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Exploring consumer behavior and willingness to pay regarding sustainable wine certification

Filippo Sgroi [a,*], Liborio Maenza [a], Federico Modica [a]

[a] *Department of Agricultural, Food and Forestry Sciences, University of Palermo, Palermo, 90128, Italy*

A B S T R A C T

Sustainability is a rapidly growing phenomenon at both the European and national levels. The "Green Economy" model and sustainability programs have spared no economic sector. The wine sector has also been swept up in this "green wave," and more and more companies have adopted sustainable production plans and socially responsible behavior. The purpose of this article is to analyze how the wine sector interacts with the main topic of sustainability and communication, particularly certification. More specifically, the goal is to understand how consumers perceive sustainability and how much they are willing to pay for it compared to conventional wine. The analysis and collection of data on consumer behavior and willingness to pay (WTP) for sustainable wine were conducted through an exploratory survey. The research results highlight that consumers are not very conscious about sustainability and this lack of awareness regarding sustainable wine is, at least in part, attributable to confusion within the industry.

1. Introduction

1.1. Sustainability between theory and analysis

In recent years, wine companies have been moving towards an increasingly sustainable attitude in terms of business models, technologies, processes, products, strategies, and relationships, and this is because sustainability is no longer erroneously seen as a fad but has become a real 'inescapable evolutionary paradigm' [1]. To understand the relationship between the agri-food sector and sustainability, it is essential to outline the concept of sustainability itself. Since it entered into the economic and ecological lexicon, the term has taken on a multidisciplinary connotation that encompasses sectors as far apart as economics, science, technology, and management, and involves them on a polarized time horizon, focused as much on the present moment as on the future. The concept of sustainable development has evolved both from an international and EU legal perspective and in its interdisciplinary environmental, economic, and socio-cultural dimensions. The most common definition of sustainable development is derived from the report Our Common Future, or the Brundtland Report of 1987. In the document published by the World Commission on Environment and Development (WCED), coordinator Gro Harlem Brundtland defines sustainable development as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" [2]. It complements this definition by specifying that development, to be sustainable, must reconcile economic, social, and environmental aspects. These three aspects, defined as the three pillars or 'triple bottom line', are related to each other, not excluding but mutually reinforcing as they belong to the same superstructure. The exclusion of any of the dimensions indicates a lack of long-term sustainability of the initiative or, at least, a high potential for development in terms of sustainability in the short term. Sustainability will be 'the ability, over the coming decades, to move from a society in which well-being and economic health are measured in terms of growth in material production and consumption to a society in which we can live better by consuming less, avoiding the squandering of natural systems, and thus natural capital, and developing the economy by reducing current inputs of energy and raw materials'. "Recognizing the limits of economic growth means assessing its impact on the environment and society through the rational and efficient use of resources and especially by favoring the use of renewable resources" [3] Fig. 5

1.2. Sustainability and Competitiveness: business and consumption

After a general outline of the concept of sustainability, which is essentially based on three pillars (environmental, economic, social), the following work also includes a look at what is wine sustainability and those indicators that are most frequently measured in the sector, such as the carbon footprint, water footprint, vineyard indicator, and land indicator. More and more often we hear about sustainability in the wine sector, and it is now clear that this is the path that wine companies must take to meet the goals set by Agenda 2030 and to maintain a high level of

* Corresponding author.
E-mail address: filippo.sgroi@unipa.it (F. Sgroi).

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competitiveness in the markets, especially internationally. The introduction of sustainable practices in the vineyard and cellar reduces energy consumption, keeps the soil healthy, and protects air and water quality. It also improves relationships with employees and communities, preserving local ecosystems and optimizing the economic viability of wineries. So, when we talk about sustainable viticulture, we are referring to a set of practices that are environmentally friendly, socially equitable, and geared towards sustaining a productive and economically competitive fabric. This approach has become indispensable in responding to the negative impact of external threats, such as climate change, exposure to air pollution, and the scarcity of water and energy. Achieving these objectives requires concrete and organized action at all stages of the life of the bottle: from grape cultivation to wine production, through bottling and distribution, and into consumers' homes. In recent years, consumers have shown increasing interest in 'sustainability' in the wine sector worldwide. The first significant project created to promote sustainability in the world of wine was the 'Pest Management Programme'. Implemented in California in 1992. In Europe, one can find interesting initiatives such as the French 'Vignerons en Development Durable' and in Italy the 'V.i.v.a- Sustainable Wine'. VIVA is a program launched in 2011 by the Ministry of Environment and Energy Security to promote sustainability in the Italian wine sector. VIVA is the only Italian public standard for measuring and improving the sustainability performance of the wine sector. The program benefits from the scientific collaboration of the OPERA Research Centre European Observatory for Sustainable Agriculture of the Cattolica del Sacro Cuore University. The VIVA project is shared and adopted by many Italian wine producers, and the number of wineries adhering to it is steadily growing. It also provides a valid basis for other voluntary sustainability certifications such as the SOStain Program. VIVA measures the sustainability performance of companies and products, mainly through the calculation of four indicators, selected as most representative of wine production, namely: air (carbon footprint, compliant with ISO 14067:2018 of Product and 14,064:2018 of Organization); water (water footprint, compliant with ISO 14046:2014); vineyard (impact on soil and water reserves of agronomic vineyard management); territory (analysis of the link between wine and its territory). To this day, there is still no EU legislation for the wine sector that regulates the use of the term 'sustainability' as there is for organic wine, but there are voluntary standards, of a public or private nature, that provide a detailed explanation of the environmental, social and economic standards that must be met throughout the wine production chain for a company to claim to be working towards sustainability. Voluntary sustainability standards provide a detailed explanation of the environmental and social standards that must be met in the production process, with a clear reference to the three pillars of sustainable development. Together with third-party certification and labeling systems, they constitute a new form of social contract involving private companies and representatives of civil society. These voluntary initiatives can contribute to sustainable development as they can foster communication between global market actors by often providing information related to traceability or ensuring compliance with certain parameters [4], although sometimes this implies that consumers have to be willing to pay a price premium to cover investments in governance and infrastructure for sustainability or to cover increased production costs [5]. In this respect, the adoption of sustainability standards can play a key role in the long-term competitiveness of wineries, thus being a potential generator of economic benefits. Furthermore, brand reputation could increase sales among environmentally aware customers, also improving their perception of value and willingness to pay for sustainable wines. Several authors state that the adoption of sustainable practices improves the sustainability of the wine-growing business structure [13]. Furthermore, sustainability in viticulture has positive impacts on social (corporate and territorial) sustainability [14,15]. The practice of wine sustainability improves business strategy from a long-term perspective [16,17,18]. Sustainability needs to be communicated and thus perceived by the consumer [19]. Therefore, companies wishing to embark on a path of sustainability can autonomously decide to adhere to one of the various standards available today for the wine sector, such as VIVA, Equalitas, and SOStain for the Sicilian territory, thereby committing themselves to follow and respecting its rules. Compliance with the standards defined by the specifications is verified by a third party that carries out a thorough check and issues the sustainability certification. Some of the sustainability standards not only provide for the certification of the entire company (Sustainable Company) but also allow for the certification of individual products (Sustainable Wine). Among the many 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 the first three capital letters of the word to highlight the meaning of 'SOS' (i.e., desperate plea for help). It thus evokes the meaning of 'helping to 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 winery and promoted by the Protection Consortium *Vini Doc Sicilia* and *Assovini Sicilia* to certify the sustainability of the regional wine sector by bringing together wine producers who voluntarily choose to adopt sustainable vineyard cultivation and wine production practices. The SOStain project began its operational phase in 2020 with the establishment of the SOStain Sicilia Foundation. Thanks to this project, Sicily becomes the first Italian region to develop a sustainability protocol for wine production. The program includes a specification consisting of 10 minimum requirements to obtain SOStain certification, developed in collaboration with academics from the University of Palermo and researchers from the Universities of Milan and Piacenza. The requirements include aspects ranging from measuring water footprint and carbon footprint to controlling bottle weight, from preserving floristic and faunal biodiversity to enhancing human and territorial capital, and from energy saving to consumer health. In the present study to investigate consumer behavior and their willingness to pay (WTP) for sustainable wine, an exploratory survey of a sample of consumers was conducted.

2. Materials and methods

The analysis and data collection of consumer behavior and willingness to pay (WTP) for sustainable wine was carried out through a survey explorative, in the form of an online questionnaire, using the main social network channels (WhatsApp, Facebook, Instagram). The limitations of exploratory surveys are well-known in the literature [6]. However, they allow us to have in immediacy data of some importance and enable us to cover a geographic universe that with direct surveys would be costly and time-consuming. This method of administering the questionnaire is very timely and provides more data on the population; in fact, it was quite effective for the objectives of the research, as it facilitated the wide dissemination of the survey questionnaire. Some data reported by the Annual Report on Internet use show that Internet penetration in Italy stood at 82% (January 2020); in particular, 94% of Internet users, aged between 16 and 64, use smartphones to connect, and 99% of them have visited or used a social network or messaging service. The questionnaire administered was constructed using the Google Forms platform. To ensure the comparability of the information and to be considered a valid survey instrument, an attempt was made to formulate the questions clearly and objectively, avoiding any possible bias in the answers. Consumers were asked to answer questions proposed by the questionnaire divided into socio-demographic questions; consumption questions; sustainability relevant factors. The study was conducted in full compliance with national privacy regulations. All participants were fully informed of the requirements of the study and were duly warned before departure that it would be an anonymous questionnaire. Participants completed the questionnaire by connecting to the link generated by the Google platform. Once completed, each questionnaire was sent to the Google platform, and the final database was downloaded as a Microsoft

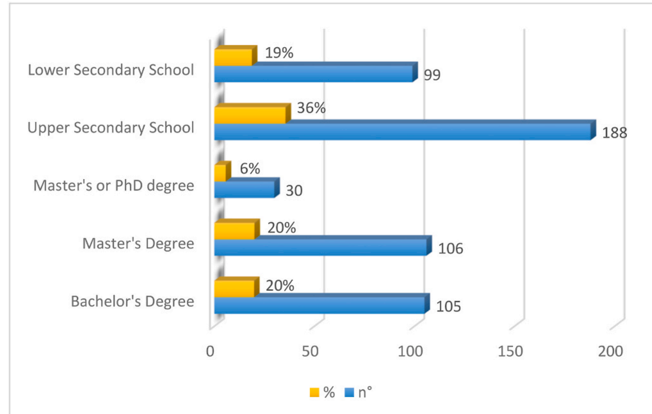
Excel spreadsheet. The sample under analysis consisted of 528 statistical units from Southern, Central, and Northern Italy. The survey was conducted from December 5, 2022 until February 10, 2023. The study of consumer behavior as well as the willingness to pay for a given product is the starting point for the definition of marketing strategies and choices regarding product, price, communication, and distribution policies. The aim of the survey was therefore to find out whether people pay attention to the information on the label, whether they were interested in buying wine with a sustainable label and what kind of guarantee they perceived in this type of label, whether they were aware of sustainability certifications such as, for example, SOStain, and finally how much more they would be willing to pay compared to a bottle of conventional wine.

3. Results

The web survey ended on February 10, 2023 and the data were collected after careful analysis. Participants in the survey were 528 consumers between the ages of 16 and over 70 who filled out the questionnaire. Women accounted for 44% of the participants, while the remaining 56% were men. The variability of the age sample shows the multiple participation of all age groups, which makes it clear how many participants of each age contributed to the questionnaire. To better analyze the results, the sample of consumers interviewed was divided into age groups, as in other similar research. The results showed that the highest percentage of participants was in the 21–30 age group with 39% or 207 participants. This is followed by the 31–40 age group represented by 26% or 135 participants. However, the Over 70s age group also recorded responses, although with the lowest percentage being 2% or 9 participants, while the 61–70s age group was represented by 4% or 19 participants. Finally, the 41–50 and 51–60 age groups recorded a percentage of 11%, with 60 and 59 participants respectively (Fig. 1).

Focusing, then, on the educational qualifications of the questionnaire participants, it can be seen that more than half have a medium-low educational qualification (high school diploma or lower) and the remainder a medium educational qualification (Bachelor's or Master's degree or doctorate). In detail (Fig. 2), it can be seen that most of the participants have a high school degree, exactly in terms of numbers we have the highest percentage with 36% or 188 participants.

Next, again in descending order with a percentage of 20%, we have participants with a Bachelor's degree and a Master's degree, with 105 and 106 participants respectively. Participants with a lower school leaving certificate were 19% or 99 participants, while the last with 6% or 30 participants were participants with a Master's or Ph.D. degree. In addition, the questionnaire also asked participants for their city of residence, referring to the population size of their city. The questionnaire question was divided into 3 options in which, one had the choice between small size, i.e. towns with a population of up to 5000; medium



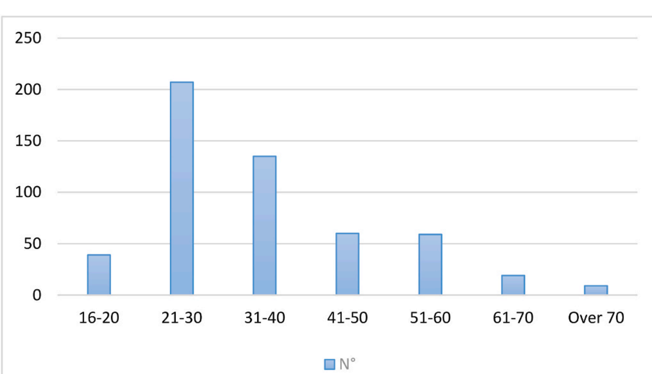
Source: elaboration of collected data

Fig. 2. Distribution of the sample by level of education.
Source: elaboration of collected data

size, towns with a population between 5,0001 and 250,000; large size, towns with a population of more than 250,000. The largest percentage of 43% or 225 participants was recorded for residents of towns with medium population size. This was followed with 37% or 196 participants by residents of towns with a small population size and finally by residents of towns with a large population size with 20% or 107 participants. Finally, to conclude the socio-demographic part of the questionnaire, participants were asked to which income bracket they thought they belonged. The options can be seen in Table 1 with their respective results.

Among the various packages of questions put to the respondents, of particular importance are those questions that allow us to define the consumption characteristics of wine drinkers. From the results of the questionnaire, it was possible to state that the majority consume wine, both men and women. Specifically, 6% of the 528 respondents stated that they do not consume wine at all, while the majority, 94%, stated that they consume wine relatively frequently, which can be seen in Fig. 3 In addition, the questionnaire asked participants "where do you buy wine?", with the possibility of expressing three preferences among the various options available (Table 2) (see Fig. 4).

From the table, it is interesting to see how, although a large part of the sample buys the product in supermarkets, the percentage of purchases made directly from the producer or in wineries and specialized shops such as wine shops are also significant. This confirms how wine is now perceived almost as a culture and therefore, more attention is paid to a conscious purchase in shops where a wide range of products can be found, with different types of quality and also, more qualified staff to respond to any needs of the potential buyer. Another important data revealed by the questionnaire is whether wine consumers pay attention to the information on the label, 76% responded that they do pay attention to the information on the label and the remaining 14% said they do not pay attention to the information on the label. As regard the price of the bottles consumed is concerned and observing the relative frequency of the answers (Table 3.), it can be seen that the majority of statistical units consume wine with a low-price range, the percentage of consumers who consume wine with a medium-high price range is also



Source: elaboration of collected data

Fig. 1. Distribution of the sample by age group.
Source: elaboration of collected data

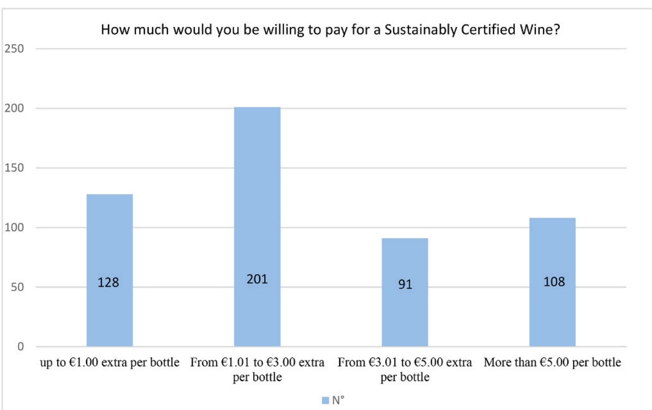
Table 1
Annual income of the sample.

Annual Income €	N°	%
More than €50,000	*63*	*12*
From €25,001 to €50,000	*155*	*29*
From €10,001 to €25,000	*204*	*39*
Up to €10,000	*106*	*20*

Source: elaboration of collected data

Source: elaboration of collected data

Fig. 3. Distribution of the sample according to the frequency of consumption. Source: elaboration of collected data



Source: elaboration of collected data

Fig. 4. Willingness to pay for a sustainable certified wine. Source: elaboration of collected data

significant

In detail, it can be seen that the largest percentage, 24% represented by 125 respondents, declared that they buy wine in the price range from 5.01€ to 7.00€, followed by 19% represented by 102 respondents in the price range from 3.00€ to 5.00€. The lowest percentages are recorded in the high price ranges, e.g. the lowest is between 11.01€ and 13.00€ with 6% or 33 respondents.

Focusing on the subject of this paper, that is, the certifications on the label that guarantee consumer compliance with the company's declared practices and the consumption of sustainable wine. The analysis shows that 88% of wine consumers are interested in buying wine with sustainable certification and only 12% are not interested. Based on this important result, the participants were asked whether they were particularly familiar with the SOStain certification. The result of this question was not positive as only 35% of the participants were familiar with SOStain certification, while 65% stated that they were not familiar with it. It can be deduced from this last data that the member companies, but also the SOStain Sicilia foundation, do not communicate the objectives of the program efficiently to the consumer. Examining one of the salient features of the questionnaire, it was seen that the majority of the sample interested in buying sustainably certified wine is also willing to pay a price premium. Looking at Table 4, it can be seen that the majority of the sample (38%) is willing to pay a price premium of between € 1.01

Table 2
Distribution channels.

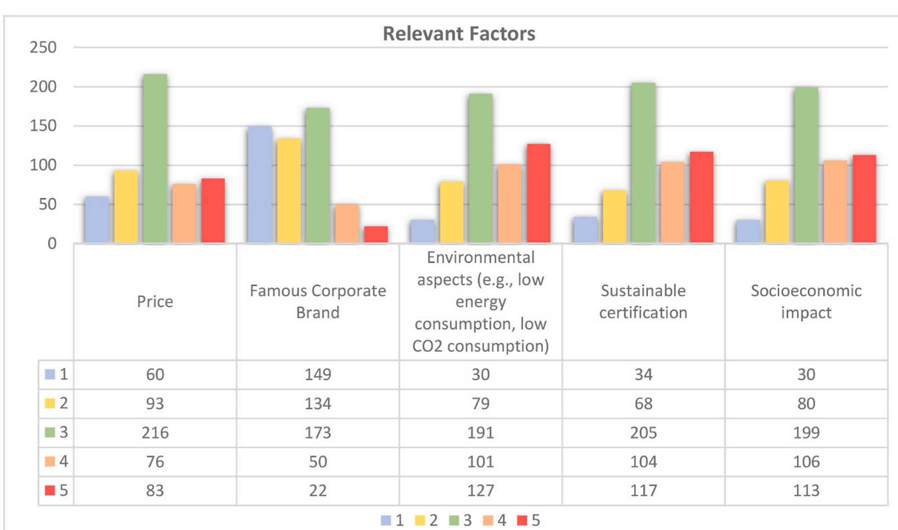
Where do you purchase Wine?	N°	%
Supermarkets/Hypermarkets	*273*	*52*
Direct sales from producer to consumer (Km0-short supply chain)	*172*	*33*
From a Cellar/Cooperative	*138*	*26*
Wineries	*156*	*30*
E-commerce/Online	*56*	*11*

Source: elaboration of collected data

Table 3
Price of one bottle of wine (750 ml).

How much do you buy for one bottle of wine?	N°	%
From €3.00 to €5.00 per bottle	*102*	*19*
From €5.01 to €7.00 per bottle	*125*	*24*
From €7.01 to €9.00 per bottle	*87*	*16*
From €9.01 to €11.00 per bottle	*91*	*17*
From €11.01 to €13.00 per bottle	*33*	*6*
From €13.01 to €15.00 per bottle	*52*	*10*
more than €15.01 per bottle	*38*	*7*

Source: elaboration of collected data



Source: elaboration of collected data

Fig. 5. Relevant factors for buying sustainably certified wine. Source: elaboration of collected data

and € 3.00 per bottle, followed by 24% of respondents who said they would be willing to pay a price premium of up to € 1.00 per bottle. Also significant is the percentage (20%) of the group of respondents who stated that they would be prepared to pay a price premium of more than € 5.00 per bottle. This is synonymous with a high perception of sustainability and, in general, with the fact that consumers in this price bracket positively perceive the characteristics that differentiate a sustainable wine from a conventional one and that the 'gap' between one and the other is considered to be high by respondents.

In addition, the questionnaire asked respondents for their opinion of how they perceived a sustainable label. In detail, they were asked what kind of guarantee a sustainable label can give, with the possibility of selecting an answer from the 3 options provided in Table 4.

Therefore, it can be deduced from the results that consumers perceive sustainable wine not only as more economic support for local producers but also, above all as higher quality and origin of raw materials. Finally, the questionnaire with the aid of the Likert scale technique respondents was asked to indicate from the surveyed factors considered (price, famous company brand, environmental aspects, sustainable certification, socio-economic impact), their degree of agreement or disagreement with what expressed by the statement: "these elements are important for the purchase of sustainable wine" (graph 5). For each item, an agreement/disagreement scale is presented, in this case, 1 indicated complete disagreement and 5 completely agree.

Analyzing in detail each attribute proposed by the questionnaire, price corresponds to the money demanded in exchange for a product or service, although, speaking in a broader sense, it is more correct to define it as the "sum of all values that a customer has to give up to obtain the benefits of owning or using the given product or service". Historically, it is the factor that mainly influences customers' consumption choices, although, in recent decades, non-price factors have become increasingly important. In fact, from the results of the questionnaire, the response on the importance of price for the purchase of sustainable wine was quite indifferent, as the largest number of responses (216), scored '3′ on the Likert scale. About the attribute, "famous company brand" for the purchase of sustainable wine, it can also be noted in this case, that the majority of the responses (173) marked, have the value "3″ and therefore, for the consumer, the purchase of sustainable wine about the famous company brand is indifferent. Furthermore, for this attribute, it can also be seen from the graph that the value "1" (149) indicating "complete disagreement" and the value "2" (134) indicating "disagreement" had a significant number of responses. From this, it can be deduced that for the consumer, the attribute of "famous corporate brand" is indifferent to the purchase of sustainable wine, but at the same time with a bias towards "completely disagree". Another relevant factor for buying sustainable wine, proposed by the questionnaire, is the "environmental aspects" understood as low energy consumption or low CO_2 consumption. From this statement, the highest number of responses (191) was recorded for the value "3″ and thus, a level of indifference among consumers but still tending towards the values "4" (101) indicating "agree" and "5" (127) indicating "completely disagree". The other relevant factor in the questionnaire is certifications, tools available to companies to assess and certify their commitment to the environmental protection and impact of their production activities. "If we look at the marketing aspect, the central element is the level of recognition that the certificate has among consumers. If the buyer recognizes the label, such as that of Viva or SOStain, and knows its meaning, then they are also willing to spend a little more to buy a sustainable bottle'. Also in this case, the highest number of responses was found for value "3", indicating a level of indifference on the part of consumers. However, looking closely at the graph, one can also see that the results for values "4" and "5" had a small number of responses, 104 and 105 respectively. Finally, the last relevant factor proposed by the questionnaire is the "socio-economic impact", which is useful for measuring the new incremental wealth generated by the implementation of the infrastructure on the territory. The sum of the individual values provides the total estimate of the impact generated by the company. From this last statement, the highest number of responses, again, was found for the value "3″, which indicates indifference among consumers. However, it can be deduced from the data collected through the questionnaire, that consumers tend to "agree" that the relevant factor "socio-economic impact" for the purchase of wine is important since a small number of responses (106) were recorded for the value "4″ and 113 responses were recorded for the value "5″, which indicates a state of "complete agreement" among consumers.

Table 4
Consumers' perception about sustainable label.

In your opinion, a sustainable label is a guarantee of:	N°	%
High-Quality product	*105*	*20*
Origin of raw materials	*270*	*51*
Greater economic support to local producers	*153*	*29*

Source: elaboration of collected data

4. Discussions

In recent years we are witnessing a radical change in the figure of the consumer, the average level of knowledge is increasing, and consequently, more conscious choices are being made. Customers are becoming increasingly sensitive to sustainability issues, whether environmental, economic, or social. Many companies have been pointing out for some time that market demand is moving towards more conscious and 'active' consumption. The modern consumer takes additional aspects into account in the product selection process, such as its life cycle and the composition of the production chain. Demand therefore evolves, and becomes empowered, realizing that it can drive business choices. This major change in consumer choice drives companies to create more 'sustainable' businesses, which also improves the corporate image. Unlike in the past, implementing policies to change their production systems in favor of greater sustainability is no longer a cost for the company, but rather an opportunity that allows the company to generate greater profits. The evolution we are witnessing has been made possible by the change in consumption habits, the end customer discovers himself to be an actor, a protagonist concerning what the company offers: he is called CONSUM-ACTOR. This new consumer figure values the use of sustainable production techniques and the context in which the purchase is made, which helps us to understand the emergence of the so-called Consum-Actor, an active consumer, more attentive to the environmental, economic, and social sustainability of the product. In the 'traditional' consumer market, there are active companies and passive customers, while in the new model that is emerging, there is the concept of sharing, ideas, resources, and skills, to create value through new forms of interaction. Co-creation of value is a business strategy that attaches great importance to the creation of shared corporate value with the end customer. In the future, the value will increasingly be co-created, and the competition will lie in the level of collaboration the company can establish with the consumer. Customers will increasingly want to be able to make choices that reflect their point of view and interact in the 'style' they prefer. Consumers, therefore, are changing their consumption habits, evolving, educating themselves, and becoming increasingly interested in the sustainability of the product or services they buy. The current crisis further accentuates this change, making the customer more selective and involved in the choice phase. This trend is happening in all sectors, when we design a product and assign a price to it, our focus must always be on the consumer. A survey by 'Il Sole 24 Ore' concerning large-scale distribution has shown that consumers are more moderate in their purchases, especially those dictated by fashions, breaking away from consumer behavior now considered useless and superfluous. Food waste has been almost eliminated, while other areas such as those related to one's well-being, sport, organic food, and health are on the rise. The crisis has allowed Italians to discover a new way of consuming that will not disappear after the crisis. We will therefore have a consumer who is more selective, more demanding, more nomadic in his purchases, and therefore more difficult to satisfy. "The compulsive consumerism of the 80s and 90s is in its twilight years replaced by a more conscious and competent consumerism" (Il Sole 24 Ore, Nielsen). Compared to other food products, consumers' choice of wine is more complex (Lockshin and Hall, 2003). Wine is one of the most differentiated products in the food market. The quality of wine is associated with the region of origin and differs strongly within vintages and wine producers. Consumers have to deal with many different signs on wine labels. It is known that key factors in the choice of wine are country of origin and region of production [7]. Furthermore, grape variety [8], the price [9], and brand [10] are important elements in consumers' choice of wines. In addition to these traditional wine characteristics, sustainable production has become a relevant issue for the global wine industry; corresponding certifications indicate new attributes for consumers' wine choices [11]. As they cannot verify the production method of the purchased product even after consumption, sustainability signals are attributes of belief. Since these types of attributes cannot be accurately assessed by consumers, the expectations they generate affect the perceived quality and sensory experiences of consumers [12]. Therefore, it is important to identify how sustainability characteristics influence consumers' perceptions, preferences, and willingness to pay (WTP) about various traditional wine quality signals.

5. Conclusions

The paper centers around three major themes: the production of sustainable wine, the certifications that communicate to the consumer the sustainable practices adopted by the winery, and finally the analysis of the consumer, how he perceives and if he is willing to pay a premium price for sustainably certified wine. The aim, therefore, was to present these themes and analyze how they interact with each other. Sustainability in the wine sector is a fully realizable requirement, for the well-being of the environment and consumers. It can be a source of great competitive advantage, giving the company greater independence from highly volatile markets such as energy and ensuring a return in terms of image. Sustainability of production, therefore, represents a strategy that the company can adopt to achieve a competitive advantage. This advantage represents a basis for profitability and company longevity. Considering that, the main sub-currents of sustainable viticulture are organic viticulture and biodynamic viticulture, as they only capture, although in different ways, one part of it, the ecological one, leaving out the social and economic aspects. The last, however, are structured with certifications and regulations, a guarantee for the consumer; sustainability, on the other hand, due to its complex nature, has no recognized standard in Italy. The way of certification and regulation by recognized authorities is the best way to reduce confusion within the sector and enable it to operate within established and communicable limits. As a matter of fact, in a context where the consumer is increasingly aware of environmental and social issues, sustainability certification plays a key role in influencing consumer choices, as it allows people to keep track of the sustainable aspects of production, reducing the risk of these being perceived as "credible" attributes negatively influencing purchases. The adoption of certified sustainable practices is therefore an added value for companies and not a limitation from an economic point of view: not only do they allow access to new markets by enhancing communication with customers, but they become potential sources of competitive advantage between similar business contexts. Another problem with the lack of a single sustainability standard is the phenomenon of 'greenwashing'. Today, companies tend to exploit consumer interest in green issues by providing vague or deliberately incomplete information that misleads the recipient. In other words, information is only credible if it is verifiable, as in the case of organic food, which is regulated at the EU level by EC Regulation No 834/2007 and EC Regulation No 889/2008. Furthermore, the data from the questionnaire suggest that in addition to deepening and strengthening communication on sustainability, there is a high level of indifference and confusion among consumers. To this day, unfortunately, there are still very few wineries that have decided to access certifiable sustainability protocols that enable them to assess and certify the environmental impacts associated with production, with a view not only to safeguarding the environment but also to improving the company and communicating with the consumer. This situation is probably the consequence of the widespread idea among the players in the wine supply chain that the adoption of a sustainability standard leads to inevitable management costs, which are more expensive than the benefits that would result from obtaining certification. Therefore, the hope for the future is that unique sustainability standards will be adopted as soon as possible, to prevent the mistrust for wine and sustainable agri-food products from continuing to grow among consumers. On the other hand, as far as producers are concerned, they should be made more informed about sustainability issues, because it has been seen that among the main obstacles to the various wine sustainability programs, the most feared by entrepreneurs are conversion costs and certification costs, as there is a perception that they can be burdensome. In conclusion, it is necessary to continue to work well and hard in the next years to close the gaps that many companies have, also with the help of those companies that have managed in recent years to implement correct behavior. For there to be a real change of course, especially in the area of sustainability, it is imperative that, as has been seen, institutions, both national and EU, continue their efforts to help companies achieve their goals. In the future, research should focus on communicating the importance of sustainability to both entrepreneurs and consumers. This aspect seems relevant because as pointed out, very often both the entrepreneur and the consumer are not aware of the positive effects of sustainability. On the company insofar as it represents a source of differentiated advantage, on consumers insofar as it impacts those aspects of a qualitative nature linked to the demand function of the product.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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