a measuring scale based on the expectation that more-involved consumers are interested in learning more (Lockshin and Hall, 2003; Lockshin, *et al.* 2006) would thus have better knowledge of the product (Cox, 2009; Bruwer and Buller, 2012). We also took into account the work performed by Charters and Pettigrew (2006), who found that involved consumers are information-seeking individuals and have often been wine tourists, and the definitions of involved and uninvolved consumers developed by Lockshin *et al.* (2001), who found that the high-involved consumers enjoy learning about wine and the low-involved consumers do not read back labels. We constructed an index that analyses the items

¹⁰ The prices included in the choice sets were chosen using information provided from the pilot survey, which was implemented to cover the middle 90% of the observed values.

assessed by respondents on a Likert scale from 0 to 10¹¹ (Table 3.1). Based on this scale, three groups were constructed for the wine involvement attribute: low, average, and high¹².

The consumer's attitudes towards Catalan (A) wine were also included in a similar way as the approach used to assess the wine involvement. We constructed an index that analyses a set of items assessed by respondents on a Likert scale from 0 to 10¹³ (Table 3.1). The items that were used to measure the attitude towards Catalan wines assessed their notoriety and prestige, intrinsic quality, diversity, design, and price. Using these attributes, we attempted to collect the most relevant wine attributes noted from the literature review. Based on the scale, three groups of agreement levels with a positive attitude toward the Catalan wine were constructed: low, average, and high¹⁴. Furthermore, to ensure the reliability of both scales, Cronbach's alpha was calculated. The obtained values for Cronbach's alpha for the scales used to assess the wine involvement and the attitudes toward Catalan wines were 0.850 and 0.871, respectively. These values are widely accepted as consistent.

3.3. Results

3.3.1. Sample description

To characterize consumers, the proportion of their most important socio-demographic stratum was set to be in accordance with that of the population from the metropolitan area of Barcelona¹⁵. The results associated with the wine consumption, attitudes and behavior are shown in Table 3.1. Wine consumers from the metropolitan area of Barcelona generally purchase wine several times a month, although a high percentage of consumers also purchase wines weekly. It was also shown that Catalan consumers do not seek wine information in a very active manner. The only commonly used method for collecting information about wine is "reading the information printed

¹¹ Before constructing the index, we discarded the results of a Principal Component Analysis (PCA) because it explained only 52.99% of the total variance of the variables.

¹² The groups were created through a Cluster analysis using the involvement index as a classification variable. We obtained a low-involved group (117 respondents with an index mean of 18.32), an average-involved group (155 respondents with an index mean of 34.92), and a high-involved group (128 respondents with an index mean of 50.20).

¹³ Before constructing the index, we discarded the results of a Principal Component Analysis (PCA) because it explained only 60.80% of the total variance of the variables.

¹⁴ The groups were created through a Cluster analysis using the attitude index as a classification variable. The following groups were obtained: respondents with a low positive attitude (65 respondents with an index mean of 29.23), respondents with an average positive attitude (179 respondents with an index mean of 40.24), and respondents with a high positive attitude (156 respondents with an index mean of 49.29).

¹⁵ For further details of the sample characteristics, see Table 2.3 (Chapter 2). The sample that has been used for the present study is named after "post experiment".

on the label". Furthermore, consumers have a positive attitude toward Catalan wines because they agreed to a greater extent with the items that advocated their good quality, texture and palate, great variety, and their connection with well-known and prestigious brands.

Table 3.1: Wine consumption, behavior and attitudes of the sample towards wine

Variables	% or Mean
Purchase frequency (%)	
Several times a week	6.0%
Every week	24.8%
Several times a month	34.3%
Once a month	20.5%
Each 2 - 3 months	9.8%
Less often	4.8%
Wine involvement variables (0: strongly disagree; 10: strongly agree)	
I like to read the information that is on the label	7.09
I visit / I like to visit wineries in the production areas	5.69
I read the information about wines published in the press	5.48
I attend / I like to attend wine tasting courses	4.45
I read wine journals	4.15
I regularly receive wine information sheets or catalogues	4.12
I look up information on Internet wine sites	3.99
Attitudes towards Catalan wines (0: strongly disagree; 10: strongly agree)	
Have a good taste, texture and palate	7.42
Are related to well-known and prestigious brands	7.37
Have a reasonable price	7.22
Present complete and attractive labels	6.75
Supply a great variety of wines	6.68
Present attractive bottling	6.55

3.3.2. Estimating aggregate consumer preferences

The results of the estimated HEV models with and without the opt-out option are shown in Table 3.2. In general, both models are significant and exhibited a good fit with highly significant likelihood ratios. The results of both models show that all of the parameters, with the exception of the recommended level, are significant, which indicates that the attributes considered are significant determinants of the consumer's welfare. The positive (negative) sign of the attributes implies a positive (negative) contribution to the consumers' utility function. The scale parameters are significantly different from 1, which exhibits the variance in the variability among the alternatives. This result indicates the violation of the IID assumption and thus confirms that the model used in this study is appropriate. Moreover, the results found higher values for the scale parameter in the non-forced model, which suggests the presence of a lower uncertainty level in the expected utility derived from the presence of an opt-out alternative.

To determine the economic interpretation of the results, implicit prices and their confidence levels for each attribute level were calculated using the simulation procedure described by Krinsky and Robb (1986). All of the implicit prices, with the exception of the recommended level, which does not contribute either positively or negatively, are significantly different from zero (Table 3.3).

The results from the forced and the non-forced-choices exhibited implicit prices of 2.65€ and 3.07€, respectively, for the Catalan origin and 0.50€ and 0.39€, respectively, for the Spanish origin. The negative values for the willingness to pay are interpreted as the discount needed for the consumer to accept the attribute levels. The results of both models show that consumers would ask for a price compensation of -3.15€ and -3.46€ to choose the imported wine (forced and non-forced-choices, respectively). The same interpretation applies for the "Prestige" of the wine (wine references attribute) and the "Merlot" variety because consumers would ask for a discount in the price to accept these choices (Table 3.3).

Table 3.2: Results of the HEV model for forced and non-forced models using the DRCE design

Forced-Choice				Non-forced-Choice			
Variables	Coeff.	Std.error	p-value	Variables	Coeff.	Std. error.	p-value
Spain	0.082	0.039	0.037	Spain	0.062	0.036	0.089
Foreign	-0.521	0.058	0.000	Foreign	-0.538	0.101	0.000
Recommended	-0.029	0.040	0.469	Recommended	0.007	0.039	0.858
Prestigious	-0.106	0.040	0.008	Prestigious	-0.121	0.037	0.001
Grenache	-0.194	0.042	0.000	Grenache	-0.207	0.047	0.000
Merlot	-0.099	0.041	0.015	Merlot	-0.149	0.040	0.000
Price	-0.166	0.021	0.000	Price	-0.155	0.029	0.000
				No-choice option (C)	-1.940	0.210	0.000
Scale Parameters of Extreme Value Distribution				Scale Parameters of Extreme Value Distribution			
θ_A	0.585	0.068	0.000	θ_A	0.889	0.169	0.000
θ_B	1.000	Fixed Parameter		θ_B	1.093	0.215	0.000
				θ_C	1.0000	Fixed Parameter	
Std. Dev for HEV distribution				Std. Dev for HEV distribution			
σ_A	2.193	0.255	0.000	σ_A	1.443	0.275	0.000
σ_B	1.282	Fixed Parameter		σ_B	1.173	0.231	0.000
				σ_C	1.282	Fixed Parameter	
<i>N</i>	7,200 (400 consumers \times 2 alt. \times 9 choice sets)			<i>N</i>	10,800 (400 consumers \times 3 alt. \times 9 choice sets)		
LL(0)	-2,495.33	LL(0)	-2,305.72	LL(0)	-3,955.00	LL(0)	-3,629.86
LLR	379.23 (0.000)	pseudo R²	0.076	LLR	650.29 (0.000)	pseudo R²	0.082

Table 3.3: Implicit price of attributes and levels

Attributes levels	Forced-Choice	Non-forced-Choice	% of IP difference (Non- forced vs. Forced)
	Implicit Price	Implicit Price	
Catalonia (regional)	2.65*** (2.18 ; 3.35)	3.07*** (2.39 ; 4.36)	15.66%* (1.2%; 39.6%)
Spain (national)	0.50** (0.12 ; 0.92)	0.39* (0.03 ; 0.77)	-21.24%** (-60.7%; -6.9%)
Imported (international)	-3.15*** (-3.93 ; -2.54)	-3.46*** (-4.22 ; -2.80)	9.85%** (3.6%; 16.5%)
Experienced wine	0.81*** (0.67 ; 1.03)	0.73*** (0.56 ; 1.04)	-9.93% (-21.2%; 8.8%)
Recommended wine	-0.17 (-0.63 ; 0.21)	0.04 (-0.40 ; 0.48)	-125.81% (-611%; 582%)
Prestigious wine	-0.64*** (-1.06 ; -0.25)	-0.78*** (-1.17 ; -0.44)	21.54%** (4.9%; 71.7%)
Cabernet Sauvignon	1.77*** (1.46 ; 2.24)	2.29*** (1.76 ; 3.26)	29.30%*** (13.1%; 56.1%)
Grenache	-1.18*** (-1.68 ; -0.76)	-1.33*** (-1.78 ; -0.94)	13.30% (-1.6%; 31.9%)
Merlot	-0.60*** (-1.01 ; -0.22)	-0.96*** (-1.37 ; -0.58)	60.70%** (30.8%; 181.3%)

Significance levels: *** p<0.01; ** p<0.50; * p<0.10

The results also show that the score rankings of the attributes are the same in the forced and non-forced choices. However, there are significant differences between their implicit prices (third column in Table 3.3), which range from -21.24% to 60.70%. The utility of the most preferred levels is significantly higher in the non-forced choice compared with the forced choice: the implicit price for the Catalan origin and the Cabernet Sauvignon grape variety is higher by 15.66% and 29.30%, respectively, in the non-forced choice compared with the forced choice. However, no significant differences were found between the non-forced and forced choices for “previously experienced” wine, which is the preferred level for the attribute “Wine References”. The levels that exhibited a negative utility, with the exception of “recommended” wine, had higher values in the forced choice compared with the non-forced choice. Nevertheless, the “recommended” level was not significant in any of the experiments (forced and non-forced). For Spanish wine, a decrease in the consumer willingness to pay was found from the forced choice to the non-forced choice. Although Spanish wine obtained a positive implicit price (i.e., consumers are willing to pay for it), it is not the preferred level of the attribute; thus, to the detriment of the other origin levels, a Catalan origin increases the consumers’ willingness to pay with the non-forced CE.

3.3.3. Estimating the preference heterogeneity

To evaluate the heterogeneity of consumers' preferences, specific HEV models that introduced interaction with socio-demographical variables (S), wine consumption frequency (C), wine involvement (I), and attitude toward Catalan wines (A). All of the models were significant and showed a good fit with highly significant likelihood ratios. For example, the results of the "wine purchase frequency" variable (FREC: codified as a dummy variable with the value of "1" to indicate a high frequency of wine purchases) are shown in Table 3.4¹⁶.

Table 3.5 (a, b and c) shows the average implicit prices obtained for the analysed variables in the forced and non-forced choices. To correctly describe the results of the heterogeneity analysis, significant differences between the implicit prices were determined using the Krinsky and Robb simulation procedure:

- First, this simulation procedure was performed for the implicit prices of the categories of each variable (e.g., for the gender variable, the significance of the differences between male and female respondents for each attribute level was determined). The shadowed cells confirm the presence of significant differences within the categories.
- Second, we tested the significance of the differences between the forced and the non-forced results for each category of the individual variables (e.g., the significance of the differences between the forced and non-forced results obtained for male respondents was analysed). The significance levels are identified by the symbol "*".

The analysis of the birth place variable revealed that respondents who were born in Spain (excluding Catalonia) exhibited a significant increase of the welfare estimate for the Catalan origin of the wine in the non-forced choice compared with the forced choice. Moreover, for the Spanish origin it is remarkable that there are no significant differences between the variable's categories (different places of birth) for the forced choice. In contrast, the group born in Spain (excluding Catalonia) exhibited a significantly higher willingness to pay in the non-forced-choice. Related to the origin of the wine, respondents with positive attitudes towards Catalan wines show a higher willingness to pay for these wines. The differences within categories are notably accentuated in this case. Furthermore, the respondents who purchase wine more

¹⁶ The results of the individual HEV models for the other variables (i.e., gender, age, household social class, place of birth, wine involvement, and attitude towards Catalan wines) were not included in the results section due to space restriction. However, the results for the other HEV models are available for interested readers.

frequently show a higher preference for Catalan wines compared with those with a lower purchase frequency. Within the groups of respondents with different wine involvements, the averagely involved group shows the highest willingness to pay for wines of Catalan origin.

Table 3.4: HEV model for the wine purchase frequency variable using the DRCE design

Forced-Choice				Non-forced-Choice			
Variables	Coeff.	Std. error.	p-value	Variables	Coeff.	Std. error.	p-value
Spain	0.130	0.066	0.051	Spain	0.088	0.060	0.142
Foreign	-0.561	0.081	0.000	Foreign	-0.554	0.114	0.000
Recommended	0.002	0.068	0.975	Recommended	-0.009	0.068	0.894
Prestigious	-0.190	0.069	0.006	Prestigious	-0.197	0.064	0.002
Grenache	-0.114	0.067	0.087	Grenache	-0.110	0.059	0.063
Merlot	-0.084	0.068	0.216	Merlot	-0.117	0.062	0.058
Price	-0.187	0.033	0.000	Price	-0.178	0.031	0.000
				Opt-Out option	-1.961	0.211	0.000
Spain × FREC	-0.071	0.081	0.385	Spain × FREC	-0.036	0.071	0.607
Foreign × FREC	0.057	0.084	0.494	Foreign × FREC	0.010	0.075	0.893
Recommended × FREC	-0.046	0.084	0.580	Recommended × FREC	0.024	0.076	0.773
Prestige × FREC	0.127	0.084	0.127	Prestige × FREC	0.112	0.073	0.115
Grenache × FREC	-0.125	0.083	0.132	Grenache × FREC	-0.148	0.083	0.049
Merlot × FREC	-0.022	0.084	0.792	Merlot × FREC	-0.049	0.071	0.499
Price × FREC	0.032	0.036	0.380	Price × FREC	0.031	0.008	0.000
<i>Scale Parameters of Extreme Value Distribution</i>				<i>Scale Parameters of Extreme Value Distribution</i>			
θ_A	0.583	0.068	0.000	θ_A	0.877	0.164	0.000
θ_B	1.000	Fixed Parameter		θ_B	1.085	0.210	0.0000
				θ_C	1.000	Fixed Parameter	
<i>Std Dev for HEV distribution</i>				<i>Std Dev for HEV distribution</i>			
σ_A	2.201	0.2558	0.000	σ_A	1.462	0.273	0.000
σ_B	1.282	Fixed Parameter		σ_B	1.182	0.228	0.000
				σ_C	1.2825	Fixed Parameter	
<i>N</i>	7,200 (400 consumers ×2 alt. ×9 choice sets)			<i>N</i>	10,800 (400 consumers ×3 alt. ×9 choice sets)		
<i>LL(0)</i>	-2,495.33	<i>LL(0)</i>	-2,301.64	<i>LL(0)</i>	-3,955.00	<i>LL(0)</i>	-3,617.423
<i>LLR</i>	387.36 (0.000)	<i>pseudo R²</i>	0.078	<i>LLR</i>	675.17 (0.000)	<i>pseudo R²</i>	0.0854

Consumers who prefer a previously experienced wine are primarily male, although females also show preference for this attribute level. Younger consumers also tend to value it higher, especially in the non-forced task. Furthermore, consumers with a positive attitude toward Catalan wines and lower-frequency purchasers also exhibit a greater willingness to pay for a previously experienced wine than those with a higher frequency. The same pattern was found for wine involvement: lower-involved wine consumers show a higher willingness to pay for this RRS (previously experienced wine). This is particularly clear in the non-forced choice experiment.

The preferences for the Cabernet Sauvignon grape do not change according to gender. With respect to age, older consumers show a higher willingness to pay. This is particularly observed in the non-forced results, which show that younger consumers (18-34 years old) exhibit a significantly lower willingness to pay compared with the other groups. Furthermore, low-frequency wine purchasers and lower-involved consumer show a lower preference for the Cabernet Sauvignon grape. The willingness to pay is significantly higher in the non-forced experiment for all three categories of wine involvement (low, average, and high) compared with the forced choice. Moreover, the differences between categories are better defined in the non-forced experiment. In other words, the willingness to pay differs between the three categories: the high-involved consumers are more willing to pay, the average-involved consumers exhibit an average willingness to pay, and the low-involved consumers exhibit the lowest willingness to pay. This result was not found in the forced-choice experiment, which found significant differences between only two of the groups, i.e., the willingness to pay of the average-involved consumers is not significantly different from that of any of the other groups. Finally, the willingness to pay for the Cabernet Sauvignon grape demonstrated by the high social class group is significantly higher in the non-forced experiment compared with the forced experiment. The increase is such that the willingness to pay for this level exhibits the following order: high > average > low social class.

Table 3.5b: Average implicit prices of the HEV models for WINE REFERENCES attribute

REFERENCES VARIABLES	EXPERIENCED WINE				RECOMMENDED WINE				PRESTIGIOUS WINE			
	FORCED CHOICE		NON-FORCED CHOICE		FORCED CHOICE		NON-FORCED CHOICE		FORCED CHOICE		NON-FORCED CHOICE	
Gender	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	1.05	0.48	0.86	0.55	-0.53	0.29	-0.18	0.37	-0.52	-0.77	-0.68	-0.92
	(0.32; 0.55)	(0.38; 0.67)	(0.65; 1.21)	(0.42; 0.81)	(-1.17; -0.01)	(-0.28; 0.92)	(-0.70; 0.36)	(-0.34; 1.10)	(-1.50; 0.74)	(-1.44; -0.19)	(-1.11; -0.27)	(-1.50; -0.033)
Age	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70
	1.40***	0.54	0.67	-0.08***	0.82***	0.71	0.99	0.10***	-0.35	0.37	-0.15	-0.71
	(1.1; 2.1)	(0.4; 0.9)	(0.5; 0.9)	(-0.2; 0.1)	(0.6; 1.1)	(0.5; 1.1)	(0.7; 1.4)	(0.1; 0.2)	(-1.1; 0.3)	(-0.6; 1.3)	(-0.8; 0.5)	(-3.1; 0.9)
	(-0.5; -0.7)	(-0.8; -1.4)	(-0.8; -0.9)	(-1.4; 0.7)	(-0.5; 0.7)	(-0.8; 1.3)	(-0.8; 0.9)	(-1.4; 0.7)	(-1.9; -0.3)	(-2.1; 0.1)	(-1.2; 0.1)	(-1.0; 3.2)
	(-1.5; -0.4)	(-1.9; -0.4)	(-1.2; 0.1)	(-1.0; 3.2)	(-1.5; -0.4)	(-1.9; 0.1)	(-1.8; -0.3)	(-0.7; 1.1)				
Social class	High	Average	Low	High	Average	Low	High	Average	Low	High	Average	Low
	0.66***	1.44***	0.10	1.10***	0.70***	0.27	-0.42	-0.02	-0.02	-0.38	0.38	0.17
	(0.52; 0.87)	(1.07; 2.15)	(0.07; 0.16)	(0.84; 1.55)	(0.53; 1.00)	(0.20; 0.38)	(-1.02; 0.10)	(-0.83; 0.71)	(-0.84; 0.89)	(-1.12; 0.35)	(-0.22; 1.01)	(-1.04; 0.85)
	(-0.77; 0.25)	(-2.47; 0.64)	(-0.95; 0.70)	(-1.36; 0.10)	(-1.71; -0.56)	(-0.92; 0.62)						
Place of birth	Cat.	Spain	Abroad	Cat.	Spain	Abroad	Cat.	Spain	Abroad	Cat.	Spain	Abroad
	0.91	1.07	0.17	0.73	1.91	0.14	-0.14	-0.53	0.05	0.14	-1.30	0.37
	(0.72; 1.22)	(0.78; 1.67)	(0.12; 0.27)	(0.56; 1.04)	(1.41; 2.88)	(0.11; 0.19)	(-0.69; 0.37)	(-1.55; 0.30)	(-0.81; 1.03)	(-0.36; 0.66)	(-2.86; 0.05)	(-0.41; 1.26)
	(-0.77; -0.27)	(-1.51; 0.37)	(-1.14; 0.63)	(-1.33; -0.44)	(-1.90; 0.53)	(-1.28; 0.15)						
Purchase frequency	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
	0.69***	1.00	0.47***	1.15	-0.29	0.01	0.10	-0.05	-0.40	-1.01	-0.57	-1.10
	(-0.39; 1.77)	(0.78; 1.42)	(0.35; 0.69)	(0.89; 1.60)	(-2.00; 0.38)	(-0.61; 0.65)	(-0.43; 0.66)	(-0.74; 0.61)	(-2.66; -0.21)	(-1.80; -0.39)	(-1.02; -0.16)	(-1.66; -0.54)
Wine Involvement	High	Average	Low	High	Average	Low	High	Average	Low	High	Average	Low
	0.44***	0.71	0.68***	0.19***	0.69	0.96***	-0.81	-0.10	0.24	-0.06	-0.05	0.26
	(0.36; 0.58)	(0.60; 0.89)	(0.56; 0.87)	(0.15; 0.27)	(0.53; 0.97)	(0.76; 1.32)	(-1.52; 0.09)	(-0.65; 0.40)	(-0.19; 0.66)	(-0.69; 0.64)	(-0.74; 0.62)	(-0.30; 0.83)
	(-0.33; 1.06)	(-1.15; -0.08)	(-1.39; -0.50)	(-0.73; 0.38)	(-1.25; -0.09)	(-1.74; -0.72)						
Attitudes towards Catalan wine	High	Average	Low	High	Average	Low	High	Average	Low	High	Average	Low
	0.86	0.68	0.36	0.91	0.64	0.37	-0.04	-0.24	-0.05	-0.06	-0.10	0.60
	(0.68; 1.16)	(0.55; 0.87)	(0.27; 0.52)	(0.69; 1.36)	(0.50; 0.89)	(0.28; 0.53)	(-0.64; 0.61)	(-0.73; 0.20)	(-0.78; 0.61)	(-0.78; 0.71)	(-0.63; 0.47)	(-0.26; 1.49)
	(-1.55; -0.22)	(-0.90; 0.03)	(-1.00; 0.32)	(-1.60; -0.30)	(-1.03; -0.12)	(-1.77; -0.21)						

Shadowed cells are statistically significant at 90% confidence interval for differences within the categories of the respondents' variables

Significance levels of the IP differences between forced and non-forced-choices are identified by the following symbols: *** p<0.01; ** p<0.50; * p<0.10

Table 3.5c: Average implicit prices (€) of the HEV models for GRAPE VARIETY attribute

GRAPE VARIETY	CABERNET SAUVIGNON								GRENACHE								MERLOT										
	FORCED CHOICE				NON-FORCED CHOICE				FORCED CHOICE				NON-FORCED CHOICE				NON-FORCED CHOICE				NON-FORCED CHOICE						
VARIABLES	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		Male		Female				
Gender	1.84 (1.96; 3.36)		1.70 (1.33; 2.35)		2.36 (1.79; 3.36)		2.17 (1.63; 3.16)		-1.40 (-3.23; -0.82)		-0.89 (-1.62; -0.33)		-1.43 (-1.96; -0.94)		-1.16 (-1.80; -0.58)		-0.43 (-1.80; 0.56)		-0.81 (-1.42; -0.25)		-0.92 (-1.46; -0.47)		-1.01 (-1.70; -0.45)				
Age	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70	18-34	35-44	45-59	60-70			
	1.52 (1.1; 2.3)	1.88 (1.4; 3.1)	1.64*** (1.3; 2.3)	2.80 (1.7; 7.4)	1.59 (1.2; 2.2)	2.71 (2.0; 4.0)	2.70*** (2.0; 3.9)	2.83 (2.2; 4.1)	-1.38 (-2.4; -0.7)	-1.74 (-3.1; -0.9)	-0.46 (-1.1; 0.2)	-1.68 (-5.9; -0.1)	-1.17 (-1.8; -0.6)	-1.95 (-3.1; -1.1)	-0.91 (-1.7; -0.2)	-1.69 (-2.8; -0.8)	-0.14 (-0.9; 0.6)	-0.14 (-1.1; 0.8)	-1.19 (-1.9; -0.6)	-1.12 (-4.0; 0.5)	-0.43 (-1.0; 0.1)	-0.76 (-1.7; 0.2)	-1.80 (-2.6; 1.1)	-1.13 (-2.1; -0.3)			
Social class	High	Average	Low		High	Average	Low		High	Average	Low		High	Average	Low		High	Average	Low	High	Average	Low		High	Average	Low	
	1.56*** (1.2; 2.08)	2.33 (1.7; 3.5)	1.25 (0.6; 1.24)		2.73*** (2.1; 3.82)	2.33 (1.76; 3.3)	1.46 (0.67; 1.2)		-1.03*** (-1.69; -0.51)	-1.79 (-2.90; -0.99)	-0.45 (-1.30; 0.32)		-1.49*** (-2.23; -0.85)	-1.63 (-2.26; -1.11)	-0.27 (-1.04; 0.45)		-0.53*** (-1.09; -0.02)	-0.54 (-1.41; 0.21)	-0.80 (-1.77; -0.04)	-1.24*** (-1.93; -0.58)	-0.69 (-1.30; -0.19)	-1.19 (-2.05; -0.39)					
Place of birth	Cat.	Spain	Abroad		Cat.	Spain	Abroad		Cat.	Spain	Abroad		Cat.	Spain	Abroad		Cat.	Spain	Abroad	Cat.	Spain	Abroad		Cat.	Spain	Abroad	
	2.12 (1.68; 2.83)	1.91 (1.38; 2.96)	0.43 (1.40; 3.16)		2.51 (1.92; 3.58)	3.07 (2.27; 4.64)	1.11 (1.99; 3.43)		-1.27 (-1.97; -0.74)	-1.06 (-2.08; -0.19)	-0.98 (-2.01; -0.15)		-1.44 (-1.98; -1.00)	-0.96 (-2.33; 0.20)	-1.13 (-1.88; -0.45)		-0.85 (-1.40; -0.34)	-0.85 (-1.99; 0.04)	0.55 (-0.31; 1.47)	-1.07 (-1.61; -0.63)	-2.11 (-3.60; -0.89)	0.01 (-0.69; 0.75)					
Purchase frequency	High	Low		High	Low			High	Low		High	Low		High	Low		High	Low		High	Low		High	Low		High	Low
	2.22*** (-0.02; 4.51)	1.06 (0.82; 1.50)		2.89*** (2.16; 4.21)	1.28 (0.99; 1.77)			-1.54 (-2.31; 0.11)	-0.61 (-1.35; -0.01)		-1.76 (-2.33; -1.23)	-0.62 (-1.18; -0.11)		-0.68* (-0.92; 1.45)	-0.45 (-1.08; 0.14)		-1.13* (-1.73; -0.67)	-0.66 (-1.26; -0.11)									
Wine Involvement	High	Average	Low		High	Average	Low		High	Average	Low		High	Average	Low		High	Average	Low	High	Average	Low		High	Average	Low	
	1.45** (1.17; 1.89)	1.41* (1.18; 1.76)	1.23* (1.02; 1.57)		2.34** (1.82; 3.28)	1.98* (1.53; 2.80)	1.72* (1.36; 2.37)		-0.83 (-1.53; -0.17)	-1.20 (-1.73; -0.69)	-0.70 (-1.18; -0.29)		-1.38 (-2.04; -0.86)	-1.24 (-1.87; -0.65)	-0.92 (-1.46; -0.43)		-0.63 (-1.35; 0.02)	-0.21 (-0.75; 0.29)	-0.54 (-0.99; -0.11)	-0.96 (-1.58; -0.40)	-0.75 (-1.39; -0.17)	-0.80 (-1.36; -0.33)					
Attitudes towards Catalan wine	High	Average	Low		High	Average	Low		High	Average	Low		High	Average	Low		High	Average	Low	High	Average	Low		High	Average	Low	
	1.65 (1.30; 2.21)	1.50 (1.22; 1.98)	1.03** (0.78; 1.49)		2.61 (1.82; 3.28)	1.94 (1.53; 2.80)	1.74** (1.36; 2.37)		-1.23 (-1.97; -0.61)	-0.82 (-1.28; -0.38)	-0.94 (-1.76; -0.30)		-1.72 (-2.04; -0.86)	-0.93 (-1.87; -0.65)	-1.18 (-1.46; -0.43)		-0.41 (-1.07; 0.16)	-0.68 (-1.20; -0.22)	-0.09 (-0.81; 0.64)	-0.90 (-1.58; -0.40)	-1.01 (-1.39; -0.17)	-0.55 (-1.36; -0.33)					

Shadowed cells are statistically significant at 90% confidence interval for differences within the categories of the respondents' variables

Significance levels of the IP differences between forced and non-forced-choices are identified by the following symbols: *** p<0.01; ** p<0.50; * p<0.10

3.4. Discussion

As part of presenting the modelling results, in this section we focus on their discussion by anchoring on sections 3.2 and 3.3. At aggregate level, results showed that a wine of Catalan origin, which is known by consumers from their own experience (previously tasted wine) and made from the Cabernet Sauvignon grape variety, is the most preferred product.

Regarding the origin, results confirm the importance of this attribute as a primary and implicit consideration of consumers in their decision to purchase wine, which is consistent with other studies (Skuras and Vakrou, 2002; Lockshin *et al.*, 2006; Lockshin and Halstead, 2005; Remaud and Lockshin, 2009). Previous research in Europe has shown that the region is the most important attribute in the European wine-producing countries. Specifically, it is been shown that older and more established wine cultures that are based on regional designations rely on the region of origin as the most important wine attribute (Perrouy *et al.*, 2006). For example, Tzimitra-Kalogiani *et al.* (1999) found that one of the most important wine attributes for Greek consumers was the designation of origin. In Spain, Angulo *et al.* (2000) stated that the region of origin is one of the main determinants of price. In other studies, the region of origin was found to be a primary consideration of consumers in their decision to purchase wine (Gil and Sánchez, 1997; Mtimet and Albisu, 2006)

In addition, wines that have been previously tasted by the consumer are generally preferred over recommended or prestigious wines. In this context, the results show that a previously experienced wine is the most valued RRS. This finding is in agreement with the literature (Lockshin and Halstead, 2005; Johnson and Bruwer, 2004; Thach, 2008; Lockshin and Hall, 2003). However, these authors also agree that recommendations are another of the main strategies to reduce consumer's risk, which is different from our results. In our case, a "recommended wine" is not a significant level for most consumers. Nevertheless, the ranking of the preferences revealed that a "recommended" wine" is higher than the third chosen level (a "prestigious wine"), which was generally found to be negatively significant.

Results also showed that the Cabernet Sauvignon is the most preferred grape variety. This result is consistent with Mtimet and Albisu (2006). However, in their choice sets, Cabernet Sauvignon was the only possible French variety presented. By adding another French variety (Merlot) to our choice study, results reject the hypothesis

that Spanish consumers are more likely to choose French varieties since the “Merlot” was not preferred. Consumers would ask for a discount in the price of the wine to accept it.

For the analysis of the consumers’ heterogeneity, the preferences for a special-occasion red wine in Catalonia are highly heterogeneous, although there is a tendency that follows the preferences found on the aggregated level. Regarding the “Catalan” origin of the wine, preferences increase when the age increases as well. Thus, older consumers might be considered advisable targets for marketing campaigns promoting wines of Catalan origin. Moreover, the averagely involved consumers show the highest preferences for wines of Catalan origin. This could be explained because the lowest-involved group has a smaller interest for the product and is thus less willing to pay for its origin and higher-involved consumers have a more experimental nature, i.e., are willing to try new things, and thus do not commit as much to a certain origin. Furthermore, our finding that higher-involved wine consumers do not exhibit the highest willingness to pay is in agreement with the results reported by Bruwer *et al.* (2002), who showed that knowledgeable consumers do not spend generously per se but often recognise good value and trade down on price.

Concerning the “previously experienced” wine attribute, results show higher preferences for younger consumers. This trend could be explained by their higher insecurity when selecting a wine. Thus, the choice of a previously experienced product reduces their uncertainty to a higher extent than the other proposed RRS. This finding agrees with the results reported by Bruwer *et al.* (2011), who demonstrated a higher use of RRS from younger consumers aged below 35. Furthermore, lower-frequency purchasers and lower-involved wine consumers show higher preference for this RRS. This parallelism may be explained by relating frequency of consumption and wine involvement, as has been previously shown in the literature (Johnson and Bruwer, 2010). Based on our finding, it is noticeable that low-frequency and low-involved consumers show a higher willingness to pay for the wine references attribute and thus use this RRS to a greater extent (Lockshin and Hall, 2003; Lockshin *et al.* 2006).

It is worth mentioning that persons who were born abroad show the lowest valuation compared with all of the attributes analyzed. The same was found with lower-social-class consumers, who exhibited the least willingness to pay in all cases. These results are due to a high correlation between the respondents who were born abroad and

those belonging to a lower social class: 80% of the non-native respondents belong to a lower social class.

Comparing the results from the forced and non-forced choice a general trend can be elicited: there is an increasing tendency of welfare estimates for the most preferred attribute levels in the non-forced choice. This may be explained because when the fixed alternative is introduced, it tends to remove a greater share from certain options rather than others that individuals tend to select under forced-choice situations, as observed by Dhar (1997), Dhar and Simonson (2003), and Brazell *et al.* (2006). Thus, the alternatives selected in the first step of the DRCE (forced-choice) that did not meet the preferred levels were disregarded in the second step of the DRCE, when the option of not buying was allowed (opt-out option). As stated by Boyle *et al.* (2001) and Ruby *et al.* (1998), the results that exclude the fixed alternative will overstate the likelihood that individuals would actually choose alternatives from a choice set, and the not-chosen alternatives should therefore be referred to as “less preferred”.

Analysing the impact of forcing or not consumers on preference heterogeneity, results show that for some segments of the population, such as older consumers (45-59 years old), high social class consumers and consumers born in Spain (i.e., outside Catalonia), the product valuation when making a forced choice might reveal the most-wanted levels. However, once confronted with the purchase, as in the second step of the DRCE, the desire appears to be compromised, and the choice might reveal a more realistic shopping behaviour. The same mechanism was observed in other cases, such as consumers with a lower positive attitude toward Catalan wines. These consumers increase their willingness to pay for the Catalan origin when the opt-out option is included.

The DRCE design is able to analyse both what consumers “would purchase” and what they “would prefer” from a choice set, which, as the results have shown, may not be equivalent. The price attribute in the traditional CE is located with a complex array of other descriptors, usually in the last position within the alternatives in the choice sets. Thus, respondents can be more driven by reason and logical arguments than by price considerations (McKenzie, 1993). For this reason, respondents may give less attention to the price and more willing to ignore their budgetary constraints (Kallas *et al.*, 2011). However, within the DRCE, emphasizing the purchasing context in the second stage of the design may allow respondents to focus more on their budgetary constraints.

3.5. Conclusions

Our work contributes to the few empirical works that analyse the preference heterogeneity between forced and non-forced choices in a within-sample approach for a special-occasion red wine. The empirical application was conducted in Catalonia (Spain) with 400 wine consumers. As a tool to compare the results from the forced and the non-forced Choice Experiments, we implement a variation of the Dual Response Choice Experiments (DRCE) design. The Heteroscedastic Extreme Value (HEV) model was used to relax the IIA (Independence of Irrelevant Alternatives) restrictive assumption.

From an empirical point of view, this paper has shown that Catalanian consumers have a high preference for the local (Catalan) origin of the product, which reveals the importance of the Catalanian identity in the wine consumer behavior. The second highest preference refers to the preferred grape variety, which was found to be Cabernet Sauvignon. Finally, the sampled consumers revealed their preference for wines that have been previously experienced compared with recommended and prestigious wines. In this context, it is important to note that reassurance was found to be the most important risk reduction strategy (RRS) for Catalan consumers when choosing a red wine for a special occasion. Furthermore, the results show that the preferences associated with a red wine for a special occasion are highly heterogeneous.

The indexes that measured the consumers' wine involvement and their attitudes toward the local product showed coherent results. This is especially relevant when determining the importance of the RRS for wine consumers that are differently involved. For example, highly involved wine consumers exhibited a reduced use of RRS when purchasing their wine. In addition to being consistent, both indexes might be good measuring tools for further research on this field. The preference for Catalan wines is in agreement with the consumers' positive attitudes toward Catalan wines. Despite of these positive attitudes, the market share for Catalan quality wines is relatively low. Thus, the origin of the wine should not be as undetermined in further research. Instead, a more specific wine, which could guide respondents into thinking of a similar product, should be used. For instance, it could be interesting to include Rioja wine instead of a generic Spanish wine because Rioja is the main competitor for Catalan quality wines.

The results from the forced and non-forced choice experiments show similar preferences for product attributes (i.e., attributes are ranked similarly in both approaches). However, a non-forced choice heightens the preferred levels by increasing

the welfare estimates for some variables. Methodologically, the DRCE design has been proven to be an appropriate approach when researchers are faced with the decision of whether to force respondents to choose their preferred product or to allow them to opt out. In our specific case, both options were plausible. Nevertheless, our results diverge from those obtained in a rabbit meat case study using the DRCE design (Kallas and Gil, 2012), which found that the estimates for the most preferred levels decreased in the non-forced choice. Therefore, more empirical applications are needed to elucidate the mechanisms that determine these differences. In addition, the traditional CE design should be compared with the DRCE design using a within sample approach to determine their impact on the preference heterogeneity.

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**Chapter 4: Consumers' Wine Preferences in a Changing
Scenario**

4.1. Introduction

4.1.1. Catalonia as a Wine Region

Worldwide, Spain usually ranks as the third wine producing country after Italy and France. Furthermore, it has recently become the largest world exporter in volume, with 22.6 million hectolitres in 2014, which represented 21.8% of the world's wine exports (OIV, 2015).

The vineyard is a key crop for sustainable development in many areas of Spain. It contributes to the economy, to the territorial balance and to the maintenance of the landscape; while offering a product linked to the Spanish culture and diet.

Catalonia accounts up to 7.53% of the production of wine in Spain, which is more than 3.2 million hectolitres (average 2011-15) (MAPAMA, 2015a). Its main specialised areas are located in the provinces of Barcelona and Tarragona, and they account for more than 90% of the Cava (sparkling wine) produced in Spain (PDO Cava). Therefore, in Catalonia, the wine sector also accounts for an important fraction of the agriculture and the food industry of the country (Kallas *et al.*, 2012). Its production is highly specialized in quality wines: more than 90% of the grape-growing surface is inscribed within one of the 12 Protected Designations of Origin (PDO) that exist in the region (IDESCAT, 2009).

However, the household wine consumption in Catalonia shows a continuous downward trend for decades: Household wine consumption was 21.86 litres per capita to only 13.92 litres from 2000 to 2014. On the other hand, the consumption of quality wines has increased by 20.8% during the same period (MAPAMA, 2015b). From these data we conclude that consumers have changed their habits: their demand for higher-quality wines increases while their consumption of other wines decreases, more specifically, the consumption of table wines.

Another characteristic of the Catalan wine sector is a relatively low market share of the Catalan PDO wines: Catalan PDO wines only account up to 33.7% of the total quality wine consumed in Catalonia (INCAVI, 2014). This shows that the demand for Catalan quality wines in Catalonia is still low. Their main competitors in the domestic market are (some) Spanish quality wines, such as "La Rioja" (Kallas *et al.*, 2013).

In turn, the exportation of Catalan quality wines shows an increasing trend in the recent years (MINECO, 2015). Thus, quality wines from Catalonia are every time more

appreciated and consumed beyond our borders. It is for all these reasons that we are interested to analyse the wine preferences of consumers in Catalonia.

4.1.2. Socio-Economic Context in Catalonia

Since 2007 the world economy has undergone a phase of marked instability. The Spanish economy was much affected by the alterations in the macro economy and in the financial conditions. Spain went into recession from the second semester of 2008 until the first four-month period of 2010, when a modest recovery was experienced. This recovery receded in the second half of 2011, as the sovereign debt crisis heightened and spread to an increasingly large number of countries (Ortega and Peñalosa, 2012).

The economic crisis in Spain had a severe impact on the employment. In 2011 the unemployment level reached a peak of more than 6.2 million people (INE, 2015). The employment adjustment can be defined as virulent and protracted and it began in early 2008 (Ortega and Peñalosa, 2012). Consequently, a sharp drop in consumption and in fixed capital investment was experienced (Carballo-Cruz, 2011).

Political changes also occurred in Catalonia during the same period, most importantly since the elections of 2010, when there was a strong rise of the amount of Members of Parliament in favour of an independent Catalonia (from Spain) (Catalan Parliament, 2016). In this direction, the main party in Catalonia (CIU, for *Convergència i Unió*, which was in charge of the Catalan government from 1980 to 2003, and from 2010 up to 2015) shifted from nationalism to Catalan independentism (Guibernau, 2014; Hopkin, 2012; Serrano, 2014; La Vanguardia publications, amongst others). The shift became more acute after the awaited decision of the Spanish Constitutional Court about the new Catalan Statute of Autonomy - delivered on July the 10th, 2010-, which declared it unconstitutional. Consequently, a massive popular mobilization of protests took place in Catalonia (Serrano, 2014). More changes developed later in Catalan politics but those are out of the scope of our research.

In this context, our main goal is to determine consumers' red wine preferences for a special occasion and their changes regarding the newer economic and political scenario. This paper relies on two surveys that measured consumers' preferences through a Discrete Choice Experiment. Methodologically, this paper contributes to the literature of the Discrete Choice Modelling (DCM) using the recently developed Generalised Multinomial Logit (GMNL) model of Fiebig *et al.* (2010). The GMNL

model allows the determination of the preference and the scale heterogeneity of consumers' choices. To our knowledge this is the first application in the literature of wine preferences to measure the impact of the contextual changes (economic and political) in Catalonia (Spain).

This chapter is structured as follows: in the next heading consumer's preferences towards wine are discussed as part of the literature review; in the Methodology section the methodological framework is presented. The empirical application is commented in Empirical application. The main results are discussed in Results and Discussion and the paper ends with some concluding remarks.

4.2. Consumers' preferences towards wine

Consumers face certain difficulties when choosing a wine (Lockshin *et al.*, 2006). The main difficulty lies in the immense number of cues that are associated with wine. Moreover, the enormous amount of labels available in the market, and the perceived formality of wine have led to the suggestion that choosing a wine can be intimidating (Lockshin and Halstead, 2005). Consequently, many consumers will perceive wine as a complex product and will very likely exhibit some risk reduction behaviour during its purchase (Johnson and Bruwer, 2004).

Furthermore, wine is an experience product and it cannot be assessed until the product has actually been consumed (Bruwer *et al.*, 2011; Mueller *et al.*, 2010; amongst others). Because of this, consumers will rely on the information available on the label and the bottle to assess the quality of a wine and, they will base their purchase decision on it (Lockshin and Hall, 2003; Lockshin and Halstead, 2005; Lockshin *et al.*, 2006; Remaud and Lockshin, 2009). Thus, the displayed information is employed as a proxy or an indication of what lies inside the bottle. However, consumers only use a small amount of all the available information to make a decision (e.g., Foxall, 1983; Lockshin and Hall, 2003). For this reason, brand names help to address risk because they provide consumers with several product cues (including quality) (D'Alessandro and Pecotich, 2013; Lockshin and Hall, 2003).

Generic types can perform as well as brand names and they can be built on the region of origin and/or the grape variety (Gluckman, 1990; Lockshin and Hall, 2003). These two wine characteristics (region of origin and grape variety) were found to be relevant signals that Italian consumers can easily recognise and trust (Corduas *et al.*, 2013). The origin of the wine plays a key role in the consumers' decision-making

process and can become one indicator of the quality of the wine (Gluckman, 1990; Skuras and Vakrou, 2002). In this line, the regions of origin can add value in the consumers' eyes (Angulo, *et al.*, 2000; De Magistris *et al.*, 2014; Gil and Sánchez, 1997; Lockshin *et al.* 2006; Quester and Smart, 1998; Remaud and Lockshin, 2009; Sáenz-Navajas *et al.*, 2013; amongst others). More specifically, in Spain, designations of origin can be of more importance than brand names (Bernabéu *et al.*, 2012); while the grape variety Cabernet sauvignon also contributes to consumer welfare (Mtimet and Albisu, 2006).

Price is a very important attribute that affects wine choice. It can also be used as a proxy to infer the quality of the product, especially when there are a small number of other cues available, when the product cannot be evaluated before purchase, and when there is some degree of risk of making a wrong choice (Lockshin and Hall, 2003; Mitchell, and Greatorex, 1988 and 1989).

Risk reduction strategies (RRS) in wine choices have been an issue of interest in previous research (Bruwer and Rawbone-Viljoen, 2012 – who include an exhaustive compilation of the literature related to the subject; Bruwer *et al.*, 2011; Johnson and Bruwer, 2004; Mitchell and Greatorex, 1988; Schiffman and Kanuk, 2006). In a more recent study from Spain, the wines that were related to a past experience and to personal knowledge were preferred over others (De Magistris *et al.*, 2014). These two characteristics fall under the definition of RRS. Similar results were found by Bernabéu *et al.* (2012) who stated that a previously tasted wine and the region of origin were the most important attributes for Spanish consumers.

4.3. Methodology: Econometric Modelling of the DCE

Discrete Choice Experiments (DCE) indirectly identify the individual's utility function by examining the trade-offs of attributes associated to a product when making choice decisions. This is achieved by facing consumers with choice sets that confront several alternatives of a product. The product is described with several attributes with varying levels. Consumers are asked to select which alternative do they prefer within each choice set, thereby revealing his/her preferences for certain attributes and levels. Subsequently, the relative importance of the attributes can be indirectly retrieved from consumers' choices.

DCE rely on Lancaster's Theory of Value (Lancaster, 1966). The theory proposes that the utility of a product can be decomposed into separable utilities associated to the

product's characteristics or attributes. DCE are also based on the Random Utility Theory (Thurstone, 1927) which proposes that individuals choose among alternatives according to a utility function that involves two main components: a systematic (observable) component and a random error term (non-observable):

$$U_{in} = V_{in}(X_i) + \varepsilon_{in} \quad (1)$$

where U_{in} is the utility of alternative i to subject n , V_{in} is the systematic component of the utility, X_i is the vector of attributes of alternative i and, ε_{in} is the random term.

According to the probabilistic models that analyse CE data, the probability that an individual n will choose alternative i (P_{in}) among other alternatives of an array of choice sets C , is formulated as follows:

$$P_{in} = \frac{e^{\mu V_{in}}}{\sum_{j=1}^{j=J} e^{\mu V_{jn}}} \quad \forall i \in C$$

where μ is the scale factor inversely proportional to the standard deviation of the error term. For this model, V_{in} must be defined. The Multinomial Logit (MNL) model assumes that V_{in} is an additive lineal function that follows this specification:

$$V_{in} = \sum_k \beta_k X_{ki}$$

where μ is not identifiable and is normalized to 1 (Ben-Akiva and Lerman, 1985), and k is the number of attributes.

Therefore, the MNL model imposes homogeneity in the preferences for the observed attributes by estimating the average attributes' utilities. This is often unrealistic as consumers' preferences are, by nature, heterogeneous. In order to solve this restriction, the Mixed or Heterogeneous Logit (MIXL) model was introduced. This model, also referred as the Random Parameter Logit (RPL) model, extends the MNL model by introducing random coefficients on the attributes, which will allow determining the unobserved heterogeneity (Ben-Akiva *et al.*, 1997). However, the scale parameter in the MIXL model is also assumed to be one for identification and, thus, only the preference heterogeneity is identified.

In a more recent research, Louviere and Meyer (2007) and Louviere *et al.* (2008) proposed that a great deal of the preference heterogeneity -that is captured in the MIXL by the random parameters- could be better captured by the scale term, which is known

as “scale heterogeneity”. It was also pointed out that the distribution of the random parameters obtained in many applications of the MIXL does not appear to be very close to a normal.

The scale heterogeneity can be interpreted as the degree of individuals' certainty in their choices, as it gathers the variation of the degree of randomness in the decision-making process over respondents. It is based on the differences of the variance of the error term (ε) across individual-decision-makers. The analysis of the scale heterogeneity is important, especially for the stated preference studies (i.e. based on questionnaire). In these studies, consumers may interpret and process choice tasks and situations differently, they may have varying levels of attention paid to the task, and they may have different levels of certainty in their choices (Train and Weeks, 2005). Thus, it would be expected that the scale of the error term could be greater for some consumers than for others.

Fiebig *et al.* (2010) developed the Generalized Multinomial Logit (GMNL) model. Within this approach, the scale parameter is no longer set to one, and a particular specification of this term is assumed. It is for these reasons that we have applied the GMNL model in our research; the GMNL model will allow us to decompose the unobserved heterogeneity into preference heterogeneity and scale heterogeneity.

Fiebig *et al.* (2010) identified that the utility to person n from choosing alternative j on choice set t is given by:

$$U_{njt} = [\sigma_n \beta + \gamma \eta_n + (1 - \gamma) \sigma_n \eta_n] X_{njt} + \varepsilon_{njt} \quad (2)$$

where γ is a mixing parameter between 0 and 1; and σ_n is a scaling factor that proportionately scales the β 's up or down for each individual n . The scaling factor is estimated through the parameter tau (τ), which is the key parameter that captures scale heterogeneity (for further details, we recommend the reading of Fiebig *et al.* (2010), in which the estimation of the model, the maximum likelihood function and its theoretical foundations are specified).

Finally, our model also included an Alternative Specific Constant (ASC) in order to measure the marginal utility of the no-choice alternative (i.e. neither of the product is chosen in the choice set). Greene and Hensher (2010) proposed three possible strategies to deal with ASC. The first strategy is to specify the ASC as a fixed parameter, which is equal as assuming that the preferences for the no-choice alternative are homogenous. A second alternative is to consider the ASC like an additional attribute and, thus, as a part

of the general GMNL specification. As a third option it can be introduced as a random parameter without forcing on it any special scaling. In this case study the ASC was specified as random parameter because it showed to have the best goodness of fit compared to the other specifications in terms of Pseudo-R2, AIC and improvement in the Likelihood functions.

Once the model is estimated, we calculated the relative importance of each attribute, which is equivalent to the ratio of a particular attribute utility to the sum of all attributes' utilities. For its calculation we used the following equation (Green and Rao, 1971):

$$I_k = \frac{(\max \beta_k - \min \beta_k)}{\sum_{k=1}^K (\max \beta_k - \min \beta_k)} \quad (3)$$

where (I_k) is the relative importance of the attribute (k), ($\max \beta_k$) is the maximum utility of the attribute (i.e. the most preferred level), and ($\min \beta_k$) is the minimum utility (i.e. the least preferred level).

For the estimation of the model, we used the GMXLOGIT procedure in NLOGIT 5.

4.4. Empirical application

4.4.1. Sample

Data were collected from two identical surveys performed in two different times: before and during the current economic crisis; more specifically, in 2008 (1st trimester) and in 2010 (4th trimester). The surveys recruited 400 and 401 consumers, respectively, who responded a structured face-to-face questionnaire over a 4-week period. We used a quota sampling procedure stratified by gender, age, and postal districts with proportional allocation to each stratum from the Metropolitan area of Barcelona. The selection criteria were that respondents should be at least 18 years of age (legal drinking age in Spain), should be defined as wine consumers (by having purchased a bottle of wine within the last 3 months), and should be the main wine purchase decision makers in their household. The fieldwork was subcontracted to a company specialised in marketing research. Each respondent was given 20€ to participate in the experiment. The questionnaire was pretested a total of four times using a pilot sample of six

different consumers each time and subsequently revised to improve readability and understanding.

To characterise consumers, the proportion of their most important socio-demographic stratum was set to be in accordance with that of the population from the metropolitan area of Barcelona (table 4.1). Ideally, the participants involved in both experiments would have been the same. Unfortunately, this was not possible to maintain and it is one of the limitations of this study. Nevertheless, Chi square tests have been performed and results showed non-significant differences between both samples in representing the socio-demographic categories of the Catalan population.

4.4.2. Attributes and Levels

It is of paramount importance a correct identification of the main attributes and levels that consumers consider when purchasing wine. From the literature review we were able to identify a set of major attributes that affect consumers' choices. In order to reduce the wine choice complexity, we delimited our wine selection by focusing on a red wine purchased for a special occasion, such as Christmas. Specifying the occasion leads respondents into thinking of a similar context (Lockshin and Hall, 2003; Lockshin *et al.*, 2006). This is important because wine consumption can be explicitly related to a specific situation and to context (Bruwer *et al.*, 2011; Engelbrecht *et al.*, 2014; Lockshin and Hall, 2003; Quester and Smart, 1998).

Subsequently, the identified attributes were discussed in a focus group formed by university lecturers in the field of marketing and representatives from consumers' associations in Catalonia to determine the final set of attributes used in the study.

The wine origin is the factor that interested us the most, and "Catalan wine" was used as an attribute level. Correspondingly, the other introduced levels were "Spanish wine", which implies any wine produced in Spain with the exception of those produced in Catalonia, and, as a third level, "Foreign wine". The grape variety was also considered, introducing two French varieties (Cabernet Sauvignon and Merlot) and a typical traditional Spanish variety (Grenache). The aim of introducing two French varieties was to determine if consumers preferred French varieties in general, or they were more specifically related to the Cabernet Sauvignon grape, as it was found by Mtimet and Albisu (2006) for Spanish consumers.

Table 4.1: Socioeconomic characteristics of the samples from the experiments performed before and during the economic crisis.

	Before crisis (%)	During crisis (%)	Population mean (%)
Gender			
Man	58,2	50,1	48,7
Women	41,8	49,9	41,3
Birth place			
Catalonia	71,8	70,6	59,9
Rest of Spain	12,5	20,7	29,0
European Union	1,55	1,5	11,1
Rest of countries	14,3	7,2	
Age			
18-34 years	34,8	31,2	34,5
35-44 years	20,8	27,7	23,7
45-59 years	27,3	27,4	27,2
60-70 years	17,3	13,7	14,5
Social class			
High social class	2,50	2,50	16,6
Middle-high social class	28,50	16,50	31,0
Middle social class	51,50	63,60	36,5
Low social class	17,50	17,50	15,9

Certain strategies of risk reduction are likely to be exhibit during wine purchase. The main risk reduction strategies (RRS) when purchasing high-priced wines are reassurance and information seeking (Johnson and Bruwer, 2004). These findings match with those obtained in Spain by Bernabéu *et al.* (2012) and De Magistris *et al.* (2014). In this sense, wine characteristics related to risk reduction were included as the third attribute of our experiment. The introduced levels were the following: a previously known wine, a recommended wine, and a prestigious wine. Through this last level, we attempted to ascertain the effect of a known brand name (prestigious) on the other two alternatives. This third attribute was denoted “Wine References”.

The set of attributes included in our experiment were the following: Wine Origin (Catalonia (regional), Spain (national), and Foreign (international)), Wine References (previously experienced, recommended, and prestigious), Grape Variety (Cabernet Sauvignon, Grenache, and Merlot), and Price (€6.00, €10.00, and €14.00). The price levels were chosen based on the fact that the purchase was meant for a special occasion, and therefore do not reflect the mean wine market prices in Spain for conventional wines.

A pilot questionnaire was then implemented to check for consistency. Following a full factorial design, a total of 81 hypothetical products were generated, which resulted in a set of $3^4 \times 3^4$ (6,561) possible combinations (choice sets with two alternatives). Finally, an orthogonal fractional factorial design was applied considering all of the main effects of the attributes, which enabled us to reduce the number of choice sets to nine.

All attributes, including the price, were coded with effect coding as discrete variables (Bech and Gyrd-Hansen, 2005). The base level of each attribute was as follows: 'Foreign' for 'Origin', 'Previously experience' for 'Wine References', 'Merlot' for 'Grape variety', and '€6.0' for the 'Price' attribute. All models were estimated with the GMXLOGIT procedure of NLOGIT5 using 500 Halton.

4.5. Results and discussion

The results of the estimated GMNL models are shown in table 4.2. Both models are statistically significant and exhibit a good fit with highly significant likelihood ratios. Results show that consumers' preferences are higher for the local (Catalan) origin of the product, for the grape variety Cabernet Sauvignon, and for wines that have been previously experienced compared to recommended and/or prestigious wines. The preference for the local product is a common fact when consumers have to choose amongst different origins which include their own. A certain degree of ethnocentrism is usual, and leads to an overestimation of the overall quality of domestic wines or products (Hustvedt *et al.*, 2013; Sáenz-Navajas *et al.*, 2014).

The results from before the economic crisis show that all the random parameters are significant, which indicates that the attributes considered are significant determinants of the consumer's welfare. The positive (negative) sign of the attributes implies a positive (negative) contribution to the consumers' utility function. However, the results obtained during the crisis show that some of the previous significant parameters have turned into non-significant. One example is the Spanish origin of the

wine. This is especially remarkable because Spanish wines gather the highest market share in Catalonia, being those from La Rioja particularly important. In this sense, the political changes occurred throughout the period of study could add an explanation to this fact.

Table 4.2: The GMNL model parameter estimates and goodness of fit

	Before crisis	During crisis
Random parameter estimates		
Spanish	2.03***	0.27
Catalan	3.80***	0.73***
Recommended	-0.80**	-0.20***
Prestigious	-1.06***	0.09
Grenache	-1.52***	-0.25
Cabernet sauvignon	1.58***	0.29**
Price-€10	0.90**	0.01
Price-€14	-1.96***	-1.19***
No choice	-2.52***	2.86***
Log-Likelihood (θ)	-3,481.13	-2,139.89
Log-Likelihood (0)	-3,955.00	-3,964.89
LL ratio test	947.73 (0.000)	3,650.00 (0.000)
Pseudo R ²	0.12	0.46
AIC/N	1.96	1.22
Variance parameter tau in scale parameter (τ)	2.05***	0.59
Weighting parameter Gamma (γ)	0.03*	0.10

Significance levels:*** p<0.01; **p<0.05; * p< 0.10

Furthermore, the no-choice option turns from negative to positive utility, with a remarkable high value in the survey performed during the economic crisis. This greater utility for the no choice intercept may explain the shift of significance that some of the observable attributes have undergone. Thus, in the latest experiment consumers show a greater preference for not taking the product. The Catalan origin of the wine, however, remains as one of the fewer levels with a positive utility for consumers during the crisis, enhancing the Catalan identity in the consumer behaviour. This finding is in accordance

with Fernández-Ferrín and Bande-Videla (2013), who stated that consumers with a recently impaired financial situation are more likely to have strong ethnocentric tendencies at a regional level.

Regarding the price attribute, results show that the coefficient for a bottle of €10.0 before the economic crisis is positive, becoming not significant during the crisis. This result can be interpreted as a reduction of the willingness to spend more, in comparison to the results obtained before the economic crisis, when respondents would choose for higher prices. Several wine studies have also shown this price behaviour, concluding that the more expensive is the wine, the more desirable it can become up to a certain price level (Chamorro *et al.*, 2015; Lockshin *et al.*, 2006; Mtimet and Albisu, 2006).

Following the equation (3), table 4.3 shows the relative importance of each attribute. The results show that the price becomes the most important wine attribute during the crisis. Before the crisis, the importance of the price was similar to that obtained by the rest of the attributes, with the exception of the origin, that was considered the most important attribute¹⁷. In this sense, the economic crisis may have had an influence on consumers' preferences, especially when related to price.

Table 4.3: Relative importance (%) of each attribute (origin of the wine, grape variety, wine references and price) obtained from the random parameters estimates of the GMNL model from both DCE: before and during the economic crisis.

	Before crisis	During crisis
Origin of the wine	51.53%	35.14%
Grape variety	16.61%	10.91%
Wine references	15.73%	6.25%
Price	16.14%	47.71%

Results from table 4.2 also report consumers' scale and preference heterogeneity. As it is shown, the scaling factor tau (τ), which is the key parameter that captures scale heterogeneity, has turned non-significant during the crisis, from a significant positive value before the crisis. As the parameter tau decreases, the degree of scale heterogeneity decreases as well. This means that, in the experiment performed during the crisis, the variation of the degree of randomness in consumers' decisions has decreased significantly and, thus has the degree of uncertainty and randomness in the decision-

¹⁷ The relative importance of the attribute of origin was also enhanced because of an advertisement campaign launched before the survey. This advertisement campaign helped to increase the positive image of the Catalan wines amongst the local population.

making process. In this sense, external common circumstances may have had a homogenising influence.

In addition, the mixing parameter γ , which value lays within the range from 0 to 1, becomes equal to zero during the crisis. This implies that the preference heterogeneity is proportional to the scale heterogeneity: the closest that γ is to 0, the more linked to each other both unobserved heterogeneities are.

Regarding the preference heterogeneity, the results from before the crisis show that all the identified parameters had a significant attribute-specific standard deviation, with the exception of the level Recommended (table 4.4). In contrast, during the crisis, the standard deviation for most of the levels becomes statistically equal to zero. This is consistent with a value of γ equal to 0. Therefore, there is a link between both unobserved heterogeneities, which turn out to be non-existent.

It is noteworthy that the Catalan wine and a wine with a price of €14.0 remain as the fewer levels that show significant preference heterogeneity during the crisis. In regard to the origin of the wine, the Catalan origin has a significantly positive utility for consumers but, nevertheless, this quality shows to be heterogeneous across consumers. The Spanish wines, next to showing a non-significant utility, also show a non-significant standard deviation of the parameter distribution.

Table 4.4: Standard deviations of random parameter distributions of the GMNL model

	Before crisis	During crisis
Sd-Spanish	3.12735***	.25613
Sd-Catalan	5.09622***	.59020**
Sd-Recommended	.23246	.08569
Sd-Prestigious	1.65080***	.11011
Sd-Grenache	1.81875***	.67845
Sd-Cabernet sauvignon	2.74603***	.21026
Sd-Price-10€	3.05442***	.38428
Sd-Price-14€	4.86483***	.97643**
Sd-No choice	7.34722***	.52561

4.6. Conclusions

Our research is focused on determining consumers' preferences towards red wine in Catalonia in two different times: before and during important economic and political changes. From an empirical point of view, consumers' preferences are higher for the local (Catalan) origin of the product, for the grape variety Cabernet Sauvignon and for wines that have been previously experienced.

In our second experiment – which takes place when the economic and political changes have already occurred –, the Catalan origin of the wine is one of the fewer levels that remain significantly positive, while consumers show a greater preference for not taking the product and the price becomes the most important attribute. Consumers' utility for Spanish wines also becomes non-significant during the crisis, in spite of gathering the highest market share in Catalonia. This seems to suggest that the political changes occurred throughout the period of study may have had an influence on consumers' preferences.

These important changes in consumers' preferences towards wine are in agreement with the undergone economic and political changes. Nevertheless, we are aware of the limitations of this study and it is therefore that the conclusions that are driven should be taken carefully, as other non-controlled variables may have also played a role. Notwithstanding, consumers' preferences towards wine have certainly changed within the different scenarios, and the undergone changes are in agreement with the contexts provided.

From the methodological point of view, the GMNL model appears to be an appropriated model to provide more information about the source of consumers' unobserved heterogeneity. During the crisis, the results do not show unobservable heterogeneity, neither scale nor preference heterogeneity, which indicates that the wine preferences are more homogeneous across consumers. The degree of uncertainty in the decision-making process decreased significantly as the scale heterogeneity became non-significant. This finding might show an impact of socio economic changes in the consumers' decision-making towards wine. In this sense, external common circumstances may have had a homogenising influence in consumer choices.

According to our findings, Catalan wineries should enhance their Catalan origin on their labels. This marketing strategy –nevertheless- is somewhat already applied by retailers, since some are placing special displays of the Catalan origin of the wine on the

supermarket shelves. Moreover, Catalan wines may also be set in the supermarkets under a shelf-frame, while clearly displaying their origin. Therefore, our results are in accordance with these observed market trends, and we expect that these methods will create an increase on the Catalan wines' market share.

Other ways to get Catalan wines closer to consumers involve creating consumption occasions, such as in fairs, trade exhibitions, etc. These marketing strategies could be applied also for wines from other regions of Spain. However, conversely to the Catalan wines, they should not enhance their origin while differentiating by other quality cues, as it could be a Cabernet sauvignon grape variety. Another possible strategy would be setting a competitive price. For the future, however, newer experiments should be performed in order to study the evolution of consumers' preferences, now that the effects of the crisis have settled down.

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**Chapter 5: Marketing Channels for Small Wineries: a Means
– End Chain approach**

5.1. Introduction

Worldwide, Spain usually ranks as the third wine producing country after Italy and France. Furthermore, it has recently become the largest world exporter in volume, with 22.6 million hectolitre in 2014, which represented 21.8% of the world's wine exports (OIV, 2015).

Catalonia produces up to 7.53% of the Spanish wine, which is more than 3.2 million hectolitres (average 2011-15) (MAPAMA, 2015). The wine sector in Catalonia accounts for an important fraction of the agriculture and the food industry of the country, while it contributes to the economy, to the territorial balance and to the maintenance of the landscape (Kallas *et al.*, 2012). Its main specialized areas are located in the provinces of Barcelona and Tarragona, which produce more than 90% of the Cava (sparkling wine) produced in Spain (PDO Cava).

From a business perspective, the wine sector in Catalonia is clearly dual: on one hand, there is a small group of large companies following differentiation strategies and enjoying economies of scale while, on the other hand, there are many small wineries who suffer a situation of economic losses at the end of the year. For the accounting year 2013, an economic analysis of the winery sector in Catalonia identified 188 wineries, from which the top 5 gathered 62% of the sales (OVVC, 2015).

On the recent years, a vast majority of companies have recently increased their exposure to the international markets. However, small and medium wineries rely vastly on their sales in the local markets where either their brands or the PDOs in which they are located support their market penetration. Moreover, Spanish wineries have not been traditionally concerned about developing marketing strategies, while concentrating their efforts on producing grapes and wines of good technical quality (Castillo, 2015). This is also valid for Catalonia, where the sector has been defined (from the standpoint of marketing) as fairly uncoordinated (Costa-Font *et al.*, 2009).

More specifically, Gil *et al.* (2009), in a survey of small and medium wineries in Catalonia, determined that their development of marketing strategies or market studies was inexistent. Regarding their sales, the local markets concentrated the highest share of their wines, while their marketing channels were mainly based on wine distributors. Table 5.1 pictures an extract from the survey that shows that most of the wineries rely on distributors – who are responsible for a big deal of their sales –, while the role of the big retailers is very small. This pattern is accordance with Contó *et al.* (2013) that stated

that distributors play a key role in production environments characterized by high fragmentation.

Table 5.1: Marketing channels for small and medium wineries in Catalonia. Distribution of the wine (%) allocated to each channel. Frequency of use for each marketing channel (%).

Marketing channels	% of the wine allocated to each channel. Only non-export volume. Total 100%	% of wineries using each channel
Distributors	54.1 %	94.7
Sold in bulk for third parties	14.4 %	5.3
Direct sales	14.3 %	26.3
Specialized wine retailers	13.1 %	47.4
Big retailers	2.4 %	7.9
Bottled for third parties	1.4 %	5.3
Horeca	0.3 %	2.6

Source: Extracted from Gil J.M. *et al.* (2009)

Conversely, wine for consumption at-home is mainly purchased in supermarkets and self-service stores, which account for most of the total wine sales. If we add hypermarkets, the share increases up to 64.5% (MAPAMA, 2015)¹⁸. Therefore, the wine sector depends highly on big retailers who are known to push their prices down because of their strong market power (PTV, 2012). Large retailers gain every time more market power, purchasing a great volume of goods at very low prices. For this reason, they prefer to deal with strong brands that have the common ability to pull, rather than push, product through the marketing chain (Lapsley and Moulton, 2001). Therefore, it is known that the big brands operate directly with the large retail sector while they tend to exclude too small suppliers (Pomarici *et al.*, 2012).

In addition, another characteristic of the Catalan wine sector is a relatively low market share of the Catalan PDO wines in the retailer channels and in the HORECA sector: the Catalan PDO wines only account up to 33.7% of all the quality wine consumed in Catalonia (INCAVI, 2014). This shows that the demand for Catalan quality wines in Catalonia is still low. This situation also contributes to the difficulty that some small Catalan wineries have to access into a market which is defined as highly saturated and competitive (Gil and Sánchez, 1997; Angulo *et al.*, 2000; Barrena and Sánchez, 2009; Bernabéu *et al.*, 2012).

¹⁸ The data is related to the Spanish market, however, for the Catalan market similar proportions may be assumed.

From these data it can be concluded that the size of the winery greatly influences its marketing channels. Small and medium wineries' presence on the markets lies in the hands of other chain agents, especially of the distributors. Thus, smaller wineries need to establish good marketing channels with wine distributors, who represent strategic agents to access the market.

Keeping in mind that the wine distributor is the winery's customer, it is of our interest to explore which are the distributor's main business motivations and which are the means to fulfil them through their business relationship with the wineries. To tackle this issue we carried out a vertical differentiation of the service provided by the wineries (wine supply) by means of the Means-End Chain (MEC) approach. This analysis identifies the linkages that the wine distributor establishes between the attributes of the service, the benefits they symbolize and the personal values they try to realize through them. Thus, the distributors will assess which are the most wanted winery's attributes in order to achieve their desired end states. In other words, the distributors will point out which winery's attributes provide a greater success in their relationship. Thus, our goal is to determine ways to develop stable relationships among stakeholders along the supply chain that can help small units in the wine sector in gaining competitive advantages in front of the wine distributor.

While research focused on wine distributors is relatively rare, there is an extensive body of literature on marketing channel relationships to form a basis for this research (Thach and Olsen, 2006). Besides, there is also few literature that approaches suppliers' choice structure in a business to business relationship, and this is one of the contributions of this study. Furthermore, the MEC approach is especially interesting to explore highly saturated markets for which achieving a proper distribution has an added difficulty.

The chapter is structured as follows: section 2 examines our theoretical framework, which is subdivided into business relationships and the means-end chain theory. The methodology and the data collection are discussed in section 3. Results are discussed in section 4 and, finally, some conclusions are outlined.

5.2. Theoretical framework

5.2.1. Business relationships

The manufacturer and the distributor working partnership has been defined as “the extent to which there is mutual recognition and understanding that the success of each firm is in part dependent upon the other firm, and where because of this, each firm takes actions so as to provide a coordinated effort that is focused upon jointly satisfying the requirements of the customer marketplace” (Anderson and Narus, 1988).

Maintaining a good working relationship between the suppliers and the distributors is critical for success in almost any industry, as so it is for the wine industry. A good partnership with the right distributor will help to achieve a better profitability, by helping out promoting a brand (Prichard, 2004) and, in the long term, by a better understanding and servicing of the customer’s needs (Kalwani and Narayandas, 1995).

The wine sector faces highly competitive marketing challenges and, for this reason, it is critical that wineries focus on effective marketing strategies (Felzensztein *et al.*, 2004). A crucial aspect for building and sustaining a good working relationship is to be cognizant of providing its partner firm with some advantage relative to the alternative and the potential partners (Anderson and Narus, 1988). A firm pursuing a relationship marketing strategy will attempt to create more value for its customers than that which is provided by the core product itself (Batt and Wilson, 2000).

Building trust between suppliers and distributors is the key to develop successful long-term relationships (Anderson and Narus, 1990; Beaujanot *et. al.*, 2005; among others). However, there are other important points for a successful partnership, such as profit. Gronroos (1994) defines the marketing relationship as a way of establishing, maintaining and enhancing a relationship with a customer at a profit, so that the objectives of the parties involved in the relationship are met. According to Thach and Olsen (2006), profit can be met with better prices, and fewer shortages and delivery delays. Another issue that arises from the literature is that in a business relationship one party will desire some degree of exclusivity from the other (Fein and Anderson, 1997).

Nevertheless, as a first step, and to start a relationship between a winery and a distributor, a wine has to be included in the distributor’s portfolio. The main factors determining whether to include a wine in a distributor’s portfolio are: wine quality, dependability of the producer, price and personal relationship. Furthermore, portfolio fit

is also relevant, which means that a wine has to stand out from the wines already included in the portfolio. Moreover, wine prestige is also considered when the portfolio includes a wide range of wines (Thach and Olsen, 2006).

Some of the abovementioned characteristics are also potential determinants of partnership advantage (Anderson and Narus, 1988). It is noteworthy that while the price is identified as a relevant factor, the offering of discounts and bonuses is not. A good personal relationship is also of great importance in business relationships (Contó *et al.*, 2013). Furthermore, the wine distributor expects the winery's support, which will also be provided by having a positive and fun attitude (Thach and Olsen, 2006).

A closer relationship and an understanding of how to satisfy the needs of the customer can develop into greater customer loyalty and higher sales (Evans and Laskin, 1994). Moreover, it has to be considered that although the acquisition of new customers is important, keeping existing customers is important too (Beaujanot *et al.*, 2005). Another characteristic that helps sustaining business to business relationships is a high standard of professionalism (Pomarici *et al.*, 2012).

Furthermore, offering support to channel members is a basic facet to encourage and motivate the distribution channel to do a more effective selling job for the manufacturer (Rosenbloom, 1978). Field and promotional support provided to the distributor enhances his/her performance in the customer marketplace (Anderson and Narus, 1988). In the U.S. wine sector, moreover, the distributor expects that the winery will have a customer service available and, that it will offer sales support. In this line, the winery must be willing to regularly train the distributor's sales staff about the wine, accompany the staff on visit to retail accounts, and conduct tastings and other trade events (Thach and Olsen, 2006).

The assistance to the distributor can be fulfilled by the winery's implementation of other marketing strategies. For instance, the power of telling the personal story of the wine and the winery cannot be overemphasized. It will help out building the brand in the consumer's mind and remembering what is unique about the wine (Thach and Olsen, 2006). Participating in wine fairs (Kovacic and Randman, 2003), inviting the distributors to visit the winery and providing wine samples (Thach and Olsen, 2006) are also other examples of marketing strategies that can be developed.

5.2.2. The Means-End Chain (MEC) theory

Consumers do not buy a product for the product's sake, but for what the product can do for them (ter Hofstede *et al.*, 1998). The main premise of the Means-End Chain (MEC) theory is that consumers learn to select those products (or services) that feature the attributes that allow them to achieve their desired consequences (Gutman, 1982; Reynolds and Gutman, 1988; ter Hofstede *et al.*, 1998).

In 1982, Gutman introduced the MEC theory into the field of marketing and consumer research. Based on the vertical differentiation of a product or a service, the MEC theory seeks to determine the cognitive structures that relate the knowledge of the product (or service), with consumer's personal knowledge. The theory proposes that consumers' knowledge of a product is organized hierarchically¹⁹ in different levels of abstraction: attributes, consequences and values (ter Hofstede *et al.*, 1998; Leppard *et al.*, 2004; among others).

According to ter Hofstede *et al.* (1998), attributes are the concrete, tangible characteristics of the product (or service), while consequences refer to what the product does or provides to the consumer at the functional or psychosocial level. Values are intangible, higher-order outcomes or ends, being cognitive representations of consumers' most basic and fundamental needs and goals.

In the consumer's mind, a product attribute will start up a chain that will establish a sequence of links with personal values through the consumer's perceptions of the consequences or benefits to be derived from certain attributes of the product, service or behavior (Barrena and Sánchez, 2010). A detailing and a subsequent understanding of these higher level distinctions provides a perspective on how the product information is processed from what could be called a motivational perspective, into the underlying reasons that define why an attribute or a consequence is important (Reynolds and Gutman, 1988).

The Means-End Chain methodology has been used in many studies that pursue to understand consumer behavior. Most of these studies aim to determine consumer's choice structure for goods (ter Hofstede *et al.*, 1998; Chen and Wei, 2012; Poppy *et al.*, 2014; among others). However, the Means-End Chain has also been employed to ascertain consumer's choice structure for services. Some examples are the identification

¹⁹ Note that although most of the literature assumes the hierarchical structure of the MEC theory, this has been challenged by some authors such as Van Rekom and Wierenga (2007). Our study assumes the hierarchical structure as it is the most widely accepted.

of the motives behind E-consumers loyalty (Koo, 2006), consumer satisfaction for hotel services (Orsingher and Marzocchi, 2003); student value and quality in education (Veludo-de-Oliveira and Akemi-Ikeda, 2004; Bolat *et al.*, 2015) and, motivation-based values for museum visitors (Thyne, 2001), amongst others. Another application of the Means-End chain methodology is related to consumer's choice structure for environmental services, like the citizen's valuation of peri-urban green spaces (López-Mosquera and Sánchez, 2011), consumer recycling goals (Bagozzi and Dabholkar, 1994) and recreational cyclist's motivations (Ho *et al.*, 2015). In the field of animal welfare there are also examples of the application of the MEC methodology, as pictured in Hansson and Lagerkvist (2015). However, there is few literature that approaches suppliers' choice structure in a business to business relationship, and this is one of the contributions of this study.

5.3. Methodology

5.3.1. The Laddering interview

The MEC is usually measured by means of a qualitative interviewing technique known as Laddering (Reynolds and Gutman, 1988; ter Hofstede *et al.*, 1998; among others). Laddering refers to an in-depth, one-on-one interview technique, aimed at detecting the consumers' associations from a product (or a service) attribute with respect to themselves, while following the Means-End Chain theory (Reynolds and Gutman, 1988).

Laddering involves a tailored interviewing format using primarily a series of directed probes, typified by the "Why is that important to you?" question. The express purpose of the interviewing process is to elicit the reasons, in terms of the associated consequences and values, for their selection of perceived relevant attributes. In other words, to elicit Attributes – Consequences – Values (ACV) associations, networks or ladders (Reynolds and Gutman, 1988).

In order to obtain consumer's choice structure, the laddering data is firstly summarized by its key elements, following a standard content-analysis procedure (Reynolds and Gutman, 1988). Once the concepts (or contents) are identified, the linkages between them can be entered on an implication matrix from which a Hierarchical Value Map (HVM) can be then constructed (ter Hofstede *et al.*, 1998). The HVM is structural in nature and shows the main relationships (or ladders) among all

elements identified (Reynolds and Gutman, 1988). This approach is also known as soft laddering. Soft laddering respects the respondent's natural flow of discourse throughout the interview and the ACV associations have to be reconstructed afterwards. It is recommended when respondent's cognitive structures are very weak or very elaborate, according to respondent's level of knowledge about a product (Grunert and Grunert, 1995). The use of soft laddering may be also advisable when the researched area is not well known and when problems in the reconstruction of meanings could arise (Veludo-de-Oliveira and Akemi-Ikeda, 2004).

Nevertheless, soft laddering has its limitations. The in-depth interviews are time-consuming, costly and require highly trained interviewers. Consequently, it is difficult – if not impossible – to use them to obtain large-scale representative samples (ter Hofstede *et al.*, 1998). In order to overcome these limitations several techniques can be applied to modify the laddering interview into what is labelled as hard laddering. Such techniques can embrace computerized data collection and self-administered questionnaires (paper-and-pencil version) (Veludo-de-Oliveira and Akemi-Ikeda, 2004). According to the Means-End Chain theory, the subjects are required to generate or verify associations between elements on individual ladders in sequences showing increasing levels of abstraction (Barrena and Sánchez, 2010). It is, thus, a variation of the laddering technique with greater structuring in data collection, which allows the application in large-scale samples. Therefore, it demands less skill of the researcher during the interview and minimizes his/her influence on the responses (ter Hofstede *et al.*, 1998).

A very widely used alternative when applying hard laddering is the Association Pattern Technique (ATP), introduced by ter Hofstede *et al.* (1998). The ATP uses a fix format, and measures the links between attributes and consequences and the links between consequences and values separately. Therefore, in the ATP an AC-matrix (Attributes – Consequences) and a CV-matrix (Consequences – Values) are distinguished. The technique is much cheaper and faster than laddering, can be used in mail questionnaires, and allows the researcher to collect data among a representative sample of consumers (ter Hofstede *et al.*, 1998).

Once the linkages are identified, they can be entered on an implication matrix, which depicts the number of times each attribute (consequence) leads to each consequence (value). From the implication matrix a HVM (Hierarchical Value Map) can be then constructed (ter Hofstede *et al.*, 1998). When showing a HVM, however, a

cut-off point needs to be determined. Leppard *et al.* (2004) defined the cut-off point as the number of linkages to be allowed on the map and proposed the “top-down ranking” method in order to determine it. This method is based on the notion that the most important linkage is that associated with the largest entry in the implication matrix. The approach begins obtaining a HVM at the largest cut-off level, which will create a simple HVM although losing a great deal of the information. Successively, other HVM are created by use of smaller cut-off levels (Leppard *et al.*, 2004), which will complicate the map interpretation while adding information.

In our work, soft laddering was used as a pilot study in order to elicit ACV of the service. Results from the in-depth interviews together with an extended literature review, helped us out to build an AC-matrix and CV-matrix in order to apply the APT for our survey. The APT was considered to be the easiest and least time-consuming method for eliciting ladders from wine distributors; taking into account that larger methodologies would have been difficultly fulfilled because of respondents’ nature.

5.3.2. Data collection

Data were collected in Catalonia (Spain) by means of a personal survey of a 50 wine distributors, from a total universe of 353 (Camerdata, 2009). This size of sample is consistent with those observed in most of the previous research in which this technique has been employed²⁰. Interviewing was conducted face to face. Each of them took an average of 60 minutes. Table 5.2 shows the sampling technical details.

This study used a three-part questionnaire. The first section questioned was addressed to elicit respondents’ business characteristics (location, size...). The second section was focused on business strategies, especially those related to their wine purchase behavior. The final section contained the laddering interview to elicit the MECs produced by the respondents. Data collection for the laddering interview was obtained by means of the APT (Association Pattern Technique). Tables 5.3 and 5.4 show the Attributes – Consequences matrix and the Consequences – Values matrix that were used in our empirical application. The order of the items was randomly modified to avoid an order effect in the responses.

²⁰ Although APT (Association Pattern Technique) was designed for use with large samples, it is approved for samples of 50+. Some examples of published works in which this methodology has been used with relatively small samples include Russell *et al.* (2004), where the APT technique is applied to a sample of 45; Ter Hofstede *et al.* (1998), where a sample of 50 subjects are surveyed for their attitudes towards olive oil and vegetable oil using this hard laddering technique.

Table 5.2: Sampling Technical Details

Universe Frame	Wine wholesalers distributors in Catalonia
Scope	Catalonia
Sample size	50 questionnaires
Sample error	± 12.9%
Confidence level	95,5% (k=1,96)
Sample size	Stratified by areas of interest (Barcelona city, Metropolitan area of Barcelona, and the provinces of Girona, Lleida and Tarragona) and by company size (according to total number of workers), with proportional affixation in each strata.
Control measurements	Pilot survey (5 in-depth interviews)
Field date	November 2009

The attributes, consequences and values were drawn from the reviewed literature, the in-depth interviews performed for the pilot survey, and the consultation with experts from the wine sector. This resulted in 14 attributes, 10 consequences and 6 values which are listed in tables 5.3 and 5.4. The values were primarily taken from the List of Values (LOV) proposed by Kahle *et al.* (1986), and later modified according to the results of the pilot survey and adapted to a business situation (table 5.4).

Some of the attributes included in the survey exemplify marketing strategies to support the distributor's work. These are the winery's believe in its wines, providing tours for clients, being present in trade fairs and events and a good image as a winery (table 5.3). This latter attribute was portrayed by a well taken care portfolio, well taken care facilities, and illustrating to the public the winery's own story.

As it was previously stated, the market share of Catalan wine in Catalonia is relatively small (INCAVI, 2014). Therefore, the Catalan origin of the wine was also added among the winery's attributes. In order to compare the Catalan wines to the rest of the Spanish wines, the Spanish origin was also considered²¹.

Furthermore, the winery's size (or volume) was also introduced as one of the attributes to be taken into account by the distributor. The measurement of this attribute will help to detect the distributors' preference towards wineries that are capable of delivering big wine volumes or not.

²¹ Spanish wines are the main competitors of the Catalan wines in Catalonia (INCAVI, 2014)

Table 5.3: Attribute – Consequences matrix

Winery's Attributes	Consequences for the distributor derived from the attributes								
	To trust the winery	To offer quality	I can be more competitive	To satisfy my clients' taste	To win loyal costumers	To get higher margins	A large range of costumers	To expand my portfolio	A great variety of options
Excellent quality of their wine									
Friendly dealing									
Tradition in the sector									
Exclusivity									
Professionalism fulfilling what is agreed upon									
Reasonable prices									
Discounts									
Wine volume is enough to meet my requests									
Wide range of Catalan wines									
Wide range of Spanish wines									
A believe in their wine									
A good image as a winery (facilities, portfolio, history...)									
Tours for my clients									
Present in trade fairs and events									

Table 5.4: Consequences – Values matrix

Consequences for the distributor derived from the attributes	Distributor's Personal Values					
	Financial security & stability	Maximize profit	Professional fulfillment	Respect from my clients	Acknowledgement	Success & prestige
To trust the winery						
To offer quality						
I can be more competitive						
To satisfy my clients' taste						
To win loyal costumers						
To get higher margins						
A large range of costumers						
To expand my portfolio						
A great variety of options						

5.4. Results and Discussion

The most important descriptive statistics of the sample are defined on table 5.5. Most of the distributors do not belong to any business group and are operating in the market for a considerable period of time (an average of 29.4 years). The average annual turnover and the total amount of workers are within the consideration of SMEs (Small and Medium Enterprises), according to European Commission Recommendation 2003/361/EC of 6 May 2003, concerning the definition of micro, small and medium-sized enterprises²². Furthermore, the proportion of the annual turnover provided by the wine sales is high (82.8%), which shows a great specialization in the business. This is also shown by the amount of wine references displayed in the portfolio (188.4), which is considerably large for such small companies.

Table 5.6 shows the importance given to several wine attributes in order to include a specific wine into the distributor's portfolio. This was measured on a Likert scale ranging from 0 to 10. Results show that the price is the most important attribute,

²² Respondents can be classified as small enterprises. However, many of them could belong to the category of microenterprise, which are defined as enterprises which employ fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million.

followed by achieving exclusivity for the wine distribution. The third most important wine characteristic is a Catalan origin. Therefore, small wine distributors in Catalonia show a preference for distributing Catalan wines. It is also noteworthy that these distributors do not take into account the size of the winery. This shows that small wine distributors do not require particular volumes in order to operate, which could be explained by their own small size. Portfolio fit is not a key element for the wine distributor. The great amount of references included in their portfolios, which determines a great variability of wines, could therefore make portfolio fit a difficult issue to be required.

Table 5.5: Sample Descriptive Statistics

	Average (Std.dev.)
% that belongs to a Business Group / Holding company	12.0
Years of operation	29.4 (27.4)
Annual turnover (EUR million)	1.13 (2.79)
Fraction of annual turnover obtained by wine sales (%)	82.8 (27.1)
Total number of workers	8.3 (16.2)
Total number of wine salespersons	2.1 (2.1)
Number of wine references in the portfolio	188.4 (375.4)

Table 5.6: Criteria to include a wine in the product portfolio. Likert scale from 0 (not important) to 10 (very important)

	Average (Std.dev.)
Price	8.2 (2.6)
Exclusivity	8.0 (2.6)
Catalan wine	7.5 (2.6)
Specific wine (difficult to obtain)	6.8 (3.1)
Portfolio fit (not competing)	6.5 (3.7)
Awards and prizes	6.5 (3.3)
From a small winery	6.3 (3.1)
From a big winery	5.7 (3.1)

From the 50 personal interviews, a total of 2,053 ladders representing attribute-consequence links or consequence-value links were revealed. Figure 5.1 represents the

Hierarchical Value Map (HVM), which shows the ladders created by the distributors. The selected cut-off level equals 14, which provides an interpretable map and retains 71.6% of the variance in the original data. This level of variance remains above the recommended 70% by Gengler and Reynolds (1995). The map includes 17 content codes from the 29 that were available (14 attributes + 9 consequences + 6 values). The percentage of the subjects that mentioned each code is also represented in the HVM.

Results show that “To trust the winery” is the main central issue for the distributors, being mentioned by almost the whole sample (96% of the participants). The importance of trust in the business relationship is in accordance with the results obtained from the literature. The distributor strongly associates the trust in the winery with “Respect from my clients”. This personal value is the most selected across respondents (82% of the participants). “To trust the winery” is also related to the distributor’s “Professional fulfillment” and “Acknowledgment” (selected by 70% and 68% of the participants, respectively). These are the three most important personal values selected by the wine distributors.

The main winery’s attribute that generates a trustful relationship is the “Excellent quality of the wine”. This is the key attribute that the winery has to offer, as it is the most selected across respondents (70% of the participants). According to Thach and Olsen (2006), the taste quality of the wine is a must for the distributors’ selection of wines.

Furthermore, a trustful relationship can also be achieved by the winery when offering a “Friendly dealing” and, when showing “Professionalism fulfilling what it is agreed upon” (timings, contract conditions, availability, etc.). These results are in agreement with Thach and Olsen (2006).

Other winery’s attributes that lead to a trustful relationship are related to the distributors’ support. As it was previously mentioned, this was portrayed in the questionnaire by the following winery’s attributes: 1) A believe in their wine; and 2) A good image as a winery. This latter attribute was characterized by having well taken care facilities, by a well taken care portfolio, and by illustrating to the public the winery’s own story. As it was previously stated, the power of communicating the personal story of the wine and the winery cannot be overemphasized (Thach and Olsen, 2006). Therefore, the winery’s determination to access the market, which would be part of the distribution support, is a very important attribute in the eyes of the wine

distributor. In this sense, small wineries could benefit from the fact of being small by presenting themselves in a personal story that enhances this fact for its uniqueness.

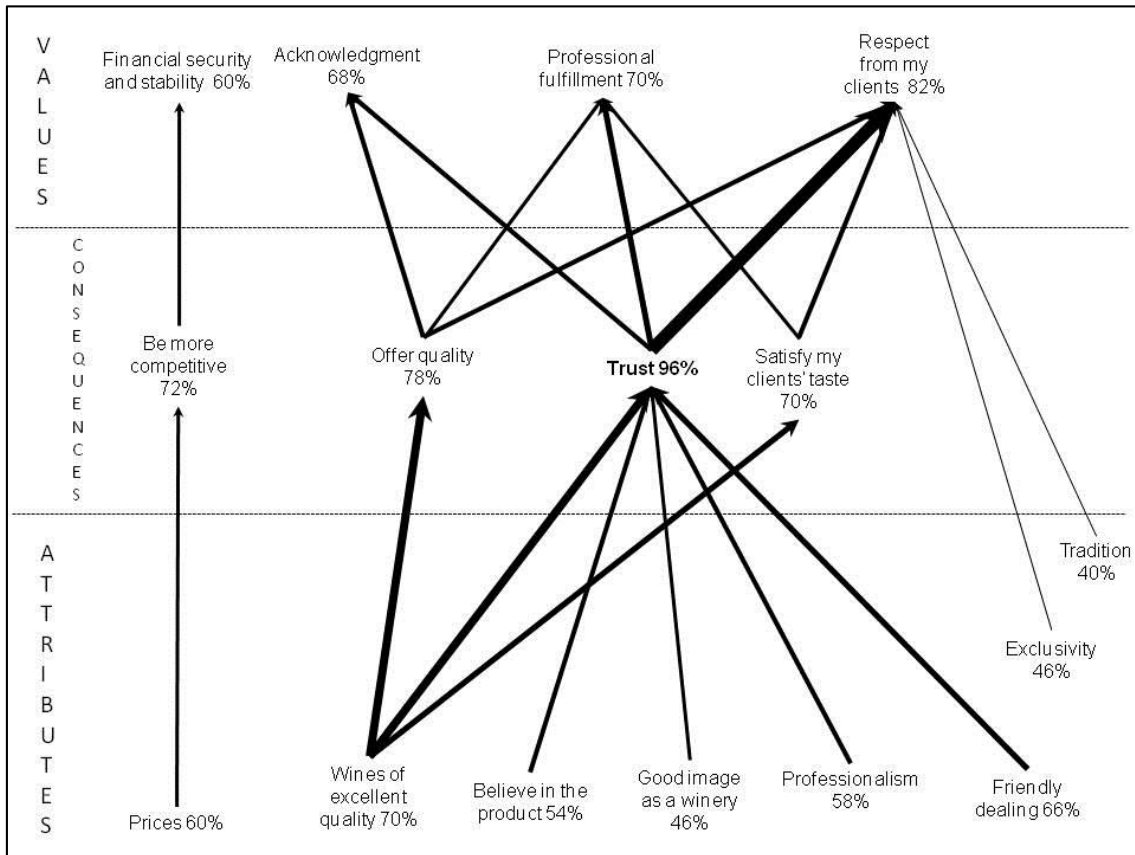
A consequence that also occupies a central positioning in the Hierarchical Value Map (HVM) is “To offer quality”. Wine distributors associate this consequence to the most important personal values: “Respect from my clients”, “Professional fulfillment” and “Acknowledgment”. In order to offer quality, wine distributors will naturally seek for wineries that can offer them a quality product. This shows again that an “Excellent quality of the wine” is the paramount attribute to be offered. When a winery offers a quality product, the distributors also relate it to “Satisfy my clients’ taste” which, in turn, is related to “Respect from my clients” and “Professional fulfillment”.

It is also noteworthy the association of providing “Exclusivity” and “Tradition in the sector” with the achievement of “Respect from my clients”. As it was noticed, exclusivity is also of the distributor’s interest when deciding for a wine to include in their portfolio (table 5.6).

The HVM shows another relevant ladder that reveals that the distributor also values his/her “Financial security and stability” in the business. This is achieved by the purchase of wines at “Reasonable prices”, which yield into “I can be more competitive”. However, the desired end states of the small distributors in Catalonia show that the respondents are not mainly business driven. The survey included other business-oriented values, such as “Maximize profit” and “Success and Prestige” as distributors, which do not appear on the HVM. This is an important finding for small wineries that cannot compete in the market with low(er) prices. In the same line, a “Reasonable price” is not the most prioritized attribute, while “Offering discounts” does not appear on the HVM, which is in agreement with Anderson and Narus (1988).

Regarding the origin of the wine (Catalan and/or Spanish), the distributors do not show any particular preference when they build their linkages for their desired end state. The Catalan wines are preferred by the distributor when deciding for a wine to include in their portfolio (table 5.6). However, once the distribution job is on the run, the origin of the wine seems not to play a role anymore for the distributor’s business goals. This is easily understood when taking into consideration that Spanish wines are the most consumed in Catalonia, especially those from La Rioja. Another issue that is not taken into account is that the winery can provide “a volume enough to meet my requests”. The size of the winery was also shown not to be relevant when introducing a wine in their portfolio, which could be related to their own small size as distributors.

Figure 5.1: Hierarchical Value Map for wine wholesalers. Cut-off point= 14 (71.6% variance explained).



5.5. Conclusions

The wine sector in Catalonia (Spain) is clearly dual: there are some big companies that contrast with the many small wineries that face difficulties to remain profitable. For these wineries, gaining access to the markets is of paramount importance. Therefore, a winery that can draw the distributor's attention will increase its business opportunities. Taking this into consideration, our work explores the distributor's business motivations, and the possibilities to pursue these in their business relationships with the wineries. To tackle this issue we carried out a vertical differentiation of the service provided by the wineries (wine supply), by means of the Means-End Chain approach.

Results show that, while wine quality is the key attribute that the winery has to offer, a trustful relationship with the winery is the main central issue for wine distributors. Furthermore, the most important personal values for the distributors are not business driven. This is an important finding for small wineries that cannot compete in

the market with low(er) prices. Thus, small wineries have non-economic ways to draw the distributor's interest, such as a friendly dealing, professionalism in fulfilling what it is agreed upon, and a strong profiling in the creation of their identity and/or image.

The winery's sales support to the distributor is of great importance for the wine distributor. Our findings report that the winery can show its support by their own will to access the market and to develop marketing strategies. An example would be promoting their smallness as a personal choice instead of as a circumstantial factor. This and similar strategies would emphasize the contrast between wines from big and notorious wineries and those produced by the smaller ones, using their particular uniqueness as a marketing tool.

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**Chapter 6: The wine business in the restaurants in Catalonia
and the role of the wine distributor**

6.1. Introduction

The proportion of food expenditure in the HORECA sector in Spain is relatively high. This proportion, however, varies depending on the food product. The proportion is higher for drinks to serve cold, including alcoholic beverages and wine (MAPAMA, 2015). Out-of-home wine consumption is significant: in 2015, it achieved 39.3% of the total expenditure for wines; and 46.5% for PDO wines (INCAVI, 2016). Therefore, the HORECA sector is not a market to be underestimated.

Nevertheless, the Catalan PDO wines have a low market share in the HORECA sector in Catalonia (32.6%, according to INCAVI, 2016)²³ and this is a missed opportunity for the wine sector. This low positioning occurs while wine production in Catalonia orientates towards quality²⁴ and its wines are internationally acknowledged (Tolosa and Antúnez, 2014).

From the restaurant point of view, wine can have a significant impact on the restaurant's profitability (Gultek *et al.*, 2006). There is therefore much research related to the restaurants' wine business focused in determining the mechanisms to increase the wine sales (Hall and Lockshin, 2000; Durham *et al.*, 2003; Manske *et al.*, 2005; Gil-Saura *et al.*, 2008; among others). From the wine sector's point of view, there is also much literature related to the restaurant's sector. However, it mainly focuses in the wine tourism potential (Hall *et al.*, 2000; Mitchell and Hall, 2004; Alonso *et al.*, 2008; López-Guzmán *et al.*, 2008; and, Sheridan *et al.*, 2009; amongst others). On the other hand, the marketing of local wines in restaurants located out of the production areas is not widely explored. In this way, this chapter contributes to the literature by exploring the wine business of the restaurants in the city of Barcelona while focusing on the local wines.

It is known that the restaurateur is a key figure to promote wines and his/her recommendations influence the restaurants' wine sales (INCAVI, 2007). Thus, a greater access of the Catalan PDO wines in the HORECA sector would improve the promotion of local wines to consumers, and this would benefit the Catalan wine industry. The access in the HORECA sector relies greatly on the wine distributor, who provides the most important marketing channel. However, the wine distribution business is hard and there is great competition. It is therefore that this chapter also aims at defining the

²³ This is a low positioning of the Catalan PDO wines, however, when this study was launched their positioning was still much lower (around 17% in the years 2004, 2005 and 2006; INCAVI, 2007).

²⁴ PDO vines cover more than 90% of the vine surface of Catalonia (IDESCAT. Farm's structure survey, 2013), which shows that there is a great specialization in the production of quality wines.

restaurateur's choice structure for the wine supply service. The vertical differentiation of the service identifies the linkages that the restaurateur establishes between the attributes of the service, the benefits they symbolize and main business and personal motivations they try to realize through them. In order to do so, we have applied a vertical differentiation of the service (wine supply) using the Means-End-Chain (MEC) methodology.

There are many studies about business to business relationships and many of them focus on determining the most important factors to improve these relationships. But business to business relationships in the restaurants' wine sector are, to our knowledge, practically inexistent. In this sense, this chapter contributes to fill this gap in the literature by taking Catalonia as a case study. Our study, however, is not only of interest for the Catalan wine sector, but can also be transposed to the study of other regions that share the same context.

This chapter explores the restaurants' wine business in the city of Barcelona (Spain) from a survey of 170 restaurants. In our survey we gathered information about the restaurants' wine business and the restaurateurs' preferences towards their wine distributors. To our knowledge, this was the first exploratory study of the wine business in the restaurants in Catalonia.

This chapter is structured as follows: the next heading encompasses a literature review about the wine business in the restaurants, followed by the description of the empirical application. Finally, the results and conclusions are exhibited. For the methodological description, we address our readers to our previous chapter (*chapter 5 sections 5.2.2. and 5.3.1.*).

6.2. Wine and Restaurants

The importance of the restaurants from a marketing point of view can be explained from different perspectives. Firstly, when a wine is listed in a restaurant's wine list, the consumer already assumes that it is a good wine as the restaurant owner has already considered it good when introducing it in its offer. Secondly, consumers are more willing to try new wines in the restaurant's environment (Gultek *et al.*, 2005). When a wine is found in a restaurant an opportunity for tasting is created. Taste opportunities are of paramount importance, as it is known that consumers take an "already tasted wine" as one of their main cues when making a wine choice (Kallas *et*

al., 2013; Thach, 2008). Therefore, if wineries are looking to increase their sales and to become more known they must take all the opportunities for their wines to be tasted.

Restaurants provide the ideal service and atmosphere for a good quality wine tasting. A good wine accompanying a good meal can cause the consumption experience to transcend to a superior level of enjoyment (Aune, 2002). A satisfactory restaurant consumption experience is an interesting subject in the literature and many researchers have studied its determining factors. A satisfactory restaurant consumption experience is of paramount importance to guaranty customers' return (Kivela *et al.*, 1999), and also to increase the restaurant's profitability, because the consumer will be willing to pay an extra amount to achieve that satisfaction (Aune, 2002).

Wine in restaurants can also have a significant impact on the restaurant's profitability (Gultek *et al.*, 2006). In the U.S., wine, beer and alcohol beverages in the restaurant are generally charged with a higher margin than the food that is served (Dodd, 1997). In Spain, the restaurant's margin for the wine sales is up to 170.8% (OEMV, 2009). Regarding this, there are opinions from the sector that claim an abusive nature with an indirect damage for the sector as a whole.

Much of the research related to wine in the restaurants is focused in determining the mechanisms to increase their wine sales, maybe through specialized staff such as a sommelier or others (Manske *et al.*, 2005, Gultek *et al.*, 2006), by improving their wine list (Davis and Charters, 2006; Berenguer *et al.*, 2008; Gil-Saura *et al.*, 2008), by performing promotional activities (Wansink *et al.*, 2006), by identifying the most relevant cues of a wine for a restaurant (Durham *et al.*, 2003), by identifying the occasion of consumption at the restaurant (Hall and Lockshin, 2000; Hall *et al.*, 2001; Halstead, 2002; Martínez-Carrasco *et al.*, 2006), or, by describing the restaurateur by his/her wine purchases (Hadmark *et al.*, 2008).

From the wine sector point of view, there are also studies that research the wine business in the restaurant. However, they are mainly focused on the wine tourism potential, with a specific interest for the development of the rural regions of production (Hall *et al.*, 2000; Mitchell and Hall, 2004; Alonso *et al.*, 2008; López-Guzmán *et al.*, 2008; and, Sheridan *et al.*, 2009; amongst others). Nevertheless, the environmental factors (location and setting, winery's visits, etc.) and the consumption occasion (festivities, especial occasions, romanticism, group feeling, etc.), focusing on the consumer as a tourist, lead to conclusions that are not comparable to the context that we

are approaching: local wines in local restaurants that are placed out of the production areas.

Amongst the authors that studied local wines in local restaurants from non-production areas, Prezler (2003) and Prezler and Schmit (2009) focused their research on New York State wines in the city of New York. In 2003, Prezler performed in-depth interviews with sector experts, together with a survey from a short questionnaire. In 2009, the authors focused on top range restaurants and their results confirmed a very low presence of local wines (<5%). Restaurateurs' attitudes towards local wines were positive, in spite of finding two important shortages: (1) wine quality consistence, (2) consumers' lack of knowledge of the local wines. According to Prezler and Schmit (2009), the most significant factor to adopt local wines in NY City was a good collective reputation of the region, and its comparative advantage due to the specific grape varieties: Riesling and Cabernet franc. He also pointed out that the regional brand "wines from NY" was not strongly defined, because it was not explicitly communicated. In this sense, for a country as the U.S., the identification of the production regions is more difficult than in Europe, because of the non-existence of a PDO's system and the lack of tradition.

In 2005, Gultek studied the lack of notoriety of the Texas's wines in restaurants from the cities of Dallas and Houston, from a survey of 152 restaurants. He also confirmed a low presence of local wines (14.9%), which was explained by the high popularity of the California State wines.

However, in order to understand the marketing of a product, a useful approach is to take into account its value chain and its marketing channels. The marketing of wine in restaurants greatly relies on the wine distributors and their importance, therefore, cannot be overemphasized. As it is in other businesses, it is of paramount importance to the wine distributor to establish good relationships with his/her clients; in this case, the restaurateurs. Besides, the distributors are generally interested in developing long term relationships (Mawson and Fearn, 1997) as restaurants have an enormous potential of selling wines. In this sense, there are many studies about business to business relationships and many of them focus on determining the most important factors to improve these relationships. However, to our knowledge, business to business relationships in the restaurants' wine sector are practically inexistent.

In 2004, Dodd *et al.* studied the most important attributes of the wine distributor from the restaurateur's point of view, by means of a survey of 152 restaurants. They

argued that the wine distributor should understand the needs and the preferences of the restaurateur in order to fulfil them and, consequently, keep their relationship in good terms. They concluded that the distributors' knowledge about wine and the discounts that were held, were the two most appreciated attributes. When the distributor is a wine specialist, the restaurateur considers that he/she will provide better recommendations about the product. This somehow allows the restaurateur disregarding that part of the business. When discounts are being held, the restaurateur can choose between transmitting them to his/her customers – by means of promotions and lower prices, increasing in this way consumer's satisfaction, or between simply increasing his/her margins. Friendly relationships between the restaurateur and the wine distributor were also well considered. However, they were not determinant in choosing a wine distributor.

Building trust between suppliers and distributors is the key to develop successful long-term relationships (Anderson and Narus, 1990; Beaujanot *et al.*, 2005; among others). A friendly dealing, the availability of the product, the prestige of the distributor and his/her reliability have been previously considered as the precedents for trust (Schurrand and Ozanne, 1985).

6.3. Empirical Application

Data were collected by means of a personal survey of 170 restaurants from the city of Barcelona (Catalonia, Spain) from a total universe of 571 restaurants (Camerdata, 2007; Gremi d'Hotels de Barcelona, 2007). The questionnaire was addressed to restaurateurs or staff in charge of purchasing the wines for the restaurant. The survey was performed by means of a face-to-face questionnaire that took less than 60 minutes to be fulfilled. The restaurants included in the sample had two or more forks, or three or more stars for hotels. Fast food and ethnic restaurants were excluded because of their lower involvement with wine consumption. Table 6.1 shows the sampling technical details.

The survey was implemented by means of a three-part questionnaire. The first section addressed restaurants' general characteristics (location, size...). The second section focused in the wine business of the restaurant, describing their wine lists and their wines. This information was enquired to reveal the competitive positioning of the Catalan wines. Moreover, this section also addressed the general description of the restaurants' wine supply. The third section of the questionnaire contained the laddering

interview to elicit the MECs ladders. The Means-End-Chain (MEC) approach was implemented for the vertical differentiation of the service (wine supply).

The collection of the data for the vertical differentiation of the wine distribution service was done by means of a laddering interview. This laddering interview employed the APT (Association Pattern Technique). The methodological aspects of this interview are detailed in chapter 5 (sections 5.2.2. and 5.3.1.). The attributes, consequences and values were drawn from the literature review and from the pilot survey. The importance of the origin of the wines was an issue also taken into account in this research.

Table 6.1: Sample technical sheet

Universe Frame	Restaurants and hotels from the city of Barcelona, with ≥ 2 forks or ≥ 3 stars, respectively.
Scope	Barcelona
Sample size	170 restaurants
Sample error	$\pm 5.39\%$
Confidence level	95% ($k = 1.96$)
Sample design	Stratified by type of business and category
Control measurements	Pilot survey (10 restaurants)
Field Date	November and December 2007

The matrices of Attributes–Consequences and Consequences–Personal Values that were used in the survey are shown in the annex 6.1. They list a total of 13 attributes, 13 consequences and 6 values. The order of the items was randomly modified to avoid an order effect in the responses. The values were primarily taken from the List of Values (LOV) proposed by Kahle *et al.* (1986), and later modified according to the results of the pilot survey and adapted to a business situation.

6.4. Results

Table 6.2 compiles the main descriptive statistics of the sample, including variables such as the income provided by the wine sales, amongst others. The average prices a la carte for a full menu have been divided in 3 categories: (1) $\leq 25\text{€}$, (2) > 25 a $\leq 40\text{€}$ and, (3) $> 40\text{€}$. These categories have been used to segment the sample, as this variable is a proxy of the restaurant range. The groups obtained were classified as low, middle and high range restaurants. For the low restaurant range, a total of 55 restaurants

was found, while the amount of restaurants of a middle range was of 66. Finally, the number of restaurants positioned on a high range was of 40²⁵.

Restaurants of a high range tend not to offer a menu, or they offer it only in the week but not in the weekend. Furthermore, 80% of the sample does not employ a sommelier. Sommeliers are more present in high range restaurants, which employ them in 54% of the cases. Most of the sampled restaurants (73%) do not belong to a restaurants' chain, therefore being independent.

6.4.1. Restaurants' wine list

The restaurant's wine list is a projection of the restaurants' essence (Gil-Saura *et al.*, 2008), already portraying the restaurants' atmosphere (Davis and Charters, 2006). The wine list will therefore provide information about the importance that the restaurateur assigns to his/her wine business.

Our results show that 73% of the restaurants provide an independent wine list (a part from the menu). However, low range restaurants differ significantly from the other groups and, in many occasions (40% of the cases), they offer their wine list together with the menu. Changing a wine list can also be an indicator of the restaurants' involvement with their wine business. The restaurants in our sample generally change their wine lists one or two times per year (68.3%). However, high range restaurants change it significantly more often (table 6.3)

When choosing wines to include in the restaurant' wine list, the restaurateurs' first criteria is that the wine is "demanded by my customers" (47.6% of the sample); followed very closely by "it is included in my distributor's portfolio" (45.9%) (table 6.4). Thirdly, the restaurateur considers whether it is a wine that he/she has tasted previously (41.8%). Other proposed criteria were not strongly considered. Thus, the price is not a determinant factor to include a wine in the restaurants' wine list. This could be explained because the price becomes more relevant when it is related to the margin that can be obtained from the sales (Gultek *et al.*, 2005).

²⁵ These 3 groups together account up to a cipher lower than 170. This is because there were missing values on the variable "price a la carte" that did not allow to introduce all the restaurants in the segmentation.

Table 6.2: Sample descriptive statistics. Results are expressed as an average (and standard deviation) or in percentage terms.

		Restaurants by range and total			
		Low	Middle	High	Total
Surface of the restaurant (m ²)		140.84 (120.85)	195.30 (171.25)	159.27 (96.89)	175.39 (172.51)
Diners capacity (number of persons)		67.93 (33.77)	88.89 (64.86)	69.41 (43.24)	78.50 (53.84)
Yearly wine sales income (€)		15,743.7 (21,433.4)	117,567.4 (218,289.7)	71,748.5 (157,567.4)	74,409.5 (158,963.2)
Daily menu price (€) [!] *		11.14 (3.72)	15.21 (6.25)	28.36 (16.15)	15.72 (9.88)
Weekend menu price (€) [!] *		13.81 (3.50)	19.82 (6.91)	42.77 (23.42)	20.54 (13.92)
A la carte price (€) ^{!***}		20.34 (4.64)	33.18 (4.41)	65.97 (19.63)	37.24 (20.58)
Menu deals*	Daily	47.3%	41.8%	21.4%	38.4%
	Only weekend	30.9%	35.8%	21.4%	30.5%
	Never (only a la carte)	21.8%	22.4%	57.1%	31.1%
Sommelier?*	Yes	5.5%	10.4%	53.7%	19.6%
	No	94.5%	89.6%	46.3%	80.4%
Belongs to chain?	Yes	16.7%	32.8%	31.0%	27.0%
	No	83.3%	67.2%	69.0%	73.0%

! Only for those restaurants that offer the requested menu

*The high range is significantly different from the other groups ($\alpha = 0.05$).

**The 3 groups show significant differences amongst them ($\alpha = 0.05$).

Table 6.3: Wine list descriptive: Location and Frequency of changes. Results are expressed in percentage terms.

		Restaurants by range and total			
		Low	Middle	High	Total
Wine list*	Included on the menu	40.0%	12.1%	9.5%	20.9%
	A part from the menu	60.0%	87.9%	90.5%	79.1%
Frequency of changes on the wine list**	Every month	0.0%	3.0%	7.1%	3.1%
	Every 1 or 3 months	12.7%	15.2%	19.0%	15.3%
	Twice per year	20.0%	30.3%	45.2%	30.7%
	One per year	41.8%	37.9%	26.2%	36.2%
	Less than once per year	25.5%	13.6%	2.4%	14.7%

* The group of a lower range is significantly different from the other groups ($\alpha = 0.05$).

** The group of a higher range is significantly different from the other groups ($\alpha = 0.05$).

Table 6.4: Restaurateurs' criteria to include a wine on their wine list. Results are expressed in percentage terms.

	Restaurants by range and total			
	Low	Middle	High	Total
The wine is demanded by my customers	60.0%	44.8%	53.7%	47.6%
The wine is included in my distributor's portfolio	47.3%	53.7%	34.1%	45.9%
I have previously tasted the wine (course, specialized fair...)	32.7%	47.8%	48.8%	41.8%
It is a wine offered at a good price	10.9%	22.4%	9.8%	16.5%
I have received information about this wine in a magazine or a specialized guide	10.9%	16.4%	24.4%	16.5%
Other criteria	3.6%	13.4%	19.5%	11.8%

Note: No significant differences amongst groups were found

6.4.2. Wine purchases of the restaurants

6.4.2.1. Wine PDOs at the restaurant's wine list

The average amount of PDOs that are present at the restaurants is high, more specifically of 12.8. However, only 3.1 are important for the restaurant wine sales (table 6.5). High range restaurants show a larger amount of PDOs than low range restaurants. The same occurs to the amount of PDOs that are important for the restaurant wine sales: high range restaurants consider a larger amount of PDOs than low range restaurants.

The PDOs *La Rioja* and *Penedès* are present in practically all the restaurants. They are also the most important in sales terms. *La Rioja* is amongst the most important PDOs in sales for 82.7% of the restaurants, while *Penedès* is chosen by 55.4% of them.

Excluding *Penedès*, *Priorat* and *Catalunya*, the other Catalan PDOs are present in less than 50% of the restaurants. In some cases, they are present in less than 25% of the restaurants (specifically, *Conca de Barberà*, *Pla de Bages*, *Terra Alta* and *Tarragona*). Foreign wines are only present in 44.7% of the restaurants, with France and Italy as the main origins.

The presence of the most mentioned PDOs and their relevance in wine sales in the restaurants of the city of Barcelona are shown in Annex 6.2.

Table 6.5: Average and standard deviation (between brackets) of the number of PDOs present in a restaurant, and the number of PDOs important for the restaurant's wine sales.

Number of PDO	Restaurants by range and total			
	Low	Middle	High	Total
Presents*	6.87 (4.91)	11.45 (7.37)	22.44 (12.80)	12.62 (10.48)
Important in sales**	2,00 (0,92)	2,67 (1,13)	4,41 (4,14)	3,08 (3,74)

*The 3 groups show significant differences amongst them ($\alpha = 0.05$).

** The group of a higher range is significantly different from the other groups ($\alpha = 0.05$).

6.4.2.2. *The Restaurant's wine supplier*

The restaurateurs work with a very high number of wine distributors: a total of 7.12. However, the sample shows a high variability and significant differences amongst high and low restaurant's ranges are found. As restaurants increase their range the number of wine distributors also increases. The restaurateur's level of satisfaction with his/her wine distributors is very high, with a grade of 8.29 points on a scale from 0 to 10 (table 6.6).

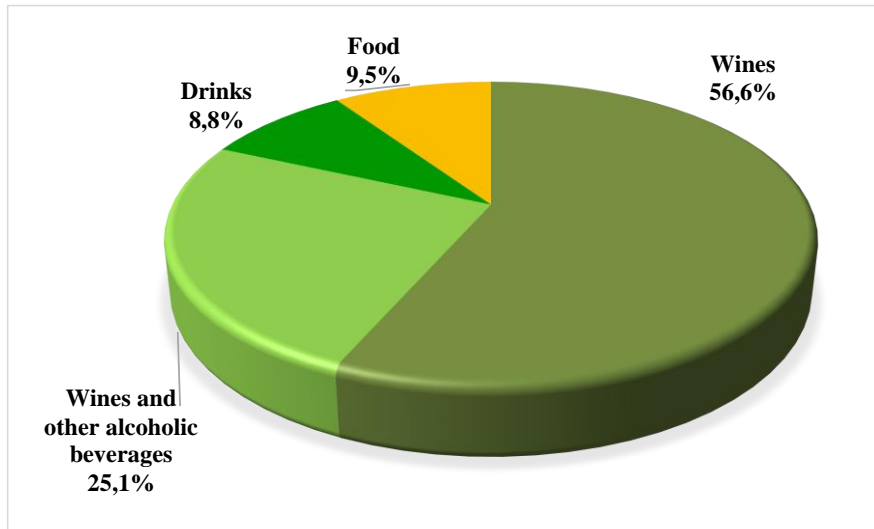
Table 6.6: Number of wine distributors per restaurant and Satisfaction level with the wine distributors –measured on a Likert scale from 0 to 10-. Results express the mean and the standard deviation (between brackets).

	Restaurants by range and total			
	Low	Middle	High	Total
Number of wine distributors*	3.76 (4.91)	7.40 (9.90)	10.90 (10.56)	7.12 (9.12)
Satisfaction level with distributors	8.20 (1.19)	8.07 (1.46)	8.64 (1.01)	8.29 (1.28)

*The high range is significantly different from the low range ($\alpha = 0.05$).

The most important wine distributors of the restaurant are the wine specialists, which gather 56.6% of the purchases (as an average of percentages). They are followed by wine and other alcoholic beverages specialists (25.1%) (figure 6.1). These results express that restaurateurs prefer distributors that are specialised. It is remarkable that none of the restaurants purchased wine directly from a winery.

Figure 6.1: Wine purchases of the restaurants allocated to different types of wine distributors
Aggregated results as an average of percentages (N=170).



Note: No significant differences amongst groups were found.

6.4.3. Vertical differentiation of the service – Wine supply

The results of the vertical differentiation are expressed on a Hierarchical Value Map (HVM). Several HVM can be obtained by selecting different cut-off points. Leppard *et al.* (2004) defined the cut-off point as the number of linkages to be allowed on the map and proposed the “top-down ranking” method in order to determine it. This method is based on the notion that the most important linkage is that associated with the largest entry in the implication matrix. The approach begins obtaining a HVM at the largest cut-off level, which will create a simple HVM, although losing a great deal of the information. Successively, other HVM are created by use of smaller cut-off levels, which will complicate the map interpretation while adding information.

Figure 6.2 shows the ladders created by the restaurateurs represented on a Hierarchical Value Map (HVM). From the 170 personal interviews, a total of 2,536 ladders representing attribute-consequence links or consequence-value links were revealed. The selected cut-off level equals 30, which provides an interpretable map and retains 53.6% of the variance of the original data. This is below the 70% recommended by Gengler and Reynolds (1995), which had to be conceded because lower cut-off points compromised the readability of the map. The map includes 22 content codes from the 33 that were available (13 attributes + 13 consequences + 7 values). The percentage of subjects that mentioned each code is also expressed in the HVM.

Results show that “To trust the distributor” is the main central issue for the restaurateur, as it is by far the most mentioned consequence from the HVM (mentioned by 72% of the participants). The importance of trust in the business relationship is in accordance with the literature. The restaurateur strongly associates “To trust the distributor” with his/her “Professional fulfilment” and “Respect from his/her clients” (70% and 73% of the participants, respectively). These two personal values, together with “Maximize profit” are the most important values selected by the restaurateurs.

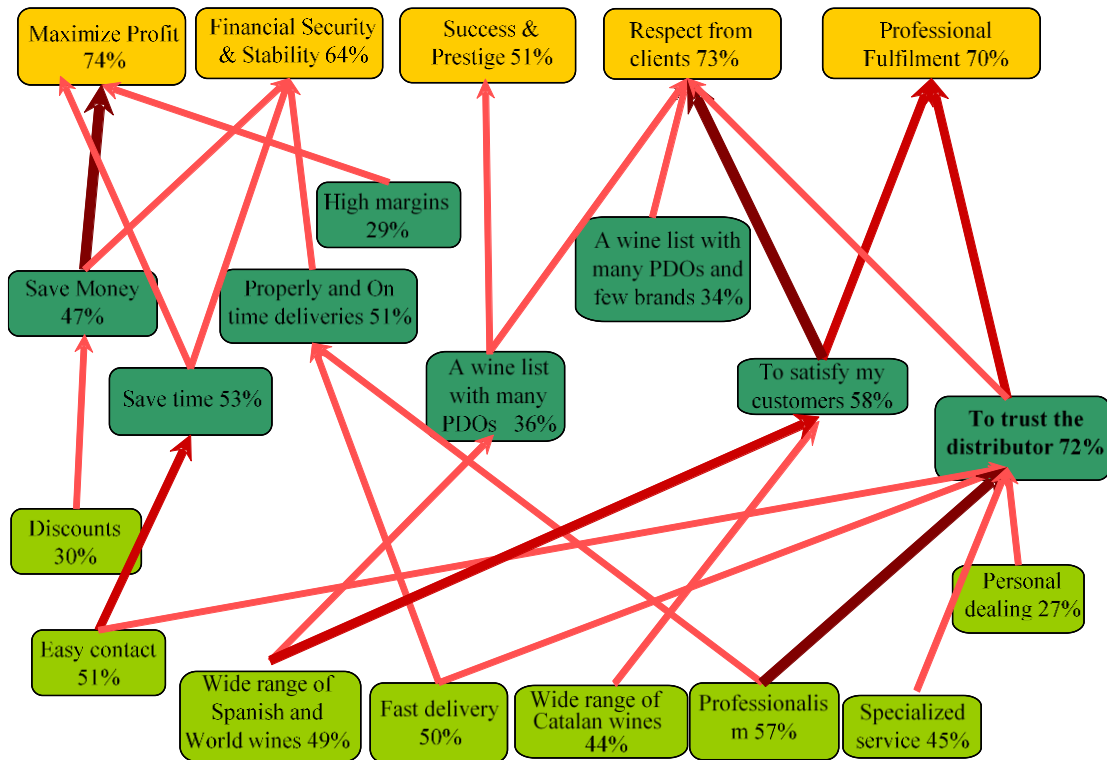
“Professionalism fulfilling what it is agreed upon” is the main attribute that links trust as a consequence, as well as the most mentioned attribute (57%). Other attributes that generate trust are “Specialized wine service” and “Personal dealing”. Both attributes were also identified in the literature. “Fast delivery” and “Easy contact” are also linked to trust.

“Professionalism fulfilling what it is agreed upon” is also linked to “Properly and On-time deliveries”, which ensures “Financial security and Stability” to the restaurateur. This personal value also arises from “Saving money” and “Saving time”. These both consequences are strongly linked to those values more business related: “Financial security and Stability” and “Maximize profit”. The latter is the most mentioned value from the sample (74% of the participants). In order to save money, “Offering discounts” is the main attribute pointed out. While in order to save time, an “Easy contact” with the distributor is most often selected.

Related to the origin of the wine, the restaurateur does not show a stronger preference towards Catalan wines in comparison to wines from Spain and the world. Conversely, Spanish and world wines are slightly more mentioned by the restaurateurs (49% vs. 44%), and show a stronger link to “Satisfy my customers”, which is the most related consequence to “Respect from my clients”.

If we compare the importance of PDOs and brands, PDOs show a higher appraisal. PDOs are included in two of the consequences of the HVM, whereas brands only appear once, and then appearing in combination with the PDOs.

Figure 6.2: Hierarchical Value Map for restaurateurs related to wine distributors' service. Cut-off point= 30



6.5. Conclusions

Out-of-home wine consumption takes a significant part of the total expenditure (MAPAMA, 2015). In the Catalan HORECA sector, however, Catalan wines show a low market share. This low positioning occurs while Catalan wine production orientates towards quality, having achieved international acknowledgement (Tolosa and Antúnez, 2014). The Catalan wine industry could greatly benefit from improving their market share in the restaurant sector in Catalonia, and introducing wine in the restaurants relies a great deal on the wine distributors. Thus, their importance cannot be overemphasized.

In this chapter we explore the wine business in the restaurants of the city of Barcelona by surveying a sample of 170 restaurants. To our knowledge, this was the first exploratory study in Catalonia of this kind. Its contribution adds to the few literature of local wines in local restaurants out of the production areas, as its results are of interest for the Catalan wine sector but also for other regions exhibiting the same context.

In this study, a vertical differentiation for the wine supply service in the restaurant sector is also applied. To do so, the Means-End-Chain methodology has been implemented. Little research has been performed from this point of view and this is also a part of our contribution.

Our results confirm that the presence and the importance of Catalan PDO wines in the restaurants of Barcelona is low, which is in agreement with the market share data. The amount of PDOs that are present in the restaurants is very high, however, only few are considered to be of importance for the restaurant's wine sales, being *La Rioja* and *Penedès* the most important PDOs. The high number of PDOs that are present indicates a great saturation of the wine market in Catalonia, where the competition for a market place is high. In this environment, the restaurateurs introduce wines that are demanded by the customers, wines that they have previously tasted, and wines recommended by their distributors. In respect to the wine distribution, the restaurateurs work with a great number of agents. These results reflect a very fragmented sector: a great number of wine distributors for a great number of restaurants.

In accordance to the literature, our results show that trust is a central issue of a business relationship. From the restaurateur's point of view, trust is generated mainly by the distributor's professionalism, a specialized service and a personal dealing. The restaurateur connects trust with emotional personal values, such as respect and

fulfilment. The fast delivery of products also generates trust. This attribute, together with offering discounts and an easy contact, provide saving money and time to the restaurateur, which lead to fulfil his/her business motivations, such as to maximize benefit and financial security and stability. These are important attributes that wine distributors should keep into account to maintain successful long term relationships with the restaurateurs.

The vertical differentiation also points out the importance of satisfying the restaurant's customers. A wide range of Catalan wines is one of the ways of achieving it. However, the importance of a wide range of Spanish and world wines is mentioned by a slightly higher number of restaurateurs and shows an even stronger connexion with customers' satisfaction.

Restaurateurs are driven by their customers' demand. Thus, if the consumers' acknowledgement of Catalan wines would increase, the restaurateur would be more inclined to include them in their wine list (Gultek, *et al.*, 2005). The importance of consumers' demand to introduce a wine in a restaurant wine list is a key parameter. In this sense, it is recommended to generate pull marketing strategies, focusing in publicity and promotion to consumers.

Moreover, consumers should be more aware of the lack of Catalan wines in the local restaurants. Differentiation strategies for the restaurants including local wines could be created, like for example a label that relates them to the consumption of local products. Local consumers tend to respond positively to the idea of supporting their community by eating and drinking local products (Gultek, *et al.*, 2005).

The city of Barcelona, with all the tourism along the year, could also benefit from serving local wines, as tourists enjoy tasting the local gastronomy. This is an issue that restaurateurs should take into account in order to increase their profits in their wine business.

Another possibility to increase the restaurateur's profitability is to organize their wine purchases directly from their producers. In that way the restaurateur could achieve a higher margin. Our results show, however, that none of the sampled restaurants performs in this fashion. Wineries could take benefit from short marketing channels and therefore develop their winery, promote their wines and establish a brand positioning (Gultek, *et al.*, 2005). On the other hand, restaurants could also improve their image by promoting short and local circuits. However, this is a subject that would need to be further explored.

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Annex 6.1. Attributes–Consequences and Consequences–Personal Values Matrices

This annex contains the matrices of Attributes–Consequences and Consequences–Personal Values that were used in the survey. These were design to generate the links between the attributes of the service and the consequences that they imply to the restaurateur and; between the consequences obtained and the personal values that arise from them. The tables’ design follow the Association Pattern Technique (APT) in order to obtain a vertical differentiation of the service “wine supply” from the restaurateur’s point of view.

Table annex 6.1a: Attributes – Consequences matrix

Wine distributor’ Attributes	Consequences for the restaurateur derived from the attributes												
	Save time	Having a great range of wines	Save money	Achieve high margins	To trust the distributor	To satisfy customers’ needs	Deliveries arriving properly and on time	To buy what I want	To buy brands that make me feel comfortable	To achieve a wine list with many PDOs and few brands	To achieve a wine list with many PDOs	A good food and wine matching on the menu	To work with several wine distributors
Specialized service													
Offering discounts regularly													
Tradition in the sector													
Wide range of Catalan wines													
Wide range of Spanish and World wines													
Prestige													
Easy and immediate contact													
Good payment terms													
Personal dealing													
Professionalism fulfilling what it is agreed upon													
Fast delivery													
Having dealt with them for a while													
Reasonable prices													

Table annex 6.1b: Consequences – Values matrix

Consequences for the restaurateur derived from the attributes	Restaurateurs' Personal Values						
	Financial security & stability	Maximize profit	Professional fulfilment	Respect from my clients	Acknowledgement from the HORECA sector	To satisfy customers' needs	Success & prestige
Save time							
Having a great range of wines							
Save money							
Achieve high margins							
To trust the distributor							
To satisfy customers' needs							
Deliveries arriving properly and on time							
To buy what I want							
To buy brands that make me feel comfortable							
To achieve a wine list with many PDOs and few brands							
To achieve a wine list with many PDOs							
A good food and wine matching on the menu							
To work with several wine distributors							

Annex 6.2. Presence and Relevance of the PDOs in the restaurants of the city of Barcelona

Table annex 6.2a: Presence of the PDOs in the restaurants. Results are expressed in percentage terms over the restaurants included in each category (per total sample and per restaurants' range). Catalan PDOs are shadowed.

PDOs	Restaurants by range and total			
	Low	Middle	High	Total
Rioja	94,55%	100,00%	100,00%	97,60%
Penedès	89,09%	95,45%	100,00%	92,90%
Ribera del Duero*	65,45%	84,85%	95,00%	79,30%
Priorat*	34,55%	69,70%	97,50%	62,70%
Navarra*	50,91%	57,58%	85,00%	60,40%
Rueda*	27,27%	59,09%	90,00%	56,20%
Somontano*	36,36%	53,03%	80,00%	52,70%
Catalunya*	34,55%	54,55%	77,50%	52,10%
Ries Baixes*	25,45%	51,52%	82,50%	49,10%
Costers del Segre*	27,27%	40,91%	70,00%	42,60%
Toro*	12,73%	37,88%	82,50%	39,10%
Alella*	18,18%	39,39%	67,50%	38,50%
Xerès*	20,00%	34,85%	60,00%	36,10%
Ribeiro*	16,36%	36,36%	65,00%	36,10%
Empordà *	14,55%	34,85%	62,50%	34,30%
Montsant*	16,36%	24,24%	72,50%	32,50%
Bierzo*	7,27%	25,76%	65,00%	29,00%
La Manxa*	14,55%	19,70%	50,00%	24,30%
Conca de Barberà*	10,91%	12,12%	60,00%	23,10%
Pla de Bages*	7,27%	16,67%	55,00%	22,50%
Terra Alta*	12,73%	13,64%	47,50%	21,30%
Tarragona*	7,27%	15,15%	35,00%	17,20%

*Significant differences amongst groups were found ($\alpha < 0.05$)

Table annex 6.2b: PDOs declared to be important in wine sales in the restaurants. Results are expressed in percentage terms over the restaurants included in each category (per total sample and per restaurants' range). Catalan PDOs are shadowed.

PDOs	Restaurants by range and total			
	Low	Middle	High	Total
Rioja	78,2%	86,4%	82,5%	82,7%
Penedès	45,5%	57,6%	67,5%	55,4%
Ribera del Duero*	23,6%	37,9%	60,0%	38,7%
Priorat*	7,3%	9,1%	40,0%	16,1%
Catalunya*	9,1%	10,6%	27,5%	14,3%
Navarra*	1,8%	7,6%	22,5%	9,5%
Rueda*	3,6%	6,1%	15,0%	8,9%
Ries Baixes	5,5%	6,1%	10,0%	7,7%
Somontano	5,5%	6,1%	7,5%	6,5%
Costers del Segre	1,8%	7,6%	10,0%	6,5%
Montsant*	1,8%	3,0%	17,5%	6,5%
Toro	1,8%	4,6%	12,5%	6,0%
Empordà*	0,0%	4,6%	15,0%	6,0%
Ribeiro	5,5%	4,6%	5,0%	5,4%
Alella	0,0%	3,0%	7,5%	3,6%
Terra Alta	3,6%	0,0%	2,5%	2,4%
Bierzo	0,0%	1,5%	2,5%	1,8%
Conca de Barberà*	0,0%	0,0%	5,0%	1,8%
La Manxa	0,0%	0,0%	0,0%	1,8%
Pla de Bages	0,0%	1,5%	2,5%	1,8%
Xerès*	0,0%	0,0%	5,0%	1,8%
Tarragona	0,0%	0,0%	2,5%	1,2%

*Significant differences amongst groups were found ($\alpha < 0.05$)

Chapter 7: Conclusions

Spain is the largest world wine exporter in volume (OIV, 2016) and the vineyard is a key crop for sustainable development in many of its areas. Catalonia accounts up to 8.74% of the wine production in Spain, with more than 3.2 million hectolitres (average 2011-15) (OIV, 2016; OVVC, 2016). Its production is highly specialized in quality wines and its wines have achieved international acknowledgement (IDESCAT, 2013; Tolosa and Antúnez, 2014). Wine consumption in Catalonia has been showing a continuous downward trend for decades. However, the consumption of quality wines increases (MAPAMA, 2016); from which we can conclude that consumers have changed their habits: their demand for higher-quality wines increases while their consumption of table wines decreases. Despite these trends, Catalan PDO wines only represent 32.5% of the total quality wine consumed in Catalonia, a rather low market share. This situation is the same for the Out-of-home (OOH) consumption: Catalan PDO wines in the HORECA sector gather collectively a relatively low market share, specifically 32.6% (INCAVI, 2016).

The overall objective of this thesis has been to explore the attitudes towards Catalan wines in Catalonia from a value chain approach. With this thesis we have aimed to shed some light about the present situation and to develop strategies to increase the consumption of Catalan wines in Catalonia. This overall objective has been doubly-addressed. The first part of the thesis has focused on consumers' wine preferences in Catalonia, while paying special attention to the origin of the wine. To tackle this issue, DCE have been applied. The second part of the thesis has aimed to identify the attributes of a wine supply service that help to develop stable relationships among the actors along the value chain. This part of the research has embraced the main agents of the OOH-consumption, namely wine distributors and restaurateurs. For this analysis the means-end-chain (MEC) methodology has been implemented. The main conclusions of the research are portrayed below.

From the consumers' research, our findings have determined that, referring to a red wine for a special occasion, consumers prefer a Catalan wine made from the Cabernet Sauvignon variety and previously tasted by the consumer. Consumers have a high preference for the local origin of the product (Catalan), which has revealed the importance of the Catalonian identity in the wine consumer behaviour. Consumers have also revealed their preference for wines that have been previously experienced and, therefore, reassurance has been found to be the most important risk reduction strategy

(RRS). Our results have shown, however, that the consumers' preferences are highly heterogeneous.

Nevertheless, the abovementioned results were determined before the economic crisis. During the economic crisis, consumers had a greater preference for not taking the product and the price became the most important attribute; however, the Catalan origin of the wine remained as one of the few product characteristics that were positively significant, while the Spanish origin became non-significant (in spite of gathering the highest market share in Catalonia). These observed changes in consumers' preferences towards wine have been therefore in agreement with the undergone economic and political changes. Nevertheless, we are aware of the limitations these latter conclusions and, therefore, they should be taken carefully as other non-controlled variables may have also played a role.

We can also conclude that the effect of the advertisement campaign launched to promote Catalan wines did not affect the ranking of the preferred attributes, as the Catalan origin was already the preferred level. However, after the advertising, the relative importance of the "Catalan" level increased in comparison to the Spanish origin. Thus, it can be stated that the advertising increased consumer awareness for local wines. Nevertheless, consumers also preferred a previously tasted wine (own experience), which has pointed out the importance of wine fairs and public tastings as a marketing strategy to let local wines be known by the consumer. In this sense, we may recommend the setting up of smaller pieces of information along the year instead of investing in big promotion campaigns, which costs are not to be underestimated. Smaller campaigns along the year could be more effective in increasing consumer knowledge towards Catalan wines and promote initial knowledge and tasting.

Methodologically, this part of the thesis has contributed to the literature as one of the few empirical works that has analysed the preference heterogeneity between forced and non-forced choices in a within-sample approach for a special-occasion red wine. As a tool to compare the results from the forced and the non-forced Choice Experiments, a variation of the Dual Response Choice Experiments (DRCE) design has been implemented. From our research we have concluded that the DRCE design is an appropriated approach when researchers are faced with the decision of whether to force respondents to choose their preferred product or to allow them to opt out. The results obtained from the forced and non-forced choice experiments showed similar preferences for product attributes (i.e., attributes are ranked similarly in both approaches). However,

the non-forced choice heightened the preferred levels by increasing the welfare estimates for some variables. Nevertheless, these conclusions have diverged from those obtained in a rabbit meat case study using the DRCE design (Kallas and Gil, 2012). Kallas and Gil revealed that the estimates for the most preferred levels decreased in the non-forced choice. Therefore, more empirical applications are needed to elucidate the mechanisms that determine these differences, a topic of interest for future research. In addition, the traditional CE design should be compared with the DRCE design using a within sample approach to determine their impact on the preference heterogeneity.

Furthermore, the GMNL model has appeared to be an appropriated model to provide more information about the source of consumers' unobserved heterogeneity. The results obtained during the economic crisis (by means of the GMNL model) did not show unobservable heterogeneity, neither scale nor preference heterogeneity. Consequently, we can conclude that the external common circumstances may had had a homogenising influence in consumer choices.

According to our findings, Catalan wineries should enhance their Catalan origin on their labels. For example, they could establish an umbrella-brand of the origin as a marketing strategy. This is somewhat already applied by some retail shops, where special displays of the Catalan origin of the wine are placed on the supermarket shelves.

Furthermore, our results have indicated that consumers prefer wines that they have previously tasted as a cue to reduce their risk in the choice making. Consequently, creating consumption occasions (fairs, trade exhibitions, etc.) would be an interesting way of getting Catalan wines closer to consumers. This marketing strategy would also be advisable for the promotion of the Protected Designations of Origin, in order to increase their notoriety. Another feasible marketing strategy would be the differentiation by other quality cues, as the Cabernet sauvignon grape or a competitive price.

Consumers' preferences for Catalan wines, however, have not been found to be in accordance to the actual market share data. Thus, for future research, the origin of the wine should be made more concrete: a more specific wine which could guide respondents into thinking of a similar product. For instance, it could be interesting to include *La Rioja* wine instead of a generic Spanish wine. Furthermore, this thesis has focused on red wine for a special occasion. Therefore, our conclusions cannot be generalized for all kinds of wines and occasions. This is one of the limitations of this thesis, but a motivation for future research as well. Moreover, the follow up of the

subject with further research will provide the evolution of consumers' preferences now that the effects of the crisis can be seen from a distance. For that purpose, the hybrid choice model (HCM) could be applied, as it represents an attempt to identify the unobservable factors and to include them into a discrete choice analysis. The HCM improves the explanatory power of the choice model by considering the effects of decision makers' latent attitudes.

The second part of this thesis has embraced the main agents of the OOH-consumption, namely wine distributors and restaurateurs. For this analysis the means-end-chain (MEC) methodology has been implemented. For the wine distributors, our results have shown that wine quality is a key attribute that the wineries need to offer. However, a trustful relationship with the winery is the main central issue for wine distributors. Furthermore, the most important personal values are not business driven, and this is an important finding for small wineries that cannot compete in the market with low(er) prices: small wineries have non-economic ways to draw the distributor's interest, such as a friendly dealing, professionalism in fulfilling what it is agreed upon, and a strong profiling in the creation of their identity and/or image. Wineries' sales support to the distributor has been also found to be of great importance for the business relationship. This support can be implemented by showing an own will to access the market and by developing marketing strategies. An example would be the promotion of a winery's smallness as a personal choice instead of as a circumstantial factor. This and similar strategies would emphasize the contrast between wines from big and notorious wineries and those produced by the smaller ones, using their particular uniqueness as a marketing tool.

From the restaurateur's point of view, our results have shown again that trust is a central issue in a business relationship. In this case, the generation of trust is related to the wine distributor's professionalism, a specialized service, a personal dealing and a fast delivery of products. Thus, wine distributors should keep this attributes into account to maintain successful long term relationships with the restaurateurs. The vertical differentiation has also pointed out the importance of satisfying the restaurant's customers. Customer's demand has been also specified as an important criterion to introduce a wine in a restaurant's wine list. Thus, if consumers' acknowledgement of Catalan wines would increase, their presence on the restaurants would increase too.

A wide range of Catalan wines has been noted as a way of achieving customers' satisfaction. However, the importance of a wide range of Spanish and world wines has

had an even stronger connexion with customers' satisfaction. Therefore, we can conclude that in the restaurant environment, Spanish wines are more demanded by costumers than Catalan wines. This result goes in accordance with the market share data but not with our results from the DCE. Regarding this, for future research the origin of the wine should not be as undetermined. Moreover, to reinforce these conclusions, it would be interesting to further explore consumers' preferences towards wine on the restaurant space, considering the actual wines and the PDOs included in the restaurants' wine list.

On the other hand, to increase customers' demand of Catalan wines in the restaurant environment, it would be advisable to generate pull marketing strategies, focusing in publicity and promotion to consumers. Besides, consumers should be made aware of the lack of Catalan wines in the local restaurants. To do so, differentiation labels that would point out which restaurants include local wines could be created. As an example, a label that would relate them to the consumption of local products could be implemented. This could succeed as it is known that local consumers tend to respond positively to the idea of supporting their community by eating and drinking local products (Gultek, *et al.*, 2005).

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Thesis' Glossary and Acronyms

Thesis' Glossary and Acronyms

ACV: Attributes – Consequences – Values

AIC: Akaike Information Criteria

APT: Association Pattern Technique

BBQ: Barbeque

CE: Choice Experiment

DCE: Discrete Choice Experiment

DCM: Discrete Choice Modelling

DRCE: Dual Response Choice Experiment

GMNL: Generalized Multinomial Logit

HORECA: Hotels, Restaurants and Cafeterias (Food Service sector)

HVM: Hierarchical Value Map

IIA: Independence of Irrelevant Alternatives

IID: Independent and Identically Distributed

LOV: List of Values

MEC: Means-End Chain

MIXL: Mixed Logit or Heterogeneous Logit

MNL: Multinomial Logit

OOH: Out-of-home (related to consumption)

PDO: Protected Designation of Origin

RPL: Random Parameter Logit

RRS: Risk Reduction Strategy/ies

