

## A Certification for Natural Wine? A Comparative Analysis of Consumer Drivers in Italy and Spain

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33 **Abstract**

34 The 2020 certification of natural wine (NW) in France has unleashed a heated debate in Europe.  
35 However, knowledge about NW consumer profiles and preferences in a comparative perspective  
36 remains scarce in the academic literature. This study aims to define the perceptions, preferences and  
37 profiles of wine consumers who support a NW label. For this purpose, we employed analysis of  
38 variance, aprioristic factor analysis and multiple regression analysis to examine data from a direct  
39 survey performed in Italy and Spain in 2020. Findings reveal that NW consumers in both countries  
40 deem it necessary to establish a certification for NW. However, we found significant differences  
41 regarding consumers' profiles, as well as purchasing preferences. In Spain, demand for NW  
42 certification is linked to eco-healthy and proximity-craft attributes of wine, and is considered more  
43 important by non-professional consumers and those with lower educational level. In Italy,  
44 information on the label and the purchase experience are the most important factors to aid in  
45 recognizing NW, while women show a significant interest in the NW certification. These findings  
46 may help policy-makers to establish homogeneous parameters to differentiate and certify NW.

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48 **Keywords:** natural wine; food labeling; consumer preferences; food certification; eco-labels

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## 65 **1. Introduction**

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### 67 ***1.1 Research context***

68 On March 25, 2020, natural wine (NW) obtained legal recognition for the first time in France under  
69 the designation *Vin Méthode Nature*, opening the way for similar initiatives worldwide. This  
70 recognition results from a long struggle led by the *Syndicat de Défense des Vins Naturels* before the  
71 French Government. The European Commission (EC) decided not to allow the use of the term NW  
72 because there is no definition of the term "natural" in the EU regulations associated with wine.  
73 Therefore, the combination of the two words can be misleading for the consumer, and damaging to  
74 the image of other wines [1]. Debate on the approval of the certification *Vin Méthode Nature* is  
75 ongoing at the European level. Disagreements emerge among EU states about the possibility of  
76 allowing it at their national level. The French authorities thus decided to create a new appellation  
77 associated with the method of production of these wines, based on fulfilling a series of requirements  
78 that include certification of organic viticulture, use of indigenous yeasts, prohibition of stabilization  
79 or filtration, and absence of any additives except low sulfite doses (up to 30 mg/liter). This opens up  
80 both a new horizon for a whole sector that can now certify wine with the recently approved French  
81 label and a legislative path for other countries to follow suit.

82 Until now, NW was considered a social movement involving consumers, producers and other actors  
83 in the wine value chain, who advocated naturalness and minimal intervention in wine rather than a  
84 regulated or defined form of winemaking [2, 3]. This movement spread throughout the 20th century  
85 from France to the whole of Europe as a reaction to modern viticulture and enological techniques.  
86 This includes intervention in the vineyard with synthetic chemicals and in the cellar with the more  
87 than 50 additives and processing aids that can be added to wine without a labeling requirement [4].  
88 Several associations have emerged in Europe in defense of NW, such as *L'Association des Vins*  
89 *Naturels* or *Sans Aucun Inérant ni Sulfite* in France, *Triple AAA*, *Viniveri*, *Vinnatur* or *VAN* in Italy,  
90 and the *Asociación de Productores de Vino Natural* in Spain. This has added to the proliferation of  
91 different national standards [5, 6]. Although there is no agreed definition for NW, these associations  
92 advocate a winemaking process under parameters of minimum intervention and the greatest respect  
93 for nature.

94 Wine is a canonical example of credence and experience goods because its quality is difficult to assess  
95 from its labeling [7]. Unlike any other food product, wine carries no information about its nutritional  
96 values, ingredients or expiration date, despite the fact that it can contain dozens of additives,

97 generating confusion for consumers [8]. The European Commission intends to address this issue and  
98 revise the labeling requirements of alcoholic drinks. It has even published a roadmap to update the  
99 regulation on the provision of food information to consumers (EU 1169/2011 FIC). Since 2017, the  
100 EC has launched a series of reports and forced the wine industry to present a self-regulatory proposal  
101 in 2018. Specifically, the proposal of the *Comité Européen des Entreprises Vins* (CEEV), as the  
102 representative institution of wine industries in Europe, is to offer some nutritional and ingredient  
103 information through a *quick response* (QR) code but not labeling the information on the bottle.  
104 However, through its Beating Cancer plan, the EC proposes a mandatory nutritional declaration and  
105 list of ingredients in alcohol labeling and is currently preparing an impact assessment that will  
106 culminate in a legislative proposal in 2022 [9]. Controversy between countries is also on the rise,  
107 given the emergence of new alcohol regulations such as the Irish Public Health Act from 2018,  
108 requiring alcoholic beverages to provide health warning claims on their labels similar to the ones  
109 displayed on tobacco [10].

110 These initiatives can be interpreted as a reaction to the current situation of the wine sector. In the light  
111 of this debate, this manuscript sets out to answer two key research questions. First, is there a specific  
112 consumer profile that demands the differentiation of NW in the market? Second, what are the  
113 preferences and perceptions of wine consumers who consider a certification to identify NW  
114 important? Answering these questions is a prerequisite for the development of a EU-wide certification  
115 and to better address both producers and consumers' needs and expectations, thus helping NW  
116 producers to create new marketing communication strategies or adapt their existing ones to new and  
117 emerging market niches.

118

### 119 ***1.2. Information asymmetries in the wine market.***

120 Wine constitutes a seminal example of information asymmetries in the market [11]. In this context,  
121 producers know about the elaboration process whereas consumers cannot, or it is difficult and time-  
122 consuming for them to obtain such information. These asymmetries make wine a complex product,  
123 about which specific knowledge is needed to make rational purchasing choices [12]. Consumers lack  
124 incentives to optimize their purchasing decisions and producers lack mechanisms to differentiate  
125 themselves in the market. This creates a potential adverse selection problem. Since it is not possible  
126 to differentiate the quality of the product, there are no incentives to compete and produce above  
127 average quality, eventually threatening its survival in the market [13].

128 In the case of NW, consumers still do not have a clear notion of what it is, how it differs from other  
129 wines, and where to buy it [6, 14]. In fact, the lack of NW certifications and the uncertainty associated  
130 with its attributes have generated a very unstable market for this product in traditionally wine-  
131 producing countries such as Spain, where consumer research about NW is scarce [15, 16]. Recent  
132 research has shown growing consumer interest in products with environmental attributes, such as  
133 organic, healthy, sustainable, responsible and “proximity” wines [17, 18]. It is accompanied by a  
134 surge in new certifications that aim to convey trust and inform about wine’s intrinsic and extrinsic  
135 qualities [19]. Previous research has shown that consumers are willing to pay a premium for organic  
136 wines in the belief that they are healthier, tastier, and of higher quality [3, 20]. However, the  
137 differences between organic, biodynamic, or sulfite-free wines remain confusing for many in the face  
138 of the proliferation of information associated with the naturalness of these wines [21-24]. Fewer  
139 studies have been conducted about NW specifically, although the literature on the topic is rapidly  
140 growing. Such coverage focuses on the different productive models in the natural wine field [15, 25,  
141 26] and on the policy controversies arising from the recent French certification of natural wine “*vin*  
142 *méthode nature*” [27]. Studies focusing on consumer interest in NW show that a predisposition to  
143 pay more for NW by Italian consumers was associated with drinking frequency and occasion, organic  
144 production, sulphite content, income, and attitudes towards healthy eating and the environment [28,  
145 29]. Other studies have explored consumer perception of NW in the Italian wine industry [14], the  
146 construction of taste in the NW market [30], and marketing strategies in the NW sector [2, 25]. There  
147 is a research gap regarding comparative studies between countries, in that we must better understand  
148 consumer behavior and specific socioeconomic profiles, given the current dominant focus on Italy in  
149 the literature. This study therefore enriches the growing literature on sustainable food consumption  
150 attitudes. A further research gap lies in the lack of studies on consumer interest in NW certification,  
151 a timely issue with normative implications because the certification developed by the French  
152 government has changed the field of play. Owing to these present academic gaps in knowledge, this  
153 manuscript sets out to answer two key research questions. First, is there a specific consumer profile  
154 that demands the differentiation of NW in the market? Second, what are the preferences and  
155 perceptions of wine consumers who deem a certification to identify NW important? Answering these  
156 questions is a prerequisite for the development of a EU-wide certification and to better address both  
157 producers and consumers’ needs and expectations, and help NW producers to create new marketing  
158 communication strategies. Owing to the present academic gap in knowledge to date, this paper deals  
159 with consumer profiles in relation to NW label interest and their preferences regarding a NW

160 certification. For this purpose, data were collected through a direct survey delivered in Italy and  
161 Spain. Both are traditional producing and consuming wine countries leading in terms of vineyard  
162 surface area, production volume and export value rankings worldwide, only after France [31].  
163 Ultimately, the paper offers an original contribution to a rather unexplored but emerging topic.

164

## 165 **2. Materials and Methods**

166

### 167 **2.1. Data collection**

168 Data were collected using a questionnaire survey aimed at a convenience sample of Spanish and  
169 Italian wine consumers aged between 18 and 70 . The questionnaire was administered by online  
170 survey management software, with a filling time of approximately 11 minutes. The survey consisted  
171 of a total of 30 questions structured from multiple-choice answer possibilities based on previous  
172 research into NW consumption [5, 6, 14], divided into four interrelated sections: (1) wine  
173 consumption habits and occasions; (2) wine labeling information and eco-label perceptions; (3) NW  
174 consumption habits, perceptions and occasions; (4) socio-demographic factors. Before beginning the  
175 survey, all participants provided informed consent. This included the purpose of the research, the  
176 voluntary nature of participation, number of questions, approximate response time, and the possibility  
177 of leaving the survey at any time. Both survey procedure and questionnaire were favorably evaluated  
178 by the Ethics Committee of the Spanish National Research Council (CSIC, approval number  
179 136/2020).

180 As mentioned, a convenience sampling procedure was applied in the absence of a regular wine  
181 consumer population census. Eligibility was based on the definition of regular wine drinkers by Wine  
182 Intelligence [32], i.e., individuals consuming wine at least once a month. This description has been  
183 previously used in similar wine consumer studies [33-35], The questionnaire was launched through  
184 specialized sector agents in both Spain and Italy. Producers' associations, distributors, wine critics,  
185 sommeliers, wine observatories, etc., publicized the initiative through their websites. They requested  
186 the participation of their users, clients and followers, to improve the response rate among wine  
187 consumers in both countries. Through this system, a total of 527 fully completed surveys by wine  
188 consumers were collected in Spain and 501 in Italy during the two months from mid-September to  
189 mid-November 2020.

### 190 **2.2. Data analysis**

191 Data analysis consisted of two phases in order to understand the drivers influencing demand for NW  
192 labeling. Consumer demand for a NW label was our dependent variable and was assessed by asking  
193 “*To what extent do you consider labeling important to identify NW?*”. Respondents answered this  
194 question using a five-point scale (from 1 “not at all” to 5 “a lot”). The first phase of the analysis  
195 responds to our research question regarding profiles of consumers that expressed a need for NW  
196 certification. It consisted of a sample description and an analysis of variance (ANOVA) aimed at  
197 distinguishing which socio-demographic and consumer profiles most accurately describe wine  
198 drinkers likely to support certification of NW in the two countries. Based on the F value and the  
199 associated significance level ( $p < 0.01$ ), a relationship of statistical dependence or independence was  
200 established between the factors and the DV, in line with recent research related to NW consumer  
201 preferences [5, 36].

202 The assumption of normality is used especially when any of the factor categories has less than 50  
203 cases. It was tested through Kolmogorov-Smirnov or Shapiro-Wilk statistics and was not fulfilled in  
204 several ANOVAs. Therefore, rejection of the hypothesis of equality of means was replicated by  
205 default through a Kruskal-Wallis test. For the case of the independent dichotomous variables (gender  
206 and NW consumption), means were compared by evaluating the level of significance associated with  
207 the F value [37].

208 The purpose of the second phase was to answer our second research question, about the preferences  
209 and perceptions of wine consumers who consider labels important as a means to identify NW. First,  
210 it included  $r$  Pearson correlations ( $p < 0.01$ ), in order to discriminate between independent and  
211 quantitative variables (IV) in wine labeling information, and on purchasing occasions that best  
212 correlated with the DV for each country. It also established a ranking order and a comparison between  
213 the two. All the 85 IV in the questionnaire were used to prepare this ranking. The aim of this bivariate  
214 exploratory statistical analysis is to identify the best IVs that explain the DV in Spain and Italy. This  
215 also sheds light on the differences between the two countries. The exploratory bivariate analysis was  
216 followed by an aprioristic factor analysis to group the best IVs from each country under common  
217 latent dimensions. This strategy permits such exploratory factor analysis and makes it more efficient,  
218 thanks to avoiding the *rubbish in, rubbish out* phenomenon described by [38], which can result from  
219 factoring in an indiscriminate number of variables.

220 The factor extraction method is based on principal component analysis using a Varimax rotation. In  
221 all cases, Bartlett's test of sphericity rejected the null hypothesis that the observed correlation matrix  
222 is an identity matrix ( $p < 0.01$ ), which legitimizes aprioristic factorizations [38]. The eigenvalues

223 obtained for each of the factors created are always greater than the unit. The scores obtained in  
 224 differential format for each factor are calculated using the regression estimation method. Finally, the  
 225 factors are used as IVs in a multiple regression model aimed at explaining the largest percentage of  
 226 variance in the DV and establishing an explanatory or predictive model for each context. Use of the  
 227 factors in the explanatory model was supported by a corresponding significant F value ( $p < 0.01$ ) [39].  
 228 In the multiple regression models, we checked the assumptions of normality and homoscedasticity of  
 229 the residuals, as well as the linearity of the IVs with respect to the DV. It was also verified that the  
 230 Durbin-Watson statistic was between 1.5 and 2.5 in the models, so the residuals were mutually  
 231 independent.

232

### 233 3. Results

#### 234 3.1 Socio-demographic profiles & NW certification

235 This section responds to our question about whether there is a specific consumer profile correlated  
 236 with demand for the differentiation of NW in the market. Table 1 shows the sample description from  
 237 both countries. The Spanish sample was composed of 527 wine consumers, 69% men and 31%  
 238 women, with a mean age of 45 years. More than 50% of the Spanish respondents had a net monthly  
 239 income of between 1,001 and 2,000 € and university or master studies (79.4%). In addition, 36.2%  
 240 of the population surveyed considered themselves to be wine professionals. Regarding wine  
 241 consumption habits, 44.2% of respondents drank wine several times a week, 78.0% consumed NW  
 242 (33.3% at least once a month), and considered that a certification for NW is necessary (3.95 out of  
 243 5).

244 The Italian sample was made up of 501 wine consumers, 55% of whom were men and 45% women,  
 245 with an average age of 38. Almost 50% of the Italian respondents had a net monthly income between  
 246 1,001 and 2,000 € and university or master studies (55.5%). Finally, 19.6% of respondents defined  
 247 themselves as wine professionals. Regarding wine consumption habits, 36.7% drank wine several  
 248 times a week, 68.7% consumed natural wine (32.3% at least once a month) and considered a NW  
 249 certification necessary (3.90 on average out of 5).

250

251 Table 1: Socio-demographics and wine habits of the surveyed population

		Spain (n=527)	Italy (n=501)
<b>Gender (%)</b>	Female	30.9	45.3
	Male	69.1	54.6
<b>Age</b>	Mean (S.D.)	44.9 (10.27)	37.5 (14.49)



<b>Income (%)</b>	Less than €1,000	9.1	25.4
	€1,001 - €2,000	50.6	48.7
	€2,001 - €3,000	25.8	15.4
	More than €3,000	14.9	10.5
<b>Level of education (%)</b>	No studies	0.6	0.0
	Secondary	2.5	5.5
	Vocational training	17.6	38.9
	University/master	79.4	55.5
<b>NW consumption (%)</b>	Yes	78.0	68.7
	No	22.0	31.3
<b>Wine consumption frequency (%)</b>	At least once a month	6.1	15.2
	Several times a month	9.3	13.6
	Once a week	17.5	21.8
	Several times a week	44.2	36.7
	Everyday	23.0	12.8
<b>NW consumption frequency (%)</b>	At least once a year	35.2	21.5
	At least once a month	33.3	32.3
	At least once a week	14.8	22.7
	2-3 times a week	11.2	15.7
	Daily	5.6	7.8
<b>I am a... (%)</b>	Wine professional	36.2	19.6
	Wine consumer	63.8	80.4
<b>NW label importance</b>	Mean (S.D.) in a scale from 1 to 5	3.95 (1.33)	3.90 (1.10)

252

253 The significant sociodemographic profiles or IV associated with the desire for a NW label in each  
 254 country are detailed in Table 2. Results show that in both countries NW consumers are more likely  
 255 to ask for a certification, to be able to identify it in the market. However, ANOVA shows significant  
 256 differences between consumer profiles from Spain and Italy.

257

258 Table 2: ANOVA - Kruskal-Wallis test / DV ("Do you consider labeling important to identify NW?")

259 \* IV

<b>IV- NW consumption (VI)</b>		<b>No</b>	<b>Yes</b>	<b>F</b>	<b>Sig.</b>
SPAIN	N	116	412	8.144	.004
	Mean	3.65	4.04		
ITAL	N	157	344	8.272	.004
	Mean	3.69	4.00		

  

<b>IV- I am a...</b>		<b>Wine Professional</b>	<b>Wine Consumer</b>	<b>F</b>	<b>Sig.</b>
SPAIN	N	191	337	5.884	.016
	Mean	3.77	4.06		
ITAL	N	98	403	.122	.727
	Mean	3.87	3.91		

<b>IV- Wine consumption frequency</b>		<b>At least once a month</b>	<b>Several times a month</b>	<b>Once a week</b>	<b>Several times a week</b>	<b>Every day</b>	<b>F</b>	<b>Sig.</b>
SPAIN	N	32	50	92	233	121	.528	.715
	Mean	4.16	4.12	3.99	3.90	3.92		
ITAL	N	76	68	109	184	64	1.581	.178
	Mean	3.93	4.13	3.72	3.88	3.98		

  

<b>IV- NW consumption frequency</b>		<b>At least once a year</b>	<b>At least once a month</b>	<b>At least once a week</b>	<b>2-3 times a week</b>	<b>Daily</b>	<b>F</b>	<b>Sig.</b>
SPAIN	N	145	137	61	46	23	1.020	.397
	Mean	4.01	4.08	4.23	3.76	4.04		
ITAL	N	74	111	78	54	27	.471	.757
	Mean	3.96	4.02	3.91	4.15	3.96		

  

<b>IV- Income</b>		<b>Less than €1000</b>	<b>€1001-2000</b>	<b>€2001-3000</b>	<b>More than €3000</b>	<b>F</b>	<b>Sig.</b>
SPAIN	N	48	267	136	77	2.782	.040(**)
	Mean	4.02	4.06	3.94	3.57		
ITAL	N	94	180	57	39	.525	.666
	Mean	3.98	3.83	3.77	3.92		

  

<b>IV- Education Level</b>		<b>Primary School</b>	<b>Secondary School</b>	<b>University or Master</b>	<b>F</b>	<b>Sig.</b>
SPAIN	N	13	93	419	7.672	.000
	Mean	4.54	4.38	3.84		
ITAL	N	27	191	272	2.237	.108
	Mean	3.48	3.91	3.95		

  

<b>IV- Age in large groups</b>		<b>18-34</b>	<b>35-49</b>	<b>+50</b>	<b>F</b>	<b>Sig.</b>
SPAIN	N	78	280	169	.444	.642
	Mean	3.97	3.90	4.02		
ITAL	N	270	108	122	2.516	.082
	Mean	4.00	3.79	3.78		

  

<b>IV- Gender</b>		<b>Woman</b>	<b>Man</b>	<b>F</b>	<b>Sig.</b>
SPAIN	N	162	362	.947	.331
	Mean	4.03	3.91		
ITAL	N	227	274	6.971	.009
	Mean	4.04	3.78		

(\*\*)Kruskal-Wallis test (Sig.>.05)

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In Spain it was the non-professional consumers and those without university or higher education who most expressed a need for NW certification. In Italy, on the other hand, (female) gender was the variable that discriminated the importance of such certification. All these variables showed significant differences (Sig.  $F < 0.05$ ), but there were also descriptive differences to consider in both samples. For example, Spanish consumers with lower purchasing power most valued the need to certify NW. This difference in means would be significant by the F test, not by KW. In Italy, younger consumers

268 thought it more important to certify NW, whereas in Spain the over-50s showed the greatest interest  
 269 in this, although not with statistical significance.

270

### 271 3.2. Wine purchasing preferences, perceptions & NW certification

272 This section responds to our question about the preferences and perceptions of wine consumers who  
 273 deem a NW certification desirable. In order to understand the underlying data structure, Table 3 shows  
 274 the r Pearson correlations ( $p < 0.01$ ) that best explain the DV for the cases of Spain and Italy,  
 275 establishing a comparative ranking between them.

276

277 Table 3: Comparison of Pearson correlations (r) / DV ("To what extent do you consider labeling  
 278 important to identify NW?") \* IV

Highest r for Spain			Highest r for Italy		
	SPAIN			ITALY	
	Ranking	r		Ranking	r
Healthy (Motivation NW consumption)	1	.377**	Tasting (NW identification)	1	.344**
Sustainable and organic (Motivation NW consumption)	2	.357**	Wine shop (Place NW purchase)	2	.311**
Winery (Place NW purchase)	3	.323**	Books, guides and/or specialized magazines (NW identification)	3	.297**
Brand (Importance label information)	4	.318**	Biodynamic certification (Importance label information)	4	.288**
Artisanal (Motivation NW consumption)	5	.309**	Internet and/or social networks (NW identification)	5	.277**
Region and/or country (Importance label information)	6	.290**	Brand (Importance label information)	6	.274**
Wine shop (Place NW purchase)	7	.289**	Organic certification (Importance label information)	7	.270**

\*\*Sig.<.01

279

280 In the Spanish case, ranking results show that considering NW healthier than other wines was the  
 281 main motivation for its consumption among those who would prefer it had a certification. Secondly,  
 282 the fact that NW wines are organic and sustainable is the next motivation for their consumption.  
 283 Third, wineries are the preferred place for NW purchase. Subsequently, the winery name or brand  
 284 when choosing a bottle of wine appears fourth in the ranking. Following this in fifth place, the fact  
 285 that NW is handmade is a motivation for its consumption and demand for certification. Finally, the  
 286 region and country of origin is in sixth position, while wine shops as the preferred place of NW

287 purchase follow this as seventh. This means that for Spaniards who consider a NW certification  
 288 necessary, it is important to characterize attributes such as healthy, sustainable, ecological and  
 289 artisanal, which are the main motivations for its consumption. In comparison, these attributes rank  
 290 20<sup>th</sup>, 13<sup>th</sup> and 30<sup>th</sup> in Italy).

291 In the Italian case, those wishing for a NW certification prioritize the place of purchase over the  
 292 specific attributes of NW. In other words, in first place they prefer to go to tastings to identify and  
 293 buy it. In second place, Italians prefer to go to wine shops (seventh in Spain) and, in third place, they  
 294 rely on books, guides or specialized magazines to identify NW. Biodynamic certification (e.g.,  
 295 Demeter) is important for Italians, appearing fourth in the ranking. It is noteworthy that for Italians  
 296 who would prefer NW certification, the internet and social networks are important spaces for  
 297 identifying NW, with fifth position in the ranking. The information present on the label and the  
 298 organic certification occupy positions number six and seven, respectively. Thus, in addition to  
 299 purchase (tastings, wine shops, book or guides), aspects related to labeling (biodynamic and organic  
 300 certifications or brand) are also relevant factors among those requesting NW certification. These  
 301 results are in stark contrast with the Spanish case, where purchase places occupy the 43<sup>rd</sup>, 7<sup>th</sup> and 19<sup>th</sup>  
 302 positions in ranking and labeling considerations appear in 46<sup>th</sup>, 17<sup>th</sup> and 9<sup>th</sup> positions.

303 These variables were subsequently organized through an aprioristic factor analysis to identify clusters  
 304 of explanatory variables of the DV. These factors have a higher Pearson's r than the IV variables that  
 305 comprise them (see Table 4), so their predictive capacity will be greater for the DV.

306

307 Table 4: Pearson correlations (r) / DV (“To what extent do you consider labeling important to identify  
 308 NW?”) \* Factors

<b>SPAIN</b>		<b>r</b>
F1_ECO-HEALTHY (IV- Healthy + IV- Sustainable and organic)		.406**
F2_PROXIMITY CRAFT (IV- Winery + IV- Artisanal)		.374**
F3_ORIGIN-BRAND (IV- Brand + IV- Region and/or country)		.337**
<b>ITALY</b>		<b>r</b>
F4_WINE EXPERIENCE (IV- Tasting + IV-Winery)		.405**
F5_ON-LABEL-INFO (IV- Biodynamic certification + IV- Brand + IV- Organic certification)		.351**

\*\*Sig.&lt;.01

309  
310

311 In the Spanish case, the first explanatory factor associated with demand for a NW certificate clusters  
312 the variables expressing NW attributes that characterize it as healthier, more sustainable and  
313 ecological than other wines. This factor was defined as *eco-healthy* (F1). A second explanatory factor  
314 emerges for the Spanish context that combines the perception of NW as artisanal and the preference  
315 to buy directly from the winery. We named this factor *proximity-craft* (F2). A third factor combines  
316 the importance of the brand or product name with the region and country of origin when a person  
317 supporting NW certification chooses a wine. We called this factor *origin-brand* (F3). In the Italian  
318 case, a factor identified as *wine experience* (F4) groups together tasting and wine shops as means to  
319 identify and buy NW. Another factor defined as *on-label-info* (F5) groups the importance of organic  
320 and biodynamic certifications with brand information, in order to recognize NW. Finally, we defined  
321 a sixth factor *extra-label-info* (F6) as the importance of information widely retrieved in the media to  
322 recognize NW, including books, social networks, specialized magazines and similar outlets.  
323 Finally, these factors were used as IV in a multiple regression analysis in order to establish an  
324 explanatory or predictor model for each country. Table 5 shows the factors that explain a higher  
325 percentage of variance for both cases in a combined rather than independent form. This provides  
326 robustness to these combinations when explaining the DV (see Table 5 and estimated coefficients in  
327 Table A1).

328

329 Table 5: Regression model summaries

SPAIN										
Model	r	r <sup>2</sup>	Adjusted r <sup>2</sup>	Std. error of estimate	Change Statistics				Durbin- Watson	
					r <sup>2</sup> change	F change	df1	df2		Sig. F change
1	.409 <sup>a</sup>	.167	.166	1.208	.167	104.202	1	518	.000	1.933
2	.438 <sup>b</sup>	.192	.189	1.191	.025	15.782	1	517	.000	
a. Predictors: (Constant). F1_ECO-HEALTHY										
b. Predictors: (Constant). F1_ECO-HEALTHY. F2_PROXIMITY CRAFT										
c. DV- "To what extent do you consider labeling important to identify NW?"										
ITALY										
Model	r	r <sup>2</sup>	Adjusted r <sup>2</sup>	Std. error of estimate	Change Statistics				Durbin- Watson	
					r <sup>2</sup> change	F change	df1	df2		Sig. F change
1	.405 <sup>a</sup>	.164	.162	.924	.164	73.170	1	373	.000	1.912
2	.441 <sup>b</sup>	.194	.190	.908	.030	13.916	1	372	.000	
a. Predictors: (Constant). F4_WINE EXPERIENCE										

b. Predictors: (Constant), F4\_WINE EXPERIENCE, F5\_ON-LABEL-INFO  
c. DV- "To what extent do you consider labeling important to identify NW?"

330

331 In the case of Spain, the combination of F1 and F2 in the same model explains a significant percentage  
332 (18.9%) of the variance (Sig. F change<0.01), that is, the perception that NW is both eco-healthy and  
333 proximity-craft. In contrast, the factor associated with origin-brand (F3) was left out of the model as  
334 it does not contribute a significant percentage of variance to explanation of the DV (Sig. F  
335 change<0.05). This defines a model for the demand for a NW certificate in Spain that could be taken  
336 into account when developing legislation and labeling policies. In the case of Italy, both factors (F4  
337 and F5) entered into the explanatory regression model of the DV, i.e. the combination of experience  
338 (F4) and on-label-info (F5) explains the need for a NW certificate. The factor associated with extra-  
339 label-info (F6) was left out of the final model because it does not contribute a significant percentage  
340 of variance to the explanation of the DV (Sig. F change>0.05).

341

#### 342 **4. Discussion**

343 Our results in Spain and Italy show that NW consumers are more likely to demand a certification that  
344 identifies NW in the market. However, there are differences between the socio-demographic profiles  
345 of consumers and the drivers of NW consumption between countries. In Spain, the socio-  
346 demographic profile of consumers who support NW certification includes non-professional  
347 consumers and people with no university or higher education, whereas in Italy, as a group women do.  
348 These results converge with recent research by [40], which found that women pay more attention to  
349 wine labeling and are more likely to pay for NW in the Italian market. In the Spanish case, there is  
350 no previous research on consumer profiles and NW, so further work is required in this area.

351 Several studies have noted the relationship of the symbolic prestige of wine consumption with the  
352 purchasing power and high education levels of certain social classes [41], even suggesting that wine  
353 is a food that establishes hierarchies [42]. Already Bourdieu's studies [43] analyzed the taste for wine  
354 as an element of bourgeois social distinction, which allows classifying the social and educational  
355 origin of the individual. However, our results show that in Spain the need felt to certify NW is  
356 associated with wine consumption among social strata with lower purchasing power and educational  
357 qualifications. These results are in line with other research showing that the lower classes can  
358 challenge the *bourgeoisie* regarding food and wine enjoyment, making a statement of sociability and  
359 generosity that contrasts with the formality and rigidity of the middle and upper classes [44].

360 Traditionally, in many mostly southern parts of Europe, wine was an everyday food staple [45].  
361 However, with the globalization of wine and the proliferation of brands and quality labels, the choice  
362 to purchase wine has made the debate about which consumers choose which wine more complex.  
363 Thus, our results for the Italian sample differ profoundly from the Spanish context, where women  
364 and young people are more likely to be interested in a NW label. In short, the socio-demographic  
365 characterization of wine consumers remains a complex scientific debate and therefore deserves  
366 special attention, especially in relation to emerging consumer trends such as NW. In fact, it remains  
367 unclear why certain sociodemographic factors are associated with greater interest in NW as a function  
368 of each specific society or culture.

369 The factors resulting from this study are in line with recent research on NW. Concerning the eco-  
370 healthy factor or F1, previous studies have shown that the perception of a wine's naturalness through  
371 labeling information associated with health consciousness, sustainability and ecological winemaking  
372 are becoming determinant drivers of purchasing choices [22, 46]. They are positively associated with  
373 a higher willingness to pay [47]. Moreover, these studies show that not only the perception but also  
374 the labeling of these attributes has become important, in line with F5, the on-label-info factor, for the  
375 Italian consumer sample. For both the Spanish and Italian samples eco-healthy (F1) attributes are  
376 important. However, Italian consumers prefer to obtain this information on-label (F5), through  
377 organic and biodynamic certifications. This shows the complexity of the current wine certification  
378 system, the multiple associated seals and the confusion it entails for the consumer, which ultimately  
379 emphasizes the absence of ingredient labeling of this product. In fact, organic certification has  
380 undergone a significant market breakthrough and has managed to build trust among consumers [48].  
381 Current confusion about the differences between organic, biodynamic and NW for consumers, who  
382 tend to think that they are all similar, has contributed to this loss of confidence in labels [3, 20, 21].  
383 Certainly, organic, biodynamic and NW are all based on organic agriculture, but they have different  
384 ways of working in the vineyard and winery [6]. Seufert et al. [49] show that the perception of organic  
385 agriculture as chemical-free is the result of a limited and partial approach to organic certifications,  
386 engendering a huge confusion between environmental, sustainable or health-related principles. This  
387 would explain why in the Italian sample the need to certify NW is associated with the importance of  
388 seeking extra-label information (F6) to identify it. Thus, our results suggest that in the absence of  
389 more information, a certification system combining eco-healthy (F1) and on-label-info (F5) could  
390 satisfy different NW consumer profiles in various countries.

391 What these results ultimately show is that the quality conventions associated with origin, brand or  
392 reputation of wine have changed radically, in turn transforming traditional systems of marketing and  
393 labeling [50]. Our results regarding F3, the origin-brand factor, indeed suggest this, since its attributes  
394 are important for those desiring NW certification in Spain, whereas in Italy it is also relevant but in  
395 combination with organic and biodynamic certification (F5 on-label-info). It would appear that the  
396 certification based on protected designations of origin (PDO) played a very important role during the  
397 1990s, when the globalized wine market developed [51]. In this scenario, traditional producer or Old  
398 World countries competed with New World countries by relying on a system based on PDO, brand  
399 names and prizes from international competitions that generated positive attitudes among consumers  
400 [30, 52]. However, in the contemporary globalized market, varied certifications associated with eco-  
401 friendly, sustainable or health characteristics have emerged, generating alternatives to conventional  
402 wines [53, 54]. Our results suggest that traditional aspects of the wine quality certification system are  
403 still important when certifying NW. Therefore, a certification system for NW should respect  
404 traditional quality conventions in the wine labeling system and combine it with other emerging  
405 aspects valued by the contemporary consumer such as F1 (eco-healthy), F2 (proximity craft) or F5  
406 (on-label-info).

407 Furthermore, aspects related to proximity-craft (F2) are important for Spaniards supporting a NW  
408 certificate. Previous research highlights the association consumers make between the perception of  
409 craft, traditional, small-scale or proximity winemaking with sustainable, organic and natural  
410 winemaking [5, 55, 56]; in other words, wines that deviate from standard and industrial production  
411 methods [57]. Not surprisingly, the French certification body *Vin Méthode Nature* is currently  
412 debating whether to charge wine companies producing over 25,000 bottles per year more, to prevent  
413 appropriation of the label by industry. Therefore, aspects related to proximity-craft should also be  
414 taken into account when certifying NW.

415 Finally, there is the experiential factor (F4) among those wanting a NW certification in Italy. In  
416 general terms, wine has been considered as a unique product and different from any other food whose  
417 singularity makes it an experiential product [58]. Wine is ceasing to be a traditional food in rural  
418 societies and is becoming more and more a product associated with hedonic or luxury consumption,  
419 especially in non-wine producing regions [36]. The recent review on consumer behavior by Deroover  
420 et al. [59] highlights that wine is perceived as an expression of traditions and culture. These attributes  
421 have greater influence on purchasing and consumption choices than for any other food or beverage  
422 [60]. Our results show that the lived-experience of identifying and buying a NW in specialized wine



423 shops and wine tastings is also part of this consumption pattern. Therefore, a NW certificate should  
424 incorporate aspects that differentiate these wines with regard to the unique experience that can take  
425 place through NW consumption.

426

## 427 **5. Conclusion**

428 This study has furthered demographic and sociocultural knowledge of the consumer profiles and  
429 drivers of demand for a NW certification, distinguishing as an example between Spanish and Italian  
430 wine drinkers. To answer the initial research question as to whether there is a specific consumer  
431 profile that considers a NW label necessary, results show that those who already consume NW are  
432 the most likely to demand a certificate to differentiate NW in the market, both in Italy and Spain.  
433 However, there are significant differences between these profiles. In Spain, non-professional  
434 consumers and those with lower educational levels support a NW certificate to a greater extent, while  
435 in Italy it is women who show a greater interest.

436 Concerning our second research question about the preferences and perceptions of wine consumers  
437 who consider NW certification important, results show four main explanatory factors in the final  
438 multiple regression models, two for each country. The eco-healthy and proximity-craft factors explain  
439 the demand for a NW certificate in Spain to a greater extent, while in Italy it is the on-label-info and  
440 experiential factors. Both samples converge in showing a predisposition among those who consume  
441 NW to prefer a distinctive label and that the explanatory factors for such a certificate are not mutually  
442 exclusive. Therefore, these results suggest that the stakeholders could indeed set homogeneous  
443 standards to reduce uncertainty and information asymmetries concerning NW. This constitutes an  
444 important contribution to the debate on the need to establish a common regulatory framework leading  
445 to a consensual EU-wide creation of a distinctive NW label. This would help assuage the polemics  
446 among countries, as reflected in complaints by several Members of the European Parliament against  
447 the French certification initiative *Vin Méthode Nature*. It could also satisfy NW producers who  
448 demand some sort of differentiation in the wine market given the lack of ingredient labeling in wine.  
449 In parallel, it could also respond to consumer interests in more transparent and sustainable food  
450 products, given that the new regulations for labeling alcoholic beverages are still being debated, with  
451 no clear outcome [9]. Certainly, a rise in the minimum standard requirements for ingredient labeling  
452 in the wine sector would make NW producers less interested in having their own certification [61],  
453 but this scenario is still unclear. Given that the promotion and growth of NW would be positive in  
454 terms of environmental sustainability and a cleaner food chain in Europe and beyond, a NW

455 certification is in line with new EU-wide strategies such as *From Farm to Fork* and the *European*  
 456 *Green Deal*. A pro-labeling policy for NW would be therefore fundamental to reconcile sustainability  
 457 aims with consumer and producer interests alike, thus reducing the currently prevailing information  
 458 asymmetry in the wine market.

459 We are aware that the lack of a probabilistic sample is a core shortcoming of this study, which limits  
 460 the potential to extrapolate the results to the whole wine consumer population in Spain and Italy at  
 461 large. Furthermore, the explained variance in the regression models is low, which implies that there  
 462 may be more drivers influencing demand for a NW certificate. Future research should explore the  
 463 perspectives of other actors in the wine sector on NW labeling, such as winemakers or traders, to  
 464 further optimize NW communication and marketing. Similarly, more cross-national and comparative  
 465 studies are needed to better delve into the profile of the NW consumers and the perceptions associated  
 466 with them, in order to more effectively deliver a Europe-wide certification.

467

468

## 469 **Appendix**

470 Table A1: Coefficients

SPAIN					
Model <sup>a</sup>	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
Constant	3.955	.052	–	75.719	.000
F1_ECO-HEALTHY	.372	.067	.283	5.581	.000
F2_PROXIMITY CRAFT	.266	.067	.201	3.973	.000
ITALY					
Model <sup>a</sup>	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
Constant	3.974	.047	–	84.256	.000
F4_WINE EXPERIENCE	.322	.052	.319	6.150	.000
F5_ON-LABEL-INFO	.196	.053	.194	3.730	.000

a. DV- "Do you consider labeling important to identify NW?"

471

472

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479

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