

Article

Is Environmental Sustainability Also “Economically Efficient”? The Case of the “SOStain” Certification for Sicilian Sparkling Wines

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Abstract: The Italian wine industry is strongly committed to sustainability. Among the numerous sustainability certifications and programs implemented in Italy for the wine sector, SOStain is the oldest at the regional level. The SOStain Foundation promotes the voluntary application of a sustainability program, developed in 2010 in Sicily (Southern Italy). The requirements of the SOStain specifications are connected to the new CAP 2023–2027 objectives; therefore, companies preparing for the new challenges of future winemaking might be interested in joining the SOStain Foundation for greening production practices. The objective of this study was to learn producers’ and consumers’ opinions about motivations, real/perceived difficulties, cost, and positive effects of the SOStain certification, as well as their intentions to make ethical choices and their willingness to spend more for a Sicilian sparkling wine with the SOStain certification. A census of producers combined with a consumer survey and focus groups were carried out. Multidimensional scaling was used to discover the polarization of producers’/consumers’ opinions regarding the SOStain certification. The findings highlighted the effect of ethical choices, despite sensory likings, on purchasing intentions and issues related to higher costs of production and market prices. The results highlighted the criticalities of the green transition for wineries and the importance of correct communication through social media.

Keywords: green deal; premium price; multidimensional scaling; focus group; sensory test; sampling survey; environmental certifications; CAP; Sicilian wineries; consumer preferences



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1. Introduction

1.1. Italy’s Wine Sector, with a Focus on Sparkling Wines

Italy is one of the world’s most important wine producers [1], and the Italian wine sector is the first among those of agro-food in value of exports. In fact, in 2020, vineyards covered an area of 71,139 ha, or more than 5% of the total area used for agricultural activities, contributing 11% of the total agricultural production value [1,2]. As regards quantities, Italy is one of the main wine producers in the world. Particularly in 2020, Italy produced more than 49.1 million hectoliters (about 18.9% of world production) [1] of wine, even though France (which alternates with Italy in the first ranking) surpassed Italy in terms of value [1]. In terms of wine export values, Italy is also the second country in the world market (after France), and the entire Italian viticulture sector is the first of the agro-food sector for value of exports. Pedoclimatic conditions of Italian agricultural areas have always allowed the development of wine production all over the territory. Nowadays, there are 310,000 farms growing vines, of which 45,700 are winemakers with wineries [1,3]. The domestic wine

sector includes a large number of operators, most of which are professional producers connected to distribution channels [3].

In the vast panorama of Italian wines, sparkling wines, also called “Spumante” wines, play a relevant role thanks to their quality level, which reaches excellence in some cases. The international market of sparkling wines is characterized by three appellations, Champagne, Cava, and Prosecco. Prosecco wine is well known all over the world as the Italian sparkling wine par excellence. Altogether, in Italy there are four wine classifications (that are part of Italian appellation system for wine), recognized by the government [4]: (1) *Vino da Tavola* (VdT), (2) *Indicazione Geografica Tipica* (IGT alias “Typical Geographical Indication”), (3) *Denominazione di Origine Controllata* (DOC), and (4) *Denominazione di Origine Controllata e Garantita* (DOCG). The IGT, DOC, and DOCG designations certify the area of origin of a wine and delimit the area of harvesting of grapes used for production of the wines to which the mark is affixed. However, the IGT wines do not meet the requirements of the stricter DOC and DOCG designations, which are generally intended to protect traditional wine formulations (such as the famous Chianti wine or Barolo wine). The DOC appellation, therefore, designs a quality and renowned wine whose characteristics are related to the natural environment and human factors. Prosecco wine has two appellations basing on the grapes’ growing territory and the wine’s production area, one of which is the *Controlled Designation of Origin* (*Denominazione di Origine Controllata*, DOC) and the other is the *Controlled and Guaranteed Denomination of Origin* (*Denominazione di Origine Controllata e Garantita*, DOCG) [4]. These appellations certify that the sparkling wine originates only in some territories of two Italian regions (Veneto and Friuli Venezia Giulia) and complies with a specific production disciplinary approved by ministerial decree. Therefore, except for the Prosecco DOC, which must be produced in its specific territory, Italian sparkling wines can be produced in any wine region.

Prosecco DOC wine is first in quantities produced of all Italian sparkling wines [5]. In 2020, the Veneto region alone produced 82% of the total quantity of the Italian sparkling wine [5]. Nevertheless, there are many examples of other good quality Spumante wines produced in other regions of Italy: Trentino, Emilia-Romagna, Friuli Venezia Giulia, and Sicily. Italy’s sparkling wine production has grown in the last five years by about 40%, from nearly 4 million hectoliters in 2015 to 5.7 million in 2020 [5]. Italian Spumante wine is appreciated all over the world; in fact, in 2020, about 80% of the Italian production of sparkling wines was exported both to EU countries (2.4 million hectoliters) and to non-EU countries (1.7 million hectoliters).

1.2. Spumante Production in Sicily

Sicily (Southern Italy) is the second largest area of Italy cultivated with wine grapes (98,355 hectares), after the Veneto region. Moreover, Sicily is the second biggest Italian region in terms of number of wineries, despite its level of technical and economical backwardness compared to the more advanced regions of northern Italy (for this reason Sicily is considered a “convergence objective” by the EU, since convergence among regions is explicitly defined as a political aim of the European Union). With regard to sparkling wines, only in the last decade have Sicilian winemakers developed sparkling wines of higher quality, although they have been produced since the last century. In fact, thanks to research and experimentation for the last 10 years, since 2018 Sicily has increased its production of sparkling wines by 326%. However, even if the quality of Sicilian Spumante has increased, its competitors (sparkling wines produced in Northern Italy) maintain a leadership position in the domestic and foreign market. Sicilian Spumante has intrinsic qualities that differentiate it from other sparkling wines. However, the strong sensory attributes of distinction are particularities and not defects of the wine. Sicilian Spumante is produced using autochthonous grapes such as Zibibbo, Catarratto, Carricante, and Grillo, and also in blends. Due to the very different *terroir* of Sicily (respective to that of the other wine regions of Northern Italy) and different grape varieties used to produce the Spumante wine, the sensorial characteristics of Sicilian Spumante are very different to those of sparkling

wines produced in other regions, particularly in terms of flavors and aromas. Actually, the different sensorial characteristics of Sicilian sparkling wines would allow additional or new consumption and purchasing intentions for different consumptive occasions than the typical sparkling wines from Northern Italy [6] or Champagne (such as celebrations, aperitifs, or parties). This could mean a different positioning for Sicilian Spumante wines. Nevertheless, so far, predominantly experts, rather than common consumers, appreciate the sensorial characteristics of Sicilian sparkling wines. Reasonably, it is believed that these characteristics should be known by consumers as distinctive elements of Sicilian sparkling wines and exploited by winemakers for positioning this wine in a different market segment.

1.3. The New Common Agricultural Policy for the Wine Sector and SOStain

The new Common Agricultural Policy (CAP), recently adopted in December 2021 (with the implementing Regulation (EU) 2021/2289), aims to make agriculture more responsive to future challenges [7], continuing to support European farmers for a sustainable and competitive agricultural sector. Compared to the previous programming, the new CAP includes improvements to the reinforcement of an actual transition to a greener agriculture that is more environmentally sustainable in order to respond adequately to the challenges of the European Green Deal [8]. It introduces 10 ambitious objectives ((1) ensuring a fair income for farmers, (2) increasing competitiveness, (3) improving the position of farmers in the food chain, (4) climate change action, (5) environmental care, (6) preserving landscapes and biodiversity, (7) supporting generational renewal, (8) vibrant rural areas, (9) protecting food and health quality, and (10) fostering knowledge and innovation) aimed at leading farmers towards the increased use of environmentally and climate-friendly practices [9]. The new Regulation (EU) 2021/2289 introduces Eco-schemes, and specifically Eco-scheme number 2 (ECO 2) refers to tree crops, including viticulture. Moreover, additional incentives are foreseen for the wine sector, which is of great interest at the community level. The political framework of the Green Deal will characterize the work of the European Commission during its five-year mandate, and, in all likelihood, it will represent an irreversible turning point in European policy over much longer time periods. Within this framework, which was refined in the specific objectives of the From Farm to Fork and Biodiversity strategies, the new Common Agricultural Policy (CAP) will define the connotations of its operation, changing the Institutions' intentions into concrete regulatory and support measures. The processes' sustainability and the supply chain's competitiveness will be the central dimensions of the new CAP. In doing so, the previous trade-off approach will be interconnected with a new innovative approach that is both cultural and operational [10,11]. However, the new CAP's objectives have some critical elements that may compromise the competitiveness of small wine producers in the EU, especially in some regions that are still less technologically and economically advanced [12].

1.4. Sustainability Voluntary Product Certifications, "VIVA" and "SOStain"

In the new millennium, also after the negative impact on producers and consumers of food scandals (e.g., BSE (mad cow disease), H5N1 virus (avian flu), swine flu, etc.), many voluntary certification systems have been developed and adopted worldwide [13,14]. Voluntary certifications are not directly imposed by governments but may be established internationally or by collective organizations, including industry associations and non-governmental organizations operating within national frontiers or recognized by some countries, such as in the EU. Most voluntary products' private standards have been introduced to support sustainable production and reduce the negative environmental and social impacts of the global food trade [15] by involving producers as well as consumers in steering supply chains [16]. However, in newly emerging and transitional economies such as Brazil and China, a growing middle class is starting to show an interest in ethical and sustainability aspects of products and production circumstances [17]. Voluntary certification schemes are based on third-party auditing of compliance with performance-based sustainable resource management standards developed by non-state actors [13]. Over the

last decades, voluntary certification programs have become a key approach to promoting sustainable supply chains for agricultural commodities in the EU [15,16,18]. The so-called management traceability has its origins in management sciences and logistics and involves consumers and public institutions [19]. Another type of traceability certification in the food supply value chain relates to food safety and product qualities—for example, EU tracking and tracing policies [19–21].

The great interest of researchers in sustainable viticulture and wine production is proven by the high number of scientific publications on these topics [22]. According to Baiano, the first sustainable winegrowing program was accomplished by the Californian Lodi Winegrape Commission in 1992. In that year, the Commission launched a grassroots farmer education program with the aim of reducing the amount of pesticides used by acquiring skills concerning the entire vineyard ecosystem, thus applying the concept of integrated pest management. In 2005, thanks to the feedback coming from farmers, viticulturists, and leading environmentalists, this program turned into the Lodi Rules Sustainable Certification Program. Today, over 1000 vineyards are certified under the Lodi Rules program in California and in Israel. In fact, in addition to the Lodi Rules used by wineries in Lodi, two new seals were created for wineries outside of Lodi, namely, California Rules and Universal Rules [22]. Since then, many other organizations in different countries have created their own rules or have accepted already existing guidelines to practice sustainability. Currently, the presence on the market of several categories of “green” wines (natural, organic, biodynamic, sustainable, etc.) combined with the increasing number of specific regulations, certification standards, and logos creates confusion among consumers and negatively affects their choices [19].

The Italian wine industry is strongly committed to sustainability: The stakeholders’ interest in the topic is constantly growing and a wide number of sustainability programs have been launched in recent years by both private businesses and public entities [23]. In Italy in 2011, the former Ministry of the Environment and Land and Sea Protection (now the Ministry of Ecological Transition) started up a new national project for the wine sector, the VIVA project [24]. This project had the aim of measuring and improving the sustainability performance of the wine industries through the analysis of four indicators: (1) Air, (2) Water, (3) Territory, and (4) Vineyard. The pilot phase saw the participation of some important Italian wineries with the scientific coordination of the European Observatory on Sustainable Agriculture (OPERA RESEARCH) of the Università Cattolica del Sacro Cuore (Catholic University of the Sacred Heart) of Milan and the Agroinnova Competence Center of the University of Turin. The pilot phase ended in 2014 with the preparation of a disciplinary (containing 10 sustainability indicators) that constitutes a technical reference for companies that want to undertake the validation process for the VIVA certification. The VIVA project is shared and adopted by many Italian wine producers and the number of wineries that join it is constantly growing, but it also constitutes a valid basis for other voluntary sustainability certifications such as the SOStain Program [25].

Among the numerous sustainability certifications and programs implemented in Italy, for the wine sector at the regional level, the SOStain certification is the oldest. The term “SOStain” derives from the English noun “sustain” and uses capital letters for the first three letters of the word in order to highlight the meaning of “SOS” (i.e., desperate call for help). Therefore, it evokes the meaning to “help sustain” sustainability (environmental, economic, social, etc.). The SOStain program consists of a voluntary and proactive sustainability program developed in 2010 by the Tasca d’Almerita wine firm with the aim of bringing together wine producers that voluntarily choose to adopt sustainable vineyard cultivation and wine production practices. In 2018, Tasca d’Almerita [26] was the first wine estate to be certified VIVA and SOStain and the CEO of the TASCA—Conti d’Almerita Group, Alberto Tasca, promoted the SOStain Foundation in the Sicilian region. The SOStain project began its operational phase in 2020 with the establishment of the SOStain Sicily Foundation. Thanks to this project, Sicily became the first Italian region to develop a sustainability protocol for wine production, SOStain Specifications, with the aim of pursuing environmentally friendly

development that is also socially fair and economically effective. This protocol is based on a disciplinary of production developed in collaboration with academics of the University of Palermo and researchers from the Universities of Milan and Piacenza that consists of many requirements to achieve the SOStain certification. These requirements include the 10 VIVA indicators, which must be achieved by wineries as a minimum requirement to obtain the certification and the authorization by the Sicily SOStain Foundation to use the SOStain label [25]. Initially, the first wineries involved were prestigious companies, i.e., Planeta Wines [27], Cantine Settesoli [28], and Terre di Noto [29]. Today there are 26 entities (such as winemakers, landowners, wineries) that have joined the SOStain Foundation, 23 of which are winemakers (with wineries) who share same ethical values of respect for the environment and biodiversity and produce wines according to the SOStain Specifications. So far, 15 associates has achieved the SOStain certification, but the number is steadily increasing [25].

It is evident that this program is much more ambitious than the VIVA one, and highlights that the region of Sicily is taking concrete and innovative steps towards a truly sustainable wine sector [30].

If we focus on the requirements of the SOStain Specifications, the connection and proximity with the objectives of the new CAP 2023–2027 emerge and, particularly, with the “Regimes for the climate and the environment” (see the above-mentioned Eco-schemes). The Eco-schemes, in fact, as well as the SOStain program, considerably emphasize the environmental, economic, and social sustainability of the current and future agricultural sector. For Sicilian wineries, therefore, obtaining SOStain certification may be a first step toward preparing themselves in the best possible way for the new challenges of modern agriculture. Reflecting on the described scenario, some big questions for researchers and winemakers (especially those in the less-developed EU regions) emerge. These are:

- Q1: Are environmentally sustainable production practices also economically sustainable?
- Q2: How much of the green transition is possible without penalizing competitiveness?
- Q3: Are winemakers ready for the green transition?
- Q4: Are consumers aware of the additional efforts and costs borne by companies supporting ethical choices?
- Q5: To what extent would wine consumers be willing to pay a premium price for certified environmentally friendly wines?

This study addresses the call for initial research about the effects of the regulatory and support measures of the new CAP [10–12,23]. This study focuses on wine producers in the region of Sicily, which has the largest number of wine-growing hectares in Italy and is number one in wine production, although it is an EU-convergence objective region. To do so, the Sicilian winemakers that joined the SOStain Foundation and adopted the SOStain voluntary sustainability standards (in the past 10 years) were observed. The aim was to learn the motivations for joining the SOStain Foundation, and the advantages, disadvantages, and difficulties of achieving the SOStain certification [31]. Moreover, this study investigated consumer sentiment about the meaning of the SOStain logo on wine bottles and about the use of sustainable production systems by winemakers that want to receive this certification. This allowed us to highlight any information or opinion asymmetries. This study focused particularly on Sicilian Spumante production. Sicilian Spumante wine is a product of good quality but still little known on the market. This product needs proper market positioning to be relaunched and commercialized properly [6]. Moreover, among the successful experiences of Sicilian Spumante production, one wine gained the SOStain certification. Therefore, four Sicilian Spumante wines were used in this study with the aim to learn consumers’ sensory tastes and preferences with regard to these wines and the influence of the SOStain certification for stimulating purchase intentions and consumption occasions in terms of how much credence attributes may influence sensory likings [31].

2. Materials and Methods

2.1. Study Design

This explorative study consisted of three different analyses (AN).

AN 1—A census investigation on Sicilian wine producers adopting the sustainable voluntary certification “SOSustain” in order to learn the reasons for joining the SOSustain Foundation, the motivations for becoming SOSustain certified, the advantages and disadvantages, the difficulties of following the agricultural practices foreseen by the SOSustain indicators, and any positive effects and value generation of having the SOSustain certification.

AN 2—A sampling survey to learn consumers’ awareness about the SOSustain certification, their sentiments about green certifications of wine producers, and their willingness to pay for a wine with the SOSustain certification.

AN 3—Two focus groups (FG) of consumers for whom both blinded and non-blinded sensory tests were carried out. This analysis (AN 3) was developed in order to complete the findings of the previous analyses (AN 1 and AN 2) and validate the results. Additionally, FGs were used to try to provide answers to the following question: How much do credence attributes and ethical values or beliefs influence sensory taste? Therefore, consumers’ sensory tastes and preferences with regard to five Spumante wines (four Sicilian Spumantes and one Spumante used for benchmarking, called the “Spumante Test”) were investigated in order to learn the influence of the SOSustain certification on consumers’ purchase intentions and consumptive occasions [31].

2.2. Analysis 1

2.2.1. Sampling Design

For AN 1, the list of all the Sicilian affiliates in the SOSustain program (wine producers and vine growers joining the SOSustain Foundation) was obtained by contacting the Foundation’s bodies (Census: $N = 26$). This list is shown Table 1.

Table 1. List of all the Sicilian companies joining the SOSustain Foundation.

<i>n.</i>	Companies Associated with the SOSustain Foundation	Timeframe for Accession *	Dimension **
1	Alessandro di Camporeale ¹	Recent accession	Small
2	Assuli ¹	Recent accession	Small
3	Aziende Agricole Planeta ^{1,3}	Early accession	Big
4	Cantina Settesoli ^{1,3}	Early accession	Big
5	Cantina Sociale Paolini ¹	Recent accession	Big
6	Cantina Sociale Petrosino ¹	Recent accession	Big
7	Cantine Colomba Bianca ^{1,3}	Recent accession	Big
8	Cantine Europa ^{1,3}	Recent accession	Big
9	Cantine La Vite ¹	Recent accession	Big
10	Carlo Pellegrino ^{1,3}	Recent accession	Small
11	Castellucci Miano ^{1,3}	Recent accession	Big
12	Conte Tasca D’Almerita ^{1,3}	Early accession	Big
13	Cottanera ^{1,3}	Recent accession	Small
14	Cusumano ^{1,3}	Early accession	Big
15	CVA Canicattì ¹	Recent accession	Big

Table 1. Cont.

<i>n.</i>	Companies associated with the SOStain Foundation	Timeframe for Accession *	Dimension **
16	Domaine en Sicile ^{2,3}	Recent accession	Small
17	Le Casematte ¹	Recent accession	Small
18	Nicosia ^{1,3}	Recent accession	Big
19	Nosio ^{2,3}	Recent accession	Small
20	Principe di Corleone ^{1,3}	Recent accession	Small
21	Solsicano ^{2,3}	Recent accession	Small
22	Tenuta di Donnafugata ^{1,3}	Early accession	Big
23	Tenuta di Fessina ¹	Recent accession	Small
24	Tenuta Gorgi Tondi ¹	Recent accession	Small
25	Tenute Rapitalà ¹	Recent accession	Big
26	Terre di Noto ¹	Early accession	Small

¹ Winemaker with winery; ² vine grower only; ³ SOStain certified; * “early accession” refers to years around 2010, and “recent accession” is after 2016; ** “small” refers to micro and small companies, and “big” refers to medium–large companies.

2.2.2. Questionnaire and Survey

As described in Section 1.4, today there are 23 wineries that have joined the SOStain Foundation that produce wines according to the SOStain Specifications (reference Universe/Population: $N = 23$). All these wineries (Census) were contacted by phone from a member of the research team with the aim of explaining the objective of the research and the type of survey intended to be carried out on producers affiliated with SOStain and to learn whether they were interested in participating in this research. The survey methodology consisted of two steps: first, an interview with the business owner or the sustainability manager of the winery (face to face), and then the filling in of a proper questionnaire specifically created by Google Modules for this survey to be completed anonymously by the respondent only at the end of the interview. All wineries (Census: $N = 23$) agreed to participate (Table 1) [32]. The questionnaire was then sent out by email to the participants. The respondent (owner/sustainability manager) was asked to look at the questionnaire for a pre-screening and confirm by email their willingness to participate in the survey. Afterward, participants were contacted again by phone to make an appointment with the member of the research group in charge of conducting the face-to-face interviews. These interviews lasted about 60 min and were conducted at wineries. During the interviews, they were asked to talk about their experience with SOStain and the reasons for their affiliation. The interview aimed to learn in detail about the problems they faced, the difficulties they encountered, and any suggestions for improving the current situation. It was purposely intended to create a trustworthy situation by explaining the importance of the answers and suggestions for improving the current situation. Interviews were recorded and a verbatim transcript was made [33]. At the end of interviews, the interviewer showed respondents the questionnaire to be compiled and provided any explanations in order to reduce compilation mistakes. Finally, it was asked respondents to complete the questionnaire anonymously by using a link to a form prepared with the help of Google Modules. In the questionnaire, neither the identity nor the e-mail address of the companies was requested; therefore, answers were anonymous.

The questionnaire was properly structured in order to collect, in a standardized way, information about the company’s characteristics (such as small/large wineries, date of affiliation with SOStain, province of the vineyard, type of wines produced, level of innovation in the company, etc.). Moreover, a list of the main reasons, opportunities, and criticalities of joining the SOStain program was displayed and respondents were asked to

select those considered to be the main ones. This questionnaire contained open/closed questions with filtering and questions to check the consistency of their answers. Additionally, respondents were asked to give a score to some questions related to the SOStain certification. Specifically, basing on the 10 disciplinary requirements to be respected, according to the SOStain Specifications, [(1) *Vineyard Management* with eco-sustainable methods, (2) *No Chemical Herbicides* (prohibition of chemical herbicides), (3) *Biodiversity* (companies with an area > 15 hectares must maintain as natural areas at least 5% of the surface area of the company), (4) *Use Of Eco-Friendly Materials In The Vineyard* (no non-recyclable or non-biodegradable materials are used in the realization of new vineyards), (5) *Local Raw Materials* (100% of any grapes and wines purchased must be of regional origin), (6) *Use of the VIVA Indicators* (companies are required to calculate, at the company level, the indices of the VIVA program (air, water, vineyard) and to respect the “territory” indicator), (7) *Energy Efficient Technologies* (for winemaking, only production processes with an energy consumption of less than 0.7 kWh/liter of wine are considered efficient), (8) *Weight of bottles* (the average weight of the still wine bottles used during the year must be less than or equal to 550 g/0.75 L), (9) *Transparency in Communication* (the companies adhering to the program are required to prepare a Sustainability Report before 31 March of each year), (10) *Limiting the content of residues in wines* (laboratory analyses must be carried out annually on a sample of at least 25% of the production commercialized to verify the absence of residues of agricultural chemical products in the wine)] [25] respondents were asked to give a score, using a 5-point Likert scale, to the variables shown in Table 2. The interview lineup and the questionnaire structure were designed by the research team basing on previous studies and existing literature [32,34–36].

Table 2. Variables used in the questionnaire for wine producers.

n.	Motivations to Join the SOStain Foundation	Difficulties Encountered in Complying with the SOStain Specifications	Which Practice Generate the Highest Costs	Where the Economic Benefits Are Most Reflected	Where the Added Value Is Mostly Allocated
1	MOT_Environmental Protection	D_Sustainable vineyard MGM ¹ by Specification	C_Sustainable vineyard MGM ¹ by Specification	ReflPosEffect_Environmental Sustainability	AValue_Brand Name
2	MOT_Focus on Sustainability	D_Use of natural preparations	C_Use of natural preparations	ReflPosEffect_Economic Sustainability	AValue_Winery production
3	MOT_Increase Visibility	D_Maintain natural biodiversity	C_Maintain natural biodiversity	ReflPosEffect_Sustainable land management	AValue_Product line
4	MOT_Commercial Advantage	D_Use of Ecofriendly materials	C_Use of Ecofriendly materials	ReflPosEffect_Nutritional Sustainability	AValue_Single wine
5	MOT_Achieve common goals	D_Use of regional grapes	C_Use of regional grapes	ReflPosEffect_Social Sustainability	AValue_Only Fine wines
6		D_Application of VIVA indicators	C_Application of VIVA indicators		
7		D_Energy Efficient Technologies	C_Energy Efficient Technologies		
8		D_Reduce bottle weight	C_Reduce bottle weight		
9		D_Prepare annual report	C_Prepare annual report		
10		D_No pesticides' residues	C_No pesticides' residues		

¹ Management.

2.3. Analysis 2

2.3.1. Sampling Design

For AN 2, a sampling survey of Italian consumers was carried out from September 2021 to March 2022. The aim was to learn consumers' information about the SOStain certification and their motivations to make ethical choices and pay a higher price for a Sicilian sparkling wine produced by a winery using environmentally sustainable production techniques [37]. In addition, sparkling wines are widely consumed all over the world by almost all types of consumers. Therefore, a heterogeneous balanced sample of individuals extracted by the simple random sampling method appeared more suitable than a homogenous sample,

because it is known to be the most suitable when the reference population is highly inhomogeneous (high variability of the statistical Population). The sample size was calculated with a sampling error of 6% ($p = 0.95$ and $q = 0.05$), which was $n = 278$ [35].

2.3.2. Questionnaire and Survey

Also for this analysis, a proper questionnaire was prepared using Google Modules. It contained open/closed questions with test questions to check the consistency of answers. The questionnaire was disseminated using the university's social channels, social networks, and word of mouth [38,39]. The questions were about socio-demographic characteristics of the respondents, consumption habits and occasions, frequency of consumption, and information about the SOStain certification and other sustainability certifications for wines. The ideal price for a Spumante wine with SOStain certification was requested; moreover, the most suitable place of purchase and the consumption intention or occasion was asked. Additionally, respondents were asked to give a score using a 5-point Likert scale to a set of variables that summarized the ones presented to producers but aimed at getting to know the point of view of consumers—also aiming to highlight possible information asymmetries (Table 3).

Table 3. Variables used in the questionnaire for consumers.

<i>n.</i>	Meaning of the SOStain Logo	Reason Why a Winemaker Joins the SOStain Program	What Practice a Winemaker Should Apply	Where the Most Added Value for the Winery Is
1	M_Environmental Sustainability	R_Increase Visibility	A_ Sustainable vineyard MGM ¹ by Specification	AV_Brand Name
2	M_Economic Sustainability	R_Commercial Advantage	A_Use of natural preparations	AV_Winery production
3	M_Sustainable land management	R_Achieve common goals	A_Maintain natural biodiversity	AV_Product line
4	M_Nutritional Sustainability	R_Environmental Protection	A_Use of Ecofriendly materials	AV_Single wine
5	M_Social Sustainability	R_Focus on Sustainability	A_Use of regional grapes	AV_Only Fine wines
6			A_Reducing environmental impacts	
7			A_Energy Efficient Technologies	
8			A_Reduce glass consumption	
9			A_Prepare annual report	
10			A_No pesticide residues	

¹ Management.

2.3.3. Multidimensional Scaling

Multidimensional Scaling (MDS) belongs to the family of multidimensional analyses, in which no assumptions are generally made about the hierarchy of variables nor about the direction of the relationships between them [40]. The first applications were made for sociological studies in the 1960s, but today these techniques are applied in most marketing surveys. MDS tries to represent a complex database of multiple variables into lower space characterized by Cartesian axes. MDS results in a spatial map where distances among the objects under observation are given by the Euclidean measure of dissimilarity or similarity of the objects for metrics or ordinal variables, like in this case [6,40]. In the spatial map, dissimilar objects are far apart, whereas objects that are similar are placed close to each other. Young's S-stress was used to calculate the goodness of adaptation ($S\text{-stress} < 1$) [40,41]. Another important indicator used to measure the goodness of fit is the "Multiple Correlation Coefficient" R^2 (RSQ), which measures the quantity of variance explained by the extracted dimensions [40,41]. For this analysis, the multidimensional ALSCAL procedure was applied because it is very effective with metrics or ordinal measures of proximity, which is why it is one of the most used [40,41]. This procedure allows the relationships between multiple sets of variables or objects to be visually examined [6]. For this study it was used to cluster similar motivations, real/perceived difficulties, costs, positive effects, allocation of added value, etc., of the SOStain certification, both for producers and consumers (see Tables 2 and 3), in order to identify any polarization of opinions. Data were processed using IBM SPSS ver.21.

2.4. Analysis 3

2.4.1. Focus Group (FG)

Focus group methodology was applied for this analysis because it is proven to be one of the most appropriate qualitative research methods to understand consumer preferences and buying and consumption behaviors in depth [42]. In fact, FGs have no constraints like other alternative methods, such as quantitative surveys. Despite FGs' limitations (due to the inherent characteristics of the method), they have been proven to be very effective when the need is to explore a new topic through a flexible approach and to gain qualitative data aimed at generating hypotheses [42,43]. Indeed, FGs are successful methods to collect information through the processes of idea generation deriving from individuals' interactions—particularly when the objective is to formulate or confirm a hypothesis regarding consumers' opinions about a food product, because it is possible to taste the product under analysis and simultaneously discuss it and exchange opinions and beliefs [6,44,45]. The degree of member homogeneity desired may be best determined in light of the task or problem the group is asked to address. FG participants should be carefully selected for demographic, psychographic, or other considerations, so the sample is often required to be non-homogeneous [35,45,46]. For this study, the sample of consumers to be selected for the FGs had to taste four sparkling wines and provide insights about sensory preferences and the influence of the information about the SOSTain certification on wine choice [31]. The aim was to confirm the results of the sampling survey on consumers and at the same time gain further insights with regard to willingness to pay and ethical beliefs that may influence preferences with regard to SOSTain certified wines for the different categories of consumers and particularly between experts and non-experts. Therefore, it was considered appropriate to use the same composition and proportion of the balanced sample of consumers extracted for AN 2. Consequently, the FGs were carried out in April 2022. Table 4 shows the segmentation criteria and characteristics of the participants [6] (for the sample composition of AN 2 refer to paragraph 3.2.1. Consumer Insight Table 6).

Table 4. Profiles of focus group participants.

Focus Group	Participants	Gender and Age Range	Education and Employment ¹	Frequency of Consumption ¹	Main Occasions/Opportunities for Consumption ¹
Group 1	10	4 males and 6 females. Age: two 19–30-year-olds; two 31–40-year-olds; four 41–50-year-olds; two >51-year-olds	The number of participants for each category was identified in order to reflect the same % values of the balanced sample of consumers extracted for AN 2	The number of participants for each category was identified in order to reflect the same % values of the balanced sample of consumers extracted for AN 2	The number of participants for each category was identified in order to reflect the same % values of the balanced sample of consumers extracted for AN 2
Group 2	10	6 males and 4 females. Age: two 19–30-year-olds; two 31–40-year-olds; four 41–50-year-olds; two >51-year-olds	The number of participants for each category was identified in order to reflect the same % values of the balanced sample of consumers extracted for AN 2	The number of participants for each category was identified in order to reflect the same % values of the balanced sample of consumers extracted for AN 2	The number of participants for each category was identified in order to reflect the same % values of the balanced sample of consumers extracted for AN 2

¹ For the sample composition of AN 2 refer to paragraph “3.2.1. Consumer Insight” and see Table 6.

When choosing a sample for FGs, it is necessary to consider the variables that influence the consumption of the product/service observed [31]. On this basis, a total of 40 participants (20 women and 20 men), who were wine drinkers, took part in the two focus groups (each with 10 participants). The recruitment process was carried out by word of mouth and by the university's social networks. To screen participants, a questionnaire was used in order to select among the volunteers those who had expressed the greatest interest in participating in the focus group. The questionnaire collected socio-demographic information (e.g., gender, age, type of employment, place of consumption of wine, etc.) of each volunteer to be able to select the sample of participants.

The two FGs—with a sensory test—were organized in two phases with the participation of a moderator and of a sommelier. The moderator (expert in communication sciences from the University of Palermo) facilitated group discussion and monitored group interaction.

For the discussion, coherent and consequential questions were structured in such a way as to involve the participants in reflecting and discussing in a flexible manner the proposed topics according to the pre-established logic.

For the sensory test [6,35,45], four sparkling wines produced in Sicily and one very popular Spumante from the Franciacorta wine region (Ferrari Spumante wine) were selected and chosen for a “Spumante test” after being tasted by the sommelier in order to have an objective judgment of their intrinsic quality.

Phase 1 consisted of a blind sensory test of the five selected Spumantes and a group discussion of the wines’ sensory traits. During the tasting, the sommelier explained the sensorial traits of the wines. The bottles were covered and the wines were identified with fancy names [6].

Phase 2 consisted of another sensory test after having revealed the bottles of wine, and the moderator explained the SOSain certification and provided information about the criticalities and advantages of wine producers respecting the SOSain disciplinary requirements.

The wines selected are shown in Table 5.

Table 5. Characteristics of sparkling wines used for the test.

<i>n.</i>	Sparkling Wine	Producer	Cultivar	Production Method	Alcohol Content	Designation of Origin (Denominazione di Origine Controllata—DOC)	Average Price	Fancy Name
1	Castellucci-Miano	Castellucci-Miano	Catarratto 100%	Charmat	12%	Sclafani DOC	15€	Sun
2	Terzavia	De Bartoli	Grillo 100%	Metodo classico	11.5%	DOC Sicilia	24€	Land
3	Brut Metodo Classico Sicilia DOC—“SOSain” certified	Planeta	Carricante 100%	Metodo classico	12.5%	DOC Sicilia	19€	Sea
4	Muller Turgau Brut	Fazio	Muller Turgau 100%	Charmat	10.5%	Etna DOC	9€	Air
5	Spumante Test	Ferrari	Chardonnay 100%	Metodo classico	12.5%	Trento DOC	18€	Moon

During the blind sensory test (Phase 1), respondents had to evaluate the sensorial attributes of the wines after having tasted the Spumante wines without knowing the brand or label using a form with pre-coded choices. Sensory attributes were chosen that were inspired by those used by the National Organization of Wine Tasters (Organizzazione Nazionale Assaggiatori di Vino—O.N.A.V.) to assign awards to wines during competitions. The chosen sensory attributes to be evaluated were only two: visual aspect and taste [46].

In the course of the non-blind sensory test (Phase 2), the same questions were asked of the participants in order to highlight possible differences occurring after having been informed by the moderator about the SOSain certification [47].

2.4.2. Running the Focus Groups

The FGs were carried out at the Co.Re.R.A.S. (Consorzio Regionale per la Ricerca Applicata e la Sperimentazione) research center. The arrangement of the participants and the composition of the table for the FGs were prepared in an equal way for the two FGs. Participants were seated at a round table in order not to have any positions that might suggest dominance on the part of some participants. The moderator and the sommelier remained standing. Specific wine glasses for wine tasting were used. Five wine glasses were placed in front of each participant. A *seau a glace* positioned in the center of the table contained the bottles. Breadsticks and crackers were placed on the table. Sparkling water was offered to the participants in transparent glasses to reset the palate during the tasting. For the blind test the bottles were covered and identified with fancy names and the glasses were positioned on a paper on which was written the invented names used for each bottle of sparkling wine. The lineup was equal for the two FGs:

- (1) Blind sensory test: The participants tasted the five Spumante wines guided by the sommelier.
- (2) Discussion: During the tasting, the participants could discuss and express their opinions about the sparkling wines tasted as well as tell about their previous experiences, e.g., consumption methods, reasons for consumption, frequency of consumption, importance of celebrative consumption, places of purchase, occasions/opportunities for consumption, prices, etc. In this step, the moderator who supervised the discussion encouraged the participants.
- (3) Evaluation: At the end of the sensorial tasting, the consumers were requested to fill a questionnaire in which they had to assign a score to the two sensory attributes chosen for evaluating the sparkling wines tasted, plus an overall judgment.
- (4) Discussion and completion of the questionnaire: After the evaluation, the participants were required to indicate an ideal price (chosen among five different ranges of pre-coded prices) for the tasted sparkling wines, based on their sensory judgment. Finally, the participants had to select the most suitable selling place for each Spumante among five different places (wine shops, wine bars, supermarkets, etc.), as well as their preferred consumption occasion/opportunity for these types of wines basing on their sensory taste.
- (5) Non-blinded sensory test and presentation of wines: The sommelier explained the reason for the sensorial differences among the five Spumante wines based on their territory of origin. The moderator talked about Sicilian sparkling wines and their typical sensorial traits, which allow for different combinations with food. Moreover, the moderator explained in depth the SOSTain certification standards, values, costs for producers, and benefits for the environment, highlighting the ethical value of this type of voluntary certification.
- (6) Discussion, evaluation, and completion of the questionnaire: Opinions regarding the ideal price of the product, the suitable place of purchase, and the preferred occasion for consumption were gathered. Moreover, the participants were asked about their beliefs with regard to environmentally friendly practices and their previous experiences with consumption of/purchasing these types of food products. In particular, any change of opinion with regard to the SOSTain-certified Spumante was investigated, as well as any new consumption intention based on their opinion about this type of certification and regardless the sensory tastes—but obviously discussing the “taste” variable.
- (7) Evaluation: At the end of discussion, the participants were asked to score the sensory attributes of the tasted wines again and provide an overall judgment plus possible changes in purchasing intention or willingness to pay.

3. Results

3.1. Results of Analysis on Wine Producers (AN1)

3.1.1. Producer Profiles

Producers were from all the provinces of Sicily, and the firms were distributed proportionally to the total number of winemakers located there. In particular, eight of these Sicilian companies were in the province of Trapani, six in the province of Palermo, three in the province of Agrigento, one in Caltanissetta, two in Catania, one in Messina, and one in Siracusa. Almost all the wineries that applied to the SOSTain program also had other voluntary environmental sustainability certifications. Specifically, nine wineries had the VIVA certification, four wineries had applied to the organic production disciplinary, one winery was both VIVA and organic certified, and one winery adhered to the Equalitas certification.

With regard to the best price range in which to position a bottle of wine with the SOSTain certification logo, the producers answered as follows: EUR 5–8 33.3%, EUR 9–12 40%, EUR 13–16 13.3%, EUR 17–20 6.7%, and more than EUR 20 6.7%. Afterwards, the question was repeated but with a particular focus on the price for a SOSTain-certified sparkling wine. Producers' preferences for Spumante wines concentrated more in the range of EUR 17–20 and more than EUR 20. This leads to the idea that the price of bottles of sparkling wine is on average higher than other bottles of wine produced (Table 7).

More than half of the wineries interviewed (53.3%) declared that they had found general (not only economic) advantages by joining SOStain. In particular, they related to a better perception by the consumers of the quality of *terroir* [48], an advantage in communicating the company's values and mission, and more requests from buyers. On the other hand, the remaining part of the interviewees (46.7%) declared that they had not yet found advantages by joining SOStain because they had just obtained the certification or were waiting for a feedback on the markets.

However, to have feedback on the markets, the effort made to obtain the SOStain certification and the values underlying the choice of producers should be correctly communicated [49]. In this regard, only 13.3% of the wineries interviewed thought that they were communicating at a very thorough level, almost all of them (80%) thought that they were communicating sufficiently, and only 6.7% thought that they were not communicating it enough and that they should communicate it better. By asking the wineries that took part in the survey how they communicate to their customers to join SOStain, the answers most voted for were "Through social channels: Instagram, Facebook and others" 40%, "Blogs" 45% [50,51]; "Through the winery website" 25% [50,51], "Through institutional channels" 80%, [50,51] "Personally" 100%, and "Through specialized channels (wine shops, wine bars, restaurants, hotels, etc.)" 18% [50,51].

3.1.2. Multidimensional Scaling—Winemakers

Multidimensional scaling provided a map that synthetizes and explains the winemakers' opinions with regard to the opportunities and criticalities to achieve SOStain certification, based on their internal strengths and weaknesses. The S-stress resulted in less than 0.001000, which represents a very good fit. $RSQ = 0.66696$ confirms the goodness of the elaboration and thus the capacity of the map to capture the information contained in the proximity matrix of the items.

From Figure 1 it is possible to observe two main dimensions. With respect to the x-axis, the sphere of the type of choices, which is distinguished in "Practical choices" on the left side and "Ethical choices" on the right side, is highlighted. In fact, in the left side it is possible to see the desire to have a commercial advantage, or to increase visibility. These goals can be achieved by focusing on sustainability by adopting practices such as the use of regional grapes, maintaining natural biodiversity, and reducing the quantities of pesticide residues in the wines. However, other practical actions include preparing an annual report, increasing the value of the brand, and using ecofriendly materials. On the right side, we can find the ethical motivations that drive the producer choice to achieve SOStain certification, such as achieving common goals and protecting the environment. These goals can be achieved by maintaining natural biodiversity, which is considered a cost for the entrepreneurs, as well as reducing bottle weight, respecting VIVA indicators, and using natural preparations during cultivation. It is interesting to note that these features were correlated with positive long-terms effects both for the environment and for the companies. These include increasing the value of the winery and of the product lines. Nevertheless, the main difficulties and costs were related to sustainable vineyard management by applying the VIVA indicators, the use of natural preparations, compliance with the VIVA indicators, and the reduction of bottle weight.

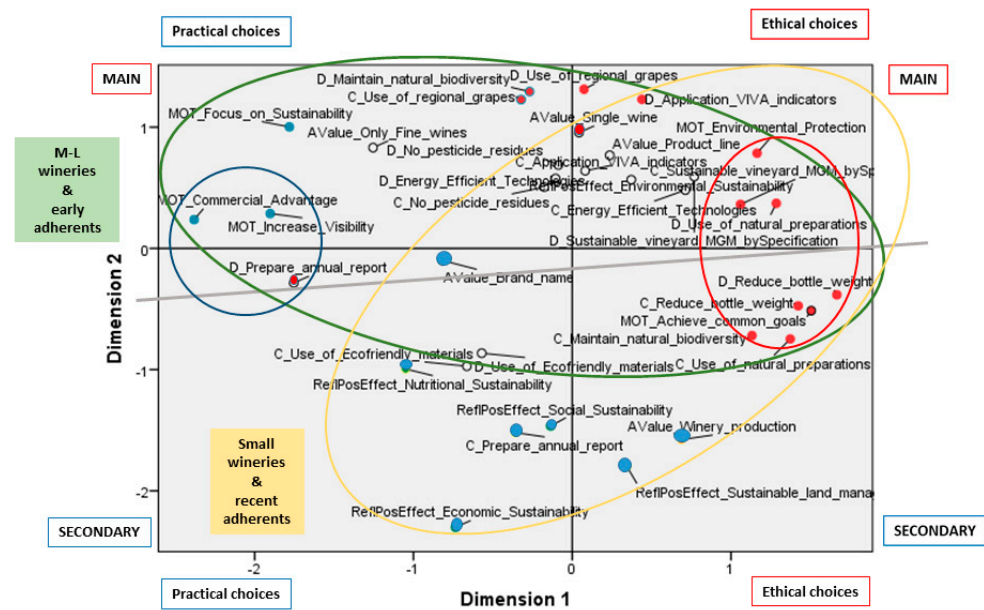


Figure 1. MDS map of producers scenario.

If we observe the second dimension on the y-axis, it is possible to discover another aspect related to the importance given by producers to all these motivations, objectives, actions, efforts, benefits, etc. Specifically, it is possible to see in the upper side of the map the main factors of importance or effectiveness, and in the bottom part the secondary factors. The main factors, according to winemakers, were paying more attention to sustainability practices (“focusing on sustainability”), the use of regional grapes, the application of the VIVA indicators, adding value to the wine with the logo of the SOSTain certification, protecting the environment, etc. [52]. The secondary factors were, on the other hand, those more difficult to see in the short term, which, in fact, are reflected in the positive effects of the SOSTain certification, such as economic sustainability, sustainable land management, social and nutritional sustainability, and other less relevant factors like the cost of preparing an annual report, using ecofriendly materials, natural preparation for cultivation, and maintaining natural biodiversity [53].

Finally, another finding that contributes to providing information about the observed phenomenon appeared, which concerns the characteristics of wineries. After careful and thorough observation and evaluation of the results provided by the map, it was possible to conclude that a better interpretation of space can occur if a different orientation of the x-axis is considered (see the grey line near the intersection of the separating axes within the plane). Basing on the results of the MDS and interviews with producers it was possible to discover that opinions were significantly different between medium–large (“M–L”) companies and micro–small companies (“S–M”) and also in relation to the time of association with the SOSTain Foundation [54]. The green oval clusters the M–L and early adherent wineries, and the yellow one clusters the small and recently adherent wineries. It is interesting to see that the differences are noticeable with regard to motivations and difficulties encountered or cost considered.

Particularly, the vision of SOSTain certification and the mission behind it turned out to differ among companies. It is possible to make a first differentiation (I) based on the size of the companies, medium–large (M–L) versus small–micro companies, and a second (II) between the founding companies (like Tasca d’Almerita) and the first adherents versus the companies that had joined subsequently or would like to join (Table 1) [55].

(I) M–L companies have a much broader view of SOSTain certification, giving it a meaning and value that goes far beyond mere production using systems with limited impact on the environment [56]. For these companies, in fact, in addition to renouncing the use of synthetic products, paying attention to reducing water use and CO₂ emissions from

transportation, recycling materials, or any of the other 10 indicators in the specification are equally important. This means that there are entrepreneurs who care not only about profit but also about the environment [57,58]. These M-L companies are integrated and propulsive parts of the area in which they are located, so the way they operate is conscious of and in tune with all territorial components (i.e., social, environmental, economic). All of this undoubtedly requires more effort on the part of wine entrepreneurs, not only economically but also organizationally and managerially. However, this group of entrepreneurs showed that they are able to anticipate and plan for the impacts and consequences of acquiring SOStain certification. These companies are already beyond that; they have started the path toward the green transition and they are thinking differently.

For small and micro (S-M) companies, on the other hand, the meaning and vision behind SOStain certification are not completely in line with those of the bigger companies. Certainly, the main problem is due to the complexity of applying the practices indicated in the Specifications. Indeed, certainly producers of small and micro wine enterprises are aware of the importance of applying agro-ecological practices. However, the risk of not being competitive due to the high costs to be incurred for the greening transition is very high [58]. For this reason, SOStain indicators are approached differently from larger vs. smaller enterprises. In particular, micro-small enterprises are very attentive to issues related to production (field and cellar). In contrast, all other management aspects related to the use of efficient energy, waste reduction, recycling of materials, etc., are not yet taken into concrete consideration, although they understand their importance. The motivations do not appear, therefore, to be cultural, but related to production capacity and market positioning (turnover and profits) [55].

(II) Further differences emerged with regard to companies that joined early in the SOStain Program compared to those companies that joined later. The founding companies showed in 2010 new business vision that evolved over time, in line with the same evolution of society that is increasingly attentive to certain ethical values related to the environment and its preservation for future generations—not of the wine market [52]. When involving other companies in the project there may be differences in understanding the value of sharing of efforts made (in the early years to achieve the actual goals) and the desire to go further. However, the importance and value of this environmental certification to increase the prestige of the brand name in the eyes of consumers [57,58] is common to both small and big producers, as is the intention to add value to the wines with the SOStain logo, which are commercial interests. It was also noted that for larger companies that would like to join the Foundation, the problem turns into “How much is it worth for me to change my image in the market in relation to the position I hold now?”. Instead, for smaller ones, it turns to “What costs and changes do I face in joining a certification that changes the organization of the enterprise? Will I be able to survive the transition to green?”. For the medium–large companies, therefore, the problem may be understanding how profit margins change in relation to the change in image; for the micro–small ones, the wariness lies in the fear of not being able to manage the change by not decreasing profits. Sustainable? Yes, but at what cost? [58].

3.2. Results of Consumer Survey (AN2)

3.2.1. Consumer Insight

Socio-demographic characteristics of the sample, such as gender, age, sex, occupation, educational level, and consumption habits, were explored. Moreover, the level of knowledge about the SOStain voluntary sustainability certification was investigated. The following table shows the resulting sample composition (Table 6).

Table 6. Sample composition.

Socio-Demographic Variables	Sample Characteristics	% Values
Gender	Female	47.1%
	Male	50.8%
	Not declared	2.1%
Range of age	18–29	52.9%
	30–49	21.4%
	50–59	18.2%
	>60	7.5%
Education *	Diploma	32.8%
	University degree	46.8%
	Higher than degree	16.7%
	Other	3.7%
Type of employment *	Student	43%
	Unemployed	7%
	Entrepreneur/Freelancer	20%
	Employee/Manager/Academic	28%
	Retired	2%
Frequency of wine consumption *	Daily	20%
	1/3 times per week	55%
	Few times per month	20%
	Rarely on special occasions	5%
Main occasions/opportunities for consumption *	At home (during meals or aperitifs)	60%
	Outside: wine shop, wine bar, restaurant, spare time with friends, etc.	35%
	Only during special occasions: holidays, celebrations, etc.	5%

* See Table 4.

The majority of the sample claimed to consume wine (92.3%), and only 7.7% said that they do not drink wine. With regard to the frequency of consumption, interviewees answered “Daily” 10.9%, “1/3 times a week” 35%, “A few times a month” 34.4%, and “Rarely, on special occasions” 19.7%. With regard to the occasion for the consumption of wine [59], 44.6% consumers chose the option “Wine bar, restaurant, and convivial occasions with friends,” showing that there is a very good consumption of wine outside the home [59]. A total of 29.9% said that they drink wine at home during meals or aperitifs with family, cohabitants, or friends; 20.7% said that they drink wine on occasion or at particular events (holidays, parties, etc.); and 4.8% said that they drink wine on other occasions.

The question “Have you ever seen the SOStain Sicilia Foundation logo on a wine label?” showed a high percentage of consumers (93.6%) that declared not to know this logo. This could be due to the fact that many SOStain wineries do not use the SOStain logo on the label, possibly depriving themselves of further sales opportunities. Nevertheless, to the question “Would you buy a bottle of wine with the SOStain certification logo on the label?” most of the interviewees (72.3%) answered “Yes” [60], and when asked why, the most representative answers were “Because sustainable production is often of high quality” (93%) and “Because I contribute to environmental protection” (95%) [60]. These data show how the consumer is attentive to the sustainability of the products she/he buys, but also to the respect for the environment and to the safeguarding of the earth [60]. The consumer also recognizes a positive relation between sustainability and quality, an aspect that leads to the idea that, for a winery, it should be positive to communicate the adherence to SOStain Program, and putting the logo on the label would increase the perceived value for consumers [61].

Regarding to the question “Do you think wineries correctly communicate the meaning of SOStain certification to consumers?”. 25.1% of the sample answered that wineries do not communicate it at all, 56.1% answered that wineries do not communicate it enough,

12.8% said that they communicate it sufficiently well, and 5.9% said that they communicate it very well. These data show how wineries should improve communication in order to better describe the value and meaning of SOStain certification [62]. In fact, most winemakers claimed to advertise the certification mainly through institutional channels, which generally reach fewer consumers than other more direct and popular channels [37,49,62]. On the other hand, to the question “Through which communication channels should the SOStain certification be communicated and explained?” winemakers answered as follows: “Through social channels [37,49,62] (Instagram, Facebook and others)” 78%, “Through the winery’s website” 71%, “Through specialized channels (wine shops, wine bars, restaurants, hotels, etc.)” 65.8% (probably voted by wine connoisseurs), “Through institutional communication” 22%, “Through blogs” 17.6% (voted mainly by wine lovers and specialists), and “Personally” 12.8%.

It is interesting to see the difference between producers and consumers with regard to the assigned “right” price for a wine with SOStain certification (Table 7).

Table 7. Price positioning of SOStain-certified wines and sparkling wines according to producers and consumers.

Price Ranges	Producers		Consumers	
	Wine in General	Spumante Wine	Wine in General	Spumante Wine
EUR 5–8	33.2%	6.7%	3.2%	2.7%
EUR 9–12	40%	33.3%	27.3%	17.1%
EUR 13–16	13.2%	20%	30.5%	28.9%
EUR 17–20	6.7%	20%	11.8%	28.3%
More than EUR 20	6.7%	20%	9.6%	23%
Do not know	-	-	17.6%	-

Table 7 shows that consumers awarded prices to wines in general and to Spumante wines higher than those assigned by producers [6,31]. This result highlights the ideal value that consumers give to wines produced using environmental friendly production systems, despite not being competent (Table 7) [63–65].

3.2.2. Multidimensional Scaling—Consumers

In this case, MDS provided a synthesis map that explains the scenario of consumers’ opinions with regard to SOStain certification, based on their information about it. The S-stress resulted in less than 0.001000 in this process as well, and the value of RSQ = 0.91587 confirms the high goodness of the elaboration and ability of this map to explain the information contained in the proximity matrix of the consumers’ items.

The results show (Figure 2) that the consumers’ answers were more homogeneous than those of the producers [60], based on the values of the S-stress and RSQ and the graphical representation of the variables in the cartesian plan. In fact, it was possible to analyze the position of each variable and see that most of them are concentrated in the right side of the plain and not very far from the zero value of Dimension 2, which means that the values of the correlations were higher for Dimension 1 and lighter for Dimension 2 (around +0.5 and −0.5). Only a small group of variables was around 1 and 1.5. After careful and thorough observation and evaluation of the results provided by the map, it was possible to label the polarity of the two dimensions as follows. Dimension 1 explains the easiness or difficulty for consumers to understand the questions, i.e., the issues/opportunities related to SOStain certification, probably because they had no information about this certification (in fact, most of them declared that they had never seen the SOStain logo). Therefore, this result allows us to state that the consumers’ answers were based on their beliefs and general knowledge about the environmental sustainability issue and climate change consequences. Dimension 2 is related to the distinction that consumers made between ethical choices (and connected effects and consequences) versus practical choices. It is interesting to notice that among the ethical choices, only the environmental sustainability was fully understood by consumers, and this was related to reducing environmental impact, focusing on sustainability practices,

sustainable vineyard management following the SOSTain specification, and preparing an annual report [66]. Moreover, these actions will be able to increase the visibility of producers and their commercial advantage, adding value to a brand name and to a product with SOSTain certification.

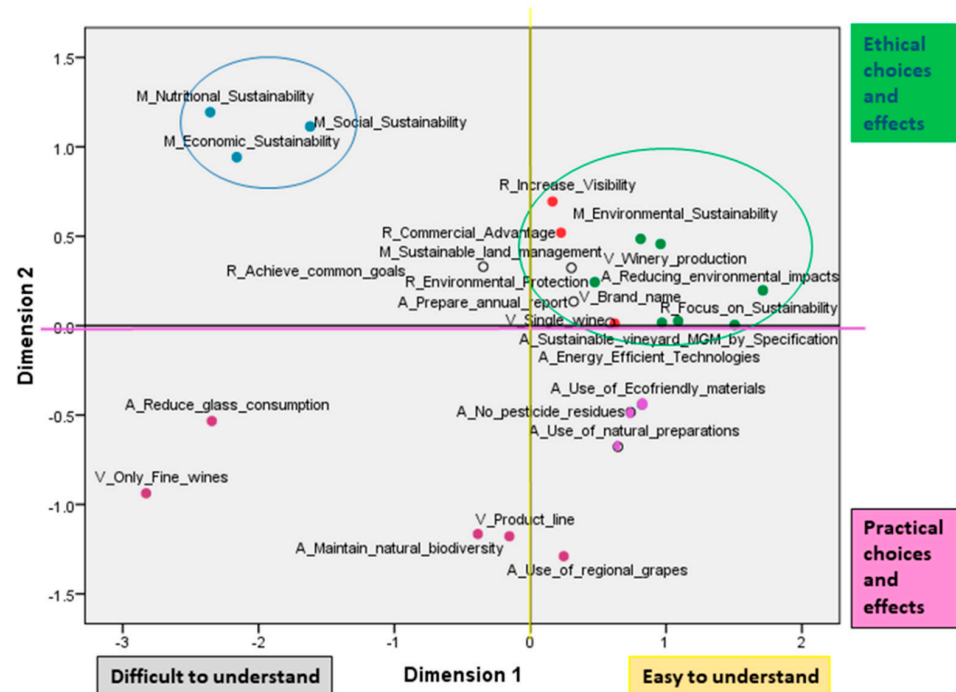


Figure 2. MDS map of consumers scenario.

Contrarily, motivations like nutritional sustainability, followed by social sustainability and economic sustainability, appeared to be definitely good but almost difficult to explain or understand, probably because these concepts are unknown to regular consumers of wine [67,68].

Finally, in the bottom side of the cartesian plan it is possible to observe practical activities to be carried out by producers to achieve SOSTain certification, according to consumers' opinions. In this case there was a distinction between very comprehensible actions, like efficient use of energy, use of ecofriendly materials, limitation of pesticide residues in the wines, use of natural preparations during vine cultivation versus less comprehensible activities or results. These were the use of regional grapes, adding value to the product line, maintaining natural biodiversity, reducing glass consumption, and adding value to fine wines [68].

3.3. Focus Group (AN3)

3.3.1. Phase 1 Blind Sensory Test

The discussion developed during the sensory test (before the moderator told the participants about the wines proposed) focused on the taste of the sparkling wines. The participants claimed that the Spumante wines they tasted did not seem to have the typical taste of sparkling wines. Although the wines they tasted had no significant differences for color and *perlage* (visual attributes) with the Spumante test, significant differences emerged for the taste. In fact, from the discussion (Table 8) it emerged that the preferred sparkling wine was the Spumante test (Moon), followed by the Planeta Spumante (Air), which turned out to be the one with the most similar taste.

Table 8. Distribution of preferences for sensory variables, purchase intentions, and ideal price assigned to the five sparkling wines before (Phase 1) and after (Phase 2) being revealed.

Variables	Phase 1—Blind Sensory Test					Phase 2—Sensory Test with Description of Spumante Wine Characteristics and SOSTain Certification				
	Sea (Muller Turgau Brut)	Sun (Castellucci- Miano)	Air (Planeta SOSTain Certified)	Land (Terzavia)	Moon (SP Test)	Muller Turgau Brut (Sea)	Castellucci- Miano (Sun)	Planeta SOSTain Certified (Air)	Terzavia (Land)	SP Test (Moon)
Visual aspect	20%	70%	90%	36%	90%	20%	70%	84%	24%	100%
Taste	22%	72%	90%	28%	96%	22%	72%	90%	22%	96%
Average price (EUR/bottle)	10€	20€	20€	10€	25€	10€	20€	24€	10€	20€
Overall judgment	20%	82%	84%	28%	96%	16%	82%%	92%	10%6	98%
Purchasing intention	20%	78%	80%	24%	98%	20%	78%	98%	20	98%

Then the moderator asked the participants to assign a possible purchase price to all Spumante wines tasted (Table 8).

The participants were then prompted to reflect on what the main occasion for consumption of the sparkling wines tasted might be and where they might buy them. Occasions for consumption were declared to be the usual ones of celebrations, holidays, parties, and when sharing special moments with partners.

The most frequent place to buy all the Spumante tasted was the supermarket, but for Planeta (Air), Spumante test (Moon), and Castellucci-miano (Sun) the participants also suggested restaurants and wine shops.

3.3.2. Phase 2 Sensory Test and Focus Group Opinions after Discussion of SOStain Certification

After the moderator explained in detail the sensorial characteristics of the sparkling wines tasted and their strong connection with the territory of production, telling about the production techniques used according to the SOStain certification requirements and describing the cost and the effort to gain this certification, the FG's discussion changed direction [69]. In fact, the participants were much more focused on the wine with the SOStain logo in the bottle and started asking for more information about how the wineries can reduce water consumption, CO₂ emissions, glass, energy, etc., during the production cycle and what the positive impacts of each of those practices are. After the discussion of SOStain certification, the participants were asked to taste the five sparkling wines again. The aim was to test whether their sensory taste changed after the discussion. They were asked to evaluate the wines again in order to measure whether the information given on sparkling wines and SOStain certification had changed their previous judgements. The completed questionnaires showed that the new input from the moderator did not significantly influence the participants' judgments regarding the visual appearance and taste of the five sparkling wines [6,35]. Nevertheless, the judgement towards the SOStain-certified sparkling wine changed. In fact, the assigned possible selling price changed and the overall judgment increased (92%), as did the purchase intention (98%) (Table 8) [31,70].

Moreover, the assigned "right" price did not change for any Spumante wines except the Spumante test. In fact, participants were able to assess/assign the real average market price after having seen the label. The participants justified their interest in the SOStain-certified sparkling wine with their awareness about environmental issues and their appreciation of the virtuous attitude of the winery towards sustainable production systems [60,68,69].

With regard to consumption occasions, participants agreed that the SOStain-certified sparkling wine is very suitable for consumption on special convivial occasions but also as a gift to friends and relatives and should be purchased in wine shops. Participants' purchase intention was mainly motivated by the possibility of contributing to an improvement of the environment by consuming a particular product such as sparkling wine [71]. Therefore, this Spumante appeared to be very appropriate as a special gift or as a special wine to offer to guests [6]. It is even more interesting to see how, besides domestic consumption, the intention to buy is linked to convivial situations in order to be able to discuss this certification and tell other people about the commitment of certified wineries to respecting the environment in every phase of wine production. According to the FG's opinion, this commitment increases the trust towards the producers for the assumption of responsibility towards environmental protection and climate change mitigation, and thus the value of the brand.

4. Discussion

Some interesting elements that emerged from the study deserve further reflection. Firstly, Sicilian companies associated with the SOStain Foundation are aware of the need to move quickly towards greening because the EU requires it and the future of humanity's survival also demands it. However, not all companies are ready for this epochal change [72].

In addition, a lack of communication from companies emerged, which appeared to be not effective or not fully focused on this aspect. Therefore, public institutions should support wine entrepreneurs by implementing campaigns to sensitize citizens towards choosing food products from more environmentally sustainable production systems [73]. The EU has also spoken out in this regard, stating that it is necessary to change the food culture of EU citizens by teaching about the benefits to human and environmental health of choosing healthier products and by favoring brands that adopt agro-ecological practices [73].

Lastly, the results highlight the need for a real financial contribution from public entities at the national and EU levels to enable environmental sustainable choices to also be economically sustainable. Indeed, this would risk penalizing the competitiveness of these companies, both large and small [74].

The study leads to a reflection on what a complete conversion to organic would entail. It opens up questions about how much the 0 km supply chain should be sponsored. It also confirms what is emerging from recent studies, namely, the risk that a total conversion to organic farming would penalize the competitiveness of Italian wine companies in the global market [74,75]. Moreover, in some cases, conversion to organic is absolutely impossible with the current technologies (e.g., greenhouse crops). Certainly, precision farming plays a key role in facilitating the transition toward more sustainable production systems; nevertheless, its application is not easy, especially in less industrialized rural areas [74].

An upstream communication to stakeholders and consumers of the value of the actions undertaken by companies for the wellness of the collectivity by telling them in a simple way about the common objectives is essential. A local example is the establishment of the DOC Sicilia, which has enabled the development of quality Sicilian viticulture over the last decade [69,71–73].

The CAP and National Strategic Plans show the Eco-schemes deemed most suitable depending on the crops, but various regional Rural Development Plans, which should reflect the needs of the different territories, have not been drafted so far. Therefore, it is of paramount importance, in the immediate future, to disseminate the results of studies like this to provide decision-makers with useful hints for the formulation of measures adapted to the real needs of each region's territory [76]. This study has highlighted the specific needs of the Sicilian wine-growing sector, which is a sector of strategic importance for this region (as discussed in Section 1.2, Sicily is one of the leading wine producers in Italy, albeit Sicilian agriculture is still in a condition of structural backwardness).

Therefore, it will be very important to pay much attention to what the financing political choices will be for the wine-growing sector and what the compulsory practices to be adopted by wine producers will be, also taking into account any negative external factors [77]. In fact, the wine sector is very much affected by negative global market trends. Lastly is the negative impact of the current war in Ukraine (both with regard to exports to Russia and the import of glass for bottles). So, to be competitive in a global market, it is crucial to be flexible and reduce production costs. However, this is not exactly easy for wine producers, and even more so for those in the EU's "convergence objective" regions.

In this articulated and complex scenario, multi-level policymakers have a fundamental role in the future of Sicilian wine growing (and other similar wine territories in the EU) by choosing where to allocate financial support for investments in the green transition and in the ways in which funding is provided to enterprises [77].

Furthermore, on the consumption side, it is evident that the consumers interviewed (both in the sample survey and in the focus groups) appeared to be aware of the importance of environmentally friendly practices and ethical choices in favor of environment protection and climate-change mitigation [64–71]. However, regardless of the ethical value attributed to these behaviors, each party—consumers and producers—has to deal with its own financial means. Therefore, higher costs for companies should be repaid either by the CAP or by the market (premium prices for their products). The results show that more experienced consumers are more willing to pay a higher price for SOStain-certified

wines [78–81]. Certainly, such wines are not marketable to ordinary consumers or in the large-scale retail trade, so sales numbers would be low anyway [78–81]. Perhaps more affluent consumers could afford more expensive certified wines [82]. However, not all consumers are willing to pay high premiums for a sustainability-certified wine even if they share in principle the need to change one's behavior with the aim of preserving the planet. However, the study did not investigate the respondents' actual willingness to pay (WTP). Certainly, focus groups are often used to generate hypotheses to be proven later, but the claim that those ideas that emerge must always necessarily be followed by quantitative research seems rather outdated. It is true that quantitative data often have problems with the extendibility and generalizability of the results, but the idea that qualitative results can be quite valuable in their own right is now well established, as are focus groups as a means of producing such results [83,84].

In order to complete the overview and supplement the results with new useful information for policymakers and winemakers, future studies could be carried out. First, it would be interesting to analyze the WTP a premium price for SOStain-certified wines [85] of a niche of experienced consumers who are more economically comfortable in order to understand the effectiveness of positioning these wines through the Ho.Re.Ca. sector. Moreover, it would be interesting to study the power of social media platforms and wine influencers in developing consumers' responsible consumption behaviors [49,61,86].

Moreover, due to the replicability of the methodology applied, the same study can be repeated in other wine regions where wines with sustainability certifications are produced. For example, it would be interesting to conduct future research to confirm the results or supplement them with new knowledge of other wine territories, for example, in the EU, the USA, Australia, South Africa, etc., that are similar in terms of having a variety of ecosystems but different in terms of culture and technological development. In addition to the producers' analysis, a consumer survey in other countries can also provide interesting information on wine consumer preferences and behavior in relation to the topic of sustainability certification of wines [87].

On a territorial level today, many small winegrowing enterprises with structural and management characteristics, which differ from those of the founders/early associate enterprises, are joining the SOStain Foundation. Although this will not lead to a change in the SOStain vision, it will certainly lead to differences in the mission, i.e., how to achieve the long-term objectives set in favor of the environment and climate for the preservation of the planet. Therefore, it would be interesting to replicate the study in the near future also in the Sicilian territory to learn how the results may have changed [88].

Furthermore, it is noted that the current scenario could also change as a result of the application of the CAP through the draft Rural Development Plan (RDP) in Sicily. The RDP will, in fact, soon be drafted by policymakers and will certainly lay the foundations for tomorrow's agriculture through the choice of agro-ecological practices to be adopted in Sicily. Sustainability is a principle that, to be applied, needs flexible instruments that can be adapted over time and in different geopolitical contexts, so the instruments must be periodically reviewed. Due to the complexity of the sustainability concept in itself, which is extremely wide and has lots of implications/interconnections, and considering the new CAP's requirements, it might be possible to modify the current SOStain production regulations and thus the conditions to which winemakers will have to refer [89,90]. Therefore, there will certainly be additional spaces for even more extensive research on this topic with the aim of highlighting opportunities to create synergies between various initiatives and define common sustainability strategies and indicators for the Italian wine sector.

5. Conclusions

Wine companies in Italy have also begun to consider voluntary certifications as an opportunity to make consumers aware of the interest and sensitivity of producers to issues of environmental sustainability and climate-change mitigation. This study highlighted the information asymmetry between producers and consumers with regard to the SOStain

certification and all the agro-ecological practices to be carried out by winemakers for the greening transaction. The study revealed that consumers are aware of issue related to environment protection and climate change; nevertheless, their opinions are mixed about the ways to achieve the sustainability goals because their information is lacking. The results showed that communication is ineffective and that the communication means used by producers, like institutional channels or personally, are not those preferred by wine consumers, which are, instead, a company's social media and websites. The findings do not provide definitive and exhaustive answers to the broad issues raised. However, they definitely do offer useful insights into the tradeoff between environmental and economic sustainability and highlight criticalities at the local level and in other wine territories with similar characteristics. However, with regard to the territorial impacts of the study results, proper suggestions regarding positioning special wines with sustainability certifications for a niche segment of expert consumers through the Ho.Re.Ca. channel were provided.

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