



Università  
Ca'Foscari  
Venezia

Master's Degree in  
Management

Final Thesis

**DIGITALISATION IN THE ITALIAN WINE SECTOR:  
A FOCUS ON ORGANIC WINE MAKING FIRMS**

Supervisor

Prof. Christine Mauracher

Graduand

Vanessa Marchiori

Matriculation number 861689

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## INTRODUCTION

In the current worldwide context, digitalisation is spreading in almost every sector, and people are learning how to interact with new technologies. With the rapid spread of the use of the Internet firms and consumers changed their approach towards the market both in buying and selling processes. In fact, on one hand companies introduced modern productive methods and advanced digitalised marketing strategies, and on the other hand, buyers evolved in their purchase patterns. The spread of the Internet granted easy access to everyone, but this is not the only perk of this technology. Its accessibility generated consequent benefits that are not to be overlooked neither on the productive side nor on the communicative path. The use of the Internet and the Web allowed productive processes to evolve from practices mainly based on the heavy use of workforce to the introduction of automatised machineries that can unburden workload and accelerate productive processes. Furthermore, accessibility allowed an evolution in the communicative strategies, rendering easy the spread of information from all over the world, expanding the user base that can be reached and influenced through the use of marketing. As the Internet and the Web have become part of people's everyday life, firms and consumers adapted to the use of digital tools, first and foremost to Social Media. These have become a valid instrument that allows quick and easy interpersonal connections, and that is the reason why companies started to include them in their marketing strategies, using them as a way to publish information about commercialised products, companies' features and promoted activities. Nevertheless, this approach towards digitalisation was not immediate for all companies around the world, creating a gap between firms that remained more rooted in traditions and those who rode the wave of digitalisation. Among those who reluctantly accepted the use of the Internet are especially SMEs in the wine sector, who find themselves in a place of dualism, torn between the preservation of traditions and the opening towards digital tools that should be used as a way to conform to the current state of the market and grant competitiveness. The understanding of this process of evolution is the driving motive of this thesis that aims at grasping how Italian wine producing firms approach the use of digital tools in both production and marketing, by investigating and describing how companies are able to manage such innovative approach in a sector where tradition and history are so highly

regarded and deeply rooted. To support this, an exploratory online survey has been developed and submitted to a sample of Italian organic winemaking firms, in order to understand their maturity level in terms of digital adoption.

In the first part of the dissertation, the current world wine scenario is analysed, focusing on the definition and description of the distinctive elements between New World and Old World countries. Moreover, a general overview about the Italian wine sector is presented and a focus on the specific organic wine market is displayed, both from international and national point of view. In all cases, actual figures about vineyard surface areas, wine production, wine consumption and international trade of wine are provided. The analysis continues with a brief examination of how the Covid-19 pandemic affected the wine scenario, both from the point of view of consumers and of companies.

The second part of the thesis dives deep into the analysis of the use of digital tools in the wine sector, exploring this concept under three different lights: production, management, and marketing. The whole discourse is based on a review of existing literature on the matter.

In the last part of the thesis, all the results of the online survey are presented and discussed, trying to uncover existing differences or similarities between collected data and previously discussed literature as to give an answer to the main objective of this dissertation, that is understanding the approach of wine firms to digitalisation.



## 1. THE WINE SECTOR SCENARIO AND THE IMPACT OF COVID-19

The worldwide wine sector is part of a complex agricultural panorama that is everchanging and continuously evolving following the rules of globalisation. The times we are living, overwhelmed by the impact of the first global pandemic of the modern times, further complicate and have unexpected repercussions on the market of wine.

In this first part of the dissertation, the general complexity of the worldwide wine scenario will be discussed, before focusing more deeply on the Italian positioning in this competitive sector, and on the growing trend of organic wine. The Italian situation will be briefly discussed in the light of the recent developments caused by the impact of Covid-19 in the global markets, as we entered the third year in which people and markets try to cope with the effects of the pandemic.

### 1.1 The dualism between Old World and New World

Traditionally, the European continent detained the appellative of “Old World” as opposed to the newly discovered lands overseas that were identified as the “New World”, and this distinction stands even in this context of analysis. The Old World can be identified as the place in which traditions are grounded and foregrounded, both generally, and in the wine environment, in which countries such as Germany, France, Italy, Spain and Portugal (Nassivera *et al.*, 2020) still have a long history of wine production that is strictly connected to traditions. On the other hand, there are the innovators, the newly invested wine producers that come from the New World, i.e. Australia, Argentina, Chile, the US, New Zealand and South Africa (Nassivera *et al.*, 2020). This distinction will come at hand in the next paragraphs and in the chapters that follow, and it is important to configurate the gap that stands between these two opposite worlds, a distinction that brings with it different set of managerial choices in the wine market.

The phenomenon of globalisation greatly impacted markets (Spezia *et al.*, 2017), and the wine sector has been invested in the change as much as any other market. The introduction of new producers coming from distant lands brought to light the distinction between the Old and the New World, foregrounding a geographical reconfiguration of

the world powers in the wine sector (Spezia *et al.*, 2017). The dynamics of production and consumption changed drastically, and while the Old World producers became suddenly conscious of the influence that the New World had on the market and on competition, the New World producers decided to differentiate themselves from the producers of the Old World by betting on innovation and economies of scale, to make their cut of the market grow bigger and bigger (Spezia *et al.*, 2017). Furthermore, the growing competition led to the employment of marketing strategies that led more and more to a growing interest in sustainability (Sogari *et al.*, 2017), that is demonstrated by the involvement, especially of younger generations, in the purchase and consumption of products that are environmentally friendly and organic.

Although we will explore the characteristics of organic wine further on in this chapter, as it becomes more and more central in nowadays market panorama, it is now important to focus on the characteristics that differentiate the Old World and the New World countries. In fact, this distinction becomes relevant to be able to better delineate the state of the wine sector and to better contextualise the graphs and data that will be presented as to give a general overview of the context of analysis of this dissertation.

First of all, it is interesting to differentiate the distinctive approaches that the Old World and the New World have to the market. Since tradition stands at the basis of the philosophy that drives producers of the Old World, the fact that production itself is the most important aspect for them it is no surprise (Festa *et al.*, 2016), and it is favoured over every other aspect of the wine enterprise. On the other hand, the push to innovation (Wongprawmas and Spadoni, 2018) is the driving force that brought New World producers to bet more and more on marketing and sales (Festa *et al.*, 2016), and on the actualisation of top down strategies and the adoption of centralised institutional measures that helped the growth and the prosperity of the industry (Stasi *et al.*, 2016).

Both the Old World and the New World producers had to adapt to the expansion and growth of the market of wine, but they chose two very different ways to do so. In the Old World, wineries reshaped themselves to be competitive in a globalised market without renouncing to old methods of production and to their spot on the market, continuing to sell high quality wine, and adopting new methods in marketing (Wongprawmas and Spadoni, 2018). In the New World, producers privileged the use of technology and pushed wineries towards innovation both in production and in marketing,

managing to establish a stable chain between suppliers, producers, organisations, institutions and research for innovation, cutting for themselves a slice of the market that does not bet on the quality of the products, that in fact appears quite standardised, but that bets on a well-engineered supply chain mechanism that grants competitiveness in the market (Wongprawmas and Spadoni, 2018).

Although the distinction among the two Worlds is easily delineated on paper, weighting their choices, simply by analysing the approach to the market that each party favours, is not so easy. As it will be possible to see in this dissertation, the two Worlds greatly differ under many aspects, from the employment of methods of production, to the approaches to digital innovation, but they also differ in their relationships with marketing, and their trends of consumption. With that being said, it is altogether interesting to consider the idea that differences between the Old World and the New World are attenuating and are not as sharp as they used to be. Differences between the parties are more and more liable as producers from both Worlds are adapting to the requests of the market set by a new generation of consumers (Nassivera *et al.*, 2020). This is testified in the first place by the emergence of the Third World of Wine, as countries that were never traditionally involved in the production of wine are beginning to throw themselves in the market. In fact, alongside the Old and the New World there is a third party rising, the so-called “Third World of Wine” composed of countries such as China and India (Spezia *et al.*, 2017; Nassivera *et al.*, 2020). Thanks to globalisation those countries are imposing their presence, once again destabilising the wine market with growing levels of demand and of production, opening the possibility of export other than covering the local demand for wine, grown out of consumer’s changing habits (Nassivera *et al.*, 2020).

However, the distinction between the Old World and the New world is still standing in several aspects of the productive and the marketing sector of the Wine environment, but this will be further analysed in the next chapter.

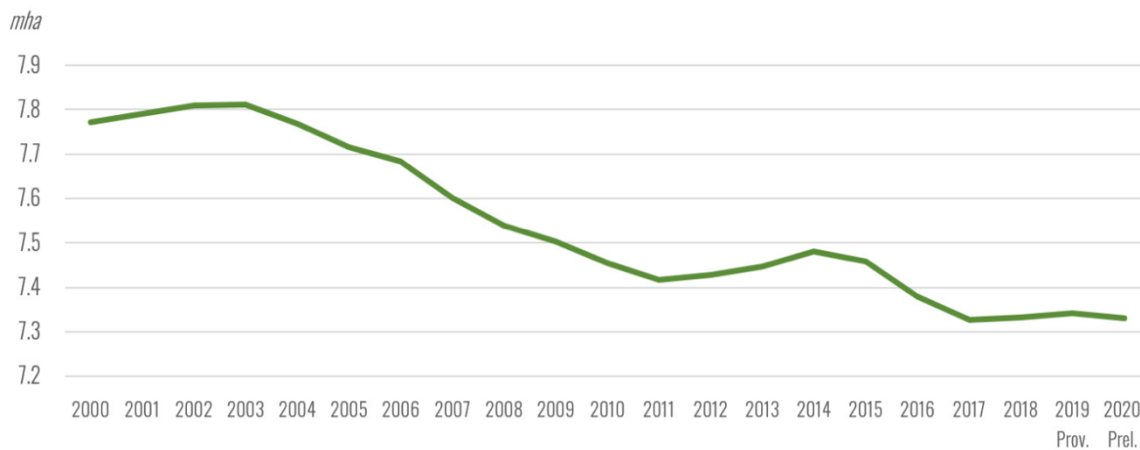
What becomes interesting to analyse at this point is the general worldwide situation in the wine sector, by discussing data on cultivated surface, production, consumption, and international trade, before focusing on the Italian positioning following the same pattern of analysis.

## 1.2 Data reflecting the global state of the Wine sector

The differentiation between the Old World and the New World should interestingly be analysed objectively, through the use of data. Local and international organisations are able to grant new and updated data about vine cultivated surface, production, consumption, and international commercialisation of wine, which will serve their purpose in this context, outlining the general global context in which wine enterprises operate.

To begin from data on the global cultivated surface allows us to contextualise the mechanism, the business, that revolves around the production and the consumption of wine worldwide.

FIGURE 1: OVERVIEW OF THE GLOBAL VINE CULTIVATED SURFACE



Source: OIV, “State of the World Vitivinicultural Sector in 2020”, April 2021, p. 3.

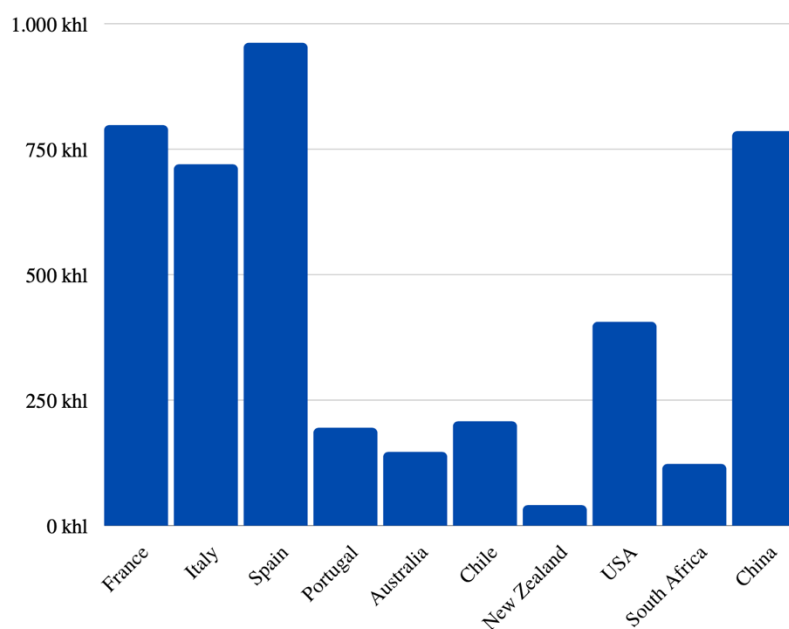
As it is possible to see from the graph here above (Figure 1), in the last decade there has been a significant reduction of the global vine cultivated surface that has stabilised after 2017. The total surface cultivated with vines greatly diminished after countries such as Iran, Turkey, Portugal, Uzbekistan, and the US reduced their vineyard surface area. Cultivated surface is currently estimated to be around 7,3 millions of hectares, as the total surface cultivated with grapes for all purposes.

However, although the cultivated surface appears to be stable in these last years, the distribution of vines is not homogeneous around the world, as it is possible to see from the following graph (Figure 2), that represents graphically the thousands of hectares occupied by vines per country. To present these data, it was necessary to select some

countries that have been afore mentioned in the previous pages as representative of both the Old, the New, and the Third world of wine.

As it is possible to notice, the countries with the largest cultivated surface appear to be small European counties belonging to the Old World, whose cultivated surface remained stable over the last years. In the New World, some countries expanded their cultivated surface recording their all-time high, and some, such as the US, constantly shrunk their cultivated surface. China, the representative country from the Third World of Wine, saw a growth, that nevertheless was less prominent than in the previous years.

FIGURE 2: VINE CULTIVATED SURFACE IN KHL IN REPRESENTATIVE COUNTRIES



Source: OIV, “State of the World Vitivinicultural Sector in 2020”, April 2021, p. 3-4.  
Personal elaboration.

The following graph (Figure 3) presents the percentages of variation of cultivated surface between 2019 and 2020. Furthermore, the graph allows to contextualise the prominence of the single country at an international level, comparing the total surface occupied per country to the world total vineyard surface area.

FIGURE 3: VINEYARD SURFACE AREA AND PERCENTAGE VARIATION OVER THE LAST TWO YEARS

<i>kha</i>	2016	2017	2018	2019 Prov.	2020 Prel.	2020/2019 % Var.	2020 % world
Spain	975	968	972	966	961	-0.6%	13.1%
France	786	788	792	794	797	0.4%	10.9%
China	770	760	779	781	785	0.6%	10.7%
Italy	693	699	701	713	719	0.8%	9.8%
Turkey	468	448	448	436	431	-1.1%	5.9%
USA	439	434	408	407	405	-0.4%	5.5%
Argentina	224	222	218	215	215	-0.2%	2.9%
Chile	209	207	208	210	207	-1.2%	2.8%
Portugal	195	194	192	195	194	-0.2%	2.7%
Romania	191	191	191	191	190	-0.4%	2.6%
Iran*	168	153	167	167	167	0.0%	2.3%
India*	131	147	149	151	151	0.0%	2.1%
Australia	145	145	146	146	146	0.0%	2.0%
Moldova	145	151	147	143	140	-2.0%	1.9%
South Africa	130	128	123	122	122	-0.7%	1.7%
Uzbekistan*	131	111	108	112	112	0.0%	1.5%
Greece*	105	106	108	109	109	0.0%	1.5%
Germany*	102	103	103	103	103	0.0%	1.4%
Russia	88	90	93	96	96	0.6%	1.3%
Afghanistan*	89	94	94	96	96	0.0%	1.3%
Brazil	86	84	82	81	80	-1.2%	1.1%
Egypt*	83	84	80	79	79	0.0%	1.1%
Algeria*	76	75	75	66	66	0.0%	0.9%
Bulgaria	64	65	67	67	66	-1.8%	0.9%
Hungary	68	68	69	67	65	-3.9%	0.9%
Other countries	816	812	811	827	827	0.0%	11.3%
<b>World total</b>	<b>7379</b>	<b>7326</b>	<b>7333</b>	<b>7342</b>	<b>7331</b>	<b>-0.2%</b>	<b>100.0%</b>

Source: OIV, “State of the World Vitivinicultural Sector in 2020”, April 2021, p. 3-4. Personal elaboration.

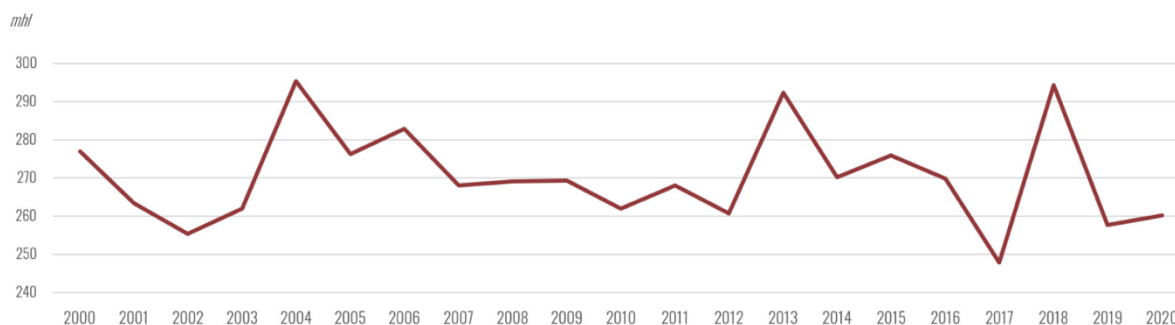
If the total vine cultivated surface appears to be stable around 7,3 millions of hectares, it is interesting to comment the fact that among the top five are enumerated not only Old World countries, but also New World countries. In these top five countries is located more than 50% of the vine cultivated surface worldwide. However, this is because

we are considering vines dedicated to the production of wine, juices, table grapes and raisins (Pomarici and Sarnari, 2018).

Data on vine cultivated surface are easy to comment, and yet are extremely interesting to be able to contextualise the relevance of the wine industry worldwide. The wine making industry, however, is also important to be contextualised for its share in the market, with data on production, consumption, import and export.

Yearly average worldwide production is estimated around 260 mhl, though in the last years, since 2017, below average values have been registered.

FIGURE 4: AVERAGE WORLDWIDE WINE PRODUCTION PER YEAR

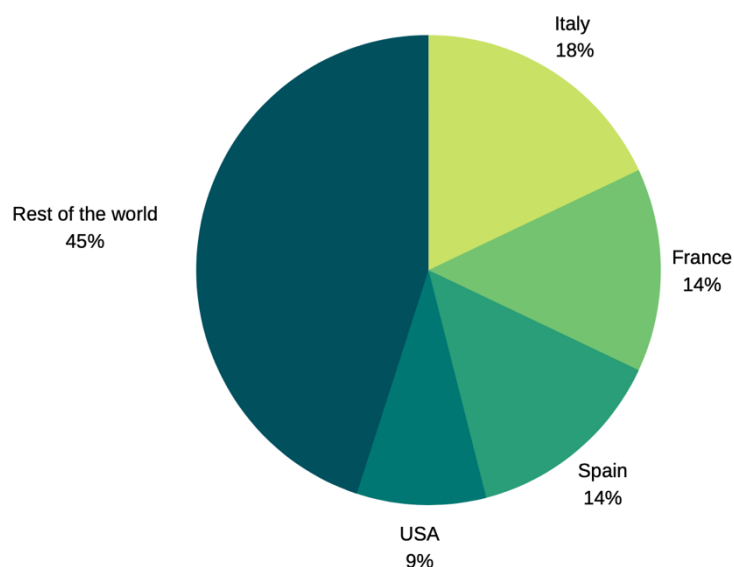


Source: OIV, “State of the World Vitivincultural Sector in 2020”, April 2021, p. 6.

As it is possible to see from the graph (Figure 4), in 2017 the production of wine hit a drastic low, though in the following year production grew higher than the average. In 2019 and 2020 production remained below average, and the first estimates of 2021 predict that yearly production will remain below average, hitting lows as in 2017. The impact of this downfall and the below average levels of production are yet to be evaluated, but the impact of the Covid-19 pandemic has to be taken into account (OIV, 2021a).

Although it is important to frame the world productive situation in terms of hectolitres of wine produced, it is as important to contextualise the production in terms of countries scoring highs and lows of their average production. Exploring in detail the data on production, more than 55% of it is split among four countries, with the three leaders being countries of the Old World. Italy is the leading country for yearly production, followed by Spain and France. The USA follow with a consistent percentage of the world production. All other countries have been considered as a single share, as they do not exceed the 45% share. The following graph (Figure 5) represents visually the situation.

FIGURE 6: MAJOR ESTIMATED WINE PRODUCING COUNTRIES COUNTRIES IN 2021



Source: OIV, “*La produzione di vino nel mondo 2021 – prima stima OIV*”, from *I numeri del vino*, November 2021. Personal elaboration.

FIGURE 5: WORLDWIDE ANNUAL PRODUCTION OF WINE HL/M

Hi m	2014	2015	2016	2017	2018	2019	2020E	2021E	Media
Italia	39.7	48.6	51.6	43.8	54.1	49.2	49.1	44.5	45.8
Francia	46.7	47.8	44.4	36.8	49.5	42.1	46.7	34.2	44.0
Spagna	38.2	37.2	38.8	33.0	45.1	34.1	40.7	35.0	37.0
Germany	9.2	8.9	9.0	7.5	10.3	8.2	8.4	8.8	8.6
Portugal	6.2	7.0	6.0	6.7	6.1	6.5	6.4	6.5	6.4
Russia	4.9	5.6	5.2	4.5	4.3	4.6	4.4	4.5	5.3
Romania	3.8	3.6	3.3	4.3	5.1	3.8	3.8	5.3	4.1
Hungary	2.6	2.6	2.5	2.5	3.6	2.4	2.9	3.1	2.6
USA	23.7	21.7	24.9	24.5	26.1	25.6	22.8	24.1	23.2
China	11.1	11.5	11.4	11.6	9.3	8.3	6.6	0.0	10.1
Australia	11.9	11.9	13.0	13.7	12.7	12.0	10.6	14.2	12.3
Argentina	15.2	13.4	9.4	11.8	14.5	13.0	10.8	12.5	13.3
Chile	10.5	12.9	10.1	9.5	12.9	11.9	10.3	13.4	11.3
South Africa	11.5	11.2	10.5	10.8	9.4	9.7	10.4	10.6	10.4
Other	28.8	29.7	27.4	29.2	30.8	28.6	28.1	33.6	30.5
<b>Total</b>	<b>264</b>	<b>275</b>	<b>268</b>	<b>250</b>	<b>294</b>	<b>260</b>	<b>262</b>	<b>250</b>	<b>265</b>

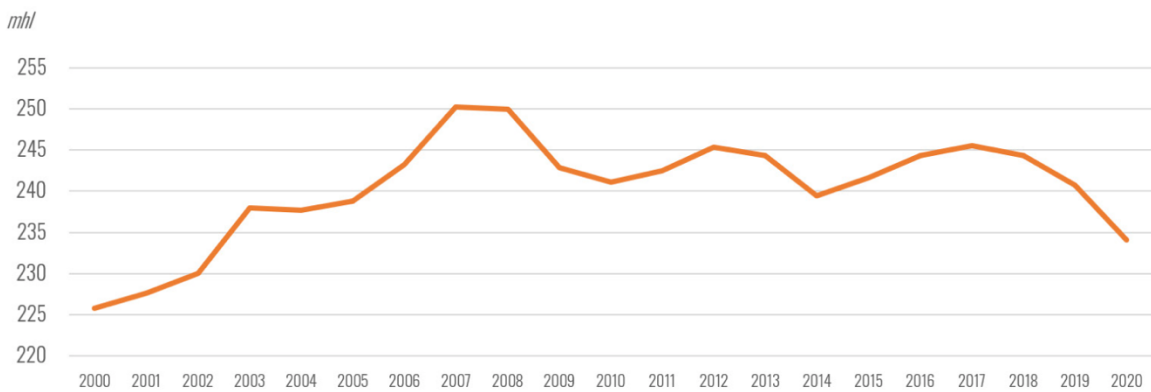
Source: OIV, “*La produzione di vino nel mondo 2021 – prima stima OIV*”, from *I numeri del vino*, November 2021. Personal elaboration.



However, as the above graph shows (Figure 6), it should be considered that according to 2021 previsions, the southern hemisphere registered an increase of production in Australia, Argentina and Chile as leading countries, while the northern hemisphere registered another decrease, but with countries of the European Union remaining the most productive worldwide, accounting for more than 50% of the world production of wine (OIV, 2021a).

On the demand side, the patterns of behaviour of the consumers changed over the years, led by the globalisation process, and by the fact that wine assumed a prominent role in people’s lives, and came to symbolise a certain social status, other than a purely gastronomic experience. People from all over the world imitated what in the collective imaginary is a symbol of the European lifestyle (Spezia *et al.*, 2017).

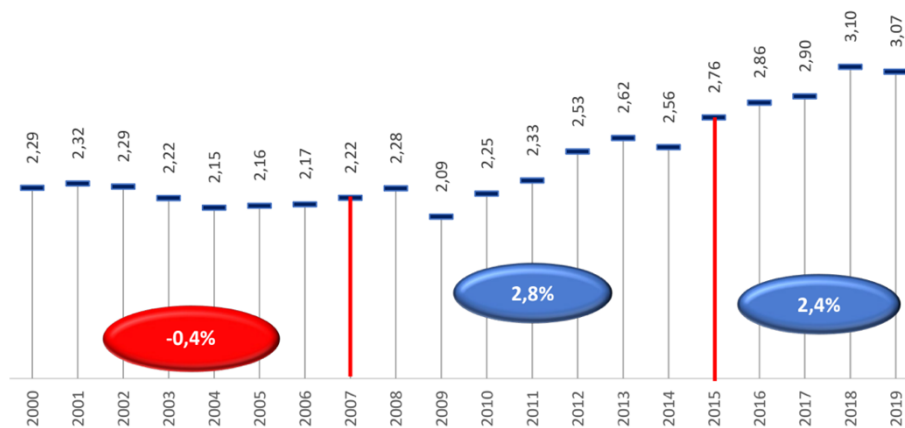
FIGURE 7: WORLD CONSUMPTION OF WINE



Source: OIV, “State of the World Vitivinicultural Sector in 2020”, April 2021, p. 9.

Although the general demand for wine decreased in the last decade, as shown by the previous graph (Figure 7), the quality of wine increased. Wine is currently following a trend of “premiumisation”, a process of wine value appreciation that allows to sell higher quality wine with higher prices (Del Rey and Piccoli, 2020). Therefore, the fact that the demand of wine suffered an arrest in growth in the last few years does not properly reflect the worth value of wine sold. The analysis of the tendency of the average price of exported wine (Figure 8) allows us to demonstrate this theory.

FIGURE 8: AVERAGE PRICE OF EXPORTED WINE

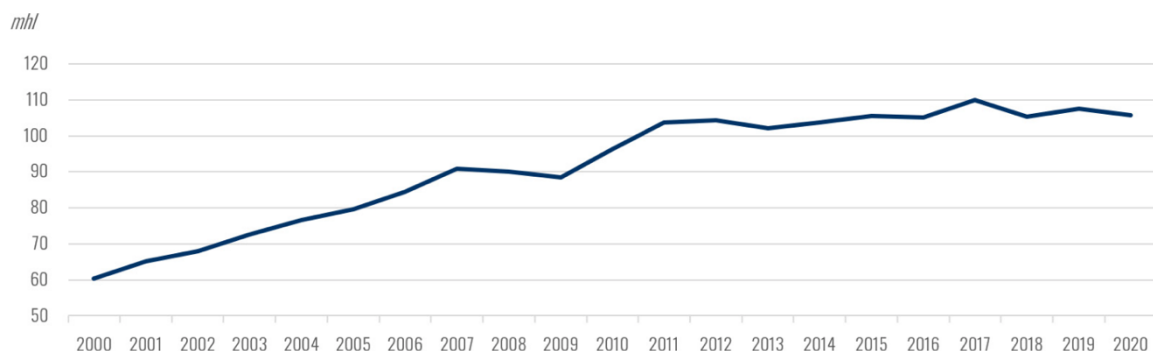


Source: Del Rey, Rafael, Piccoli, Fabio, “Il mercato del vino in Italia e nel mondo prima e dopo il Covid-19 - Situazione, tendenze e sfide per il vino a livello mondiale”, December 2020, p. 18.

International trade value of wine is the last important aspect that should be analysed in order to complete a general presentation of the actual state of the market of wine worldwide.

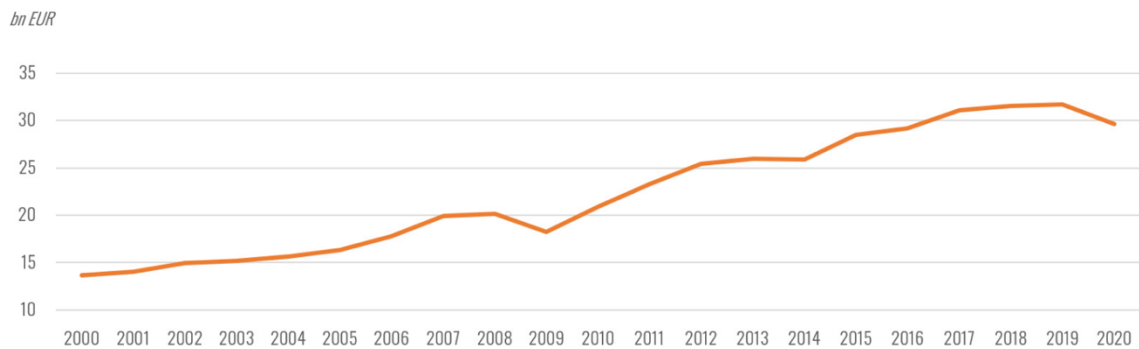
It should be considered that in the last two years, from 2020 onwards, the global pandemic of Covid-19 struck a serious blow to the global market that was born with globalisation, holding back global trade. Therefore, it is not surprising that data on worldwide import and export are not portraying a growing and decisive growth, but a slow decline, both in volume and in value (Figure 9 and 10).

FIGURE 9: INTERNATIONAL TRADE OF WINE BY VOLUME



Source: OIV, “State of the World Vitivinicultural Sector in 2020”, April 2021, p. 13.

FIGURE 10: INTERNATIONAL TRADE OF WINE BY VALUE

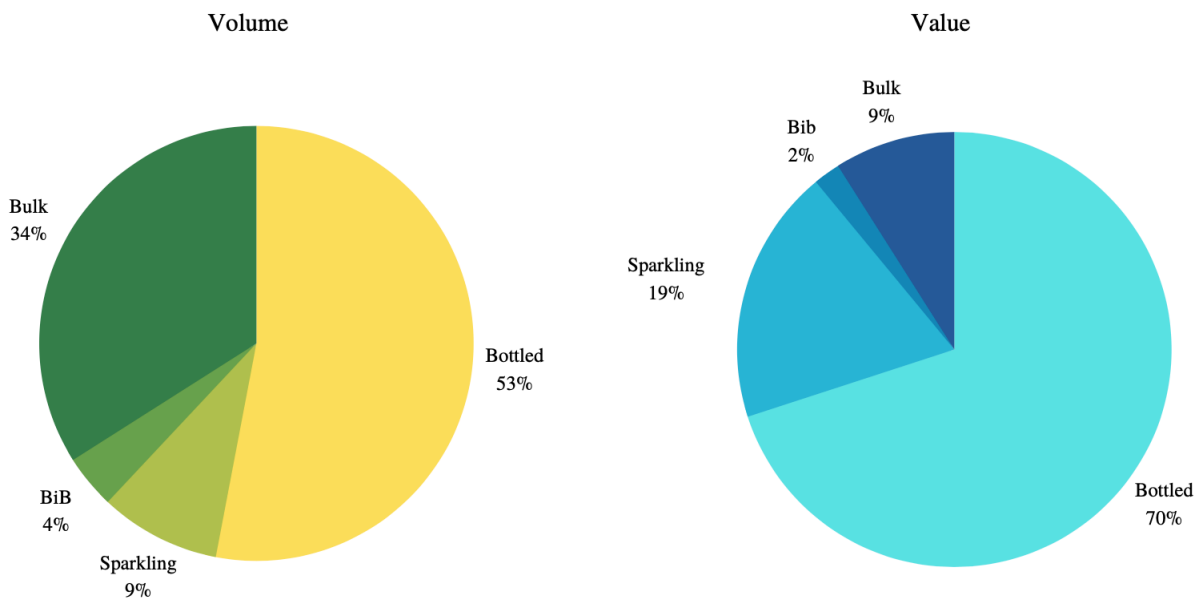


Source: OIV, “State of the World Vitivinicultural Sector in 2020”, April 2021, p. 13.

Furthermore, what is interesting to consider is which is the most exported product worldwide, and which countries are the greatest exporters and importers.

In order to be analysed, wines were divided into four categories: <2 l bottled wine, sparkling wine, 2 to 10 l bag in box wine (BiB), bulk wine >10 l (Figure 11).

FIGURE 11: KINDS OF WINE SOLD GLOBALLY BY VOLUME AND VALUE



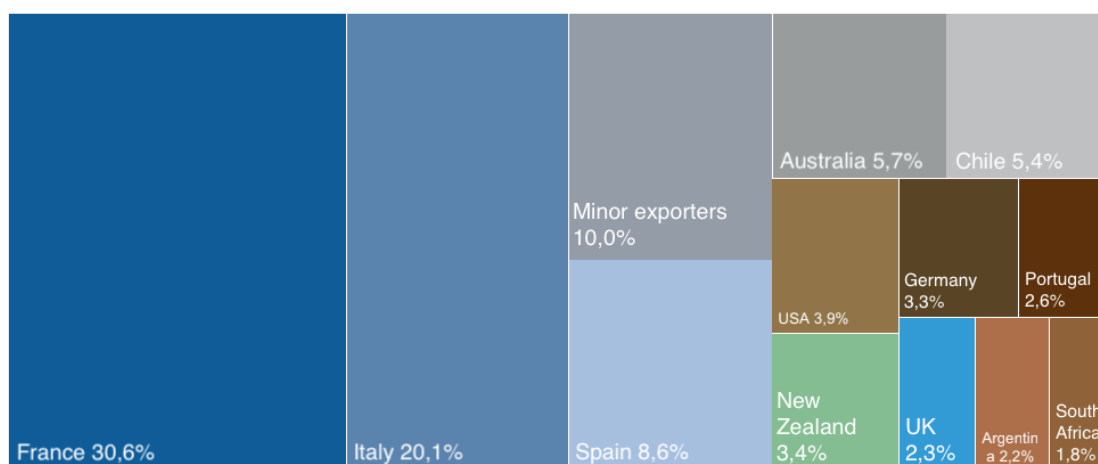
Source: OIV, “State of the World Vitivinicultural Sector in 2020”, April 2021, p. 14. Personal elaboration.

It can be noticed that bottled wine in <2 l bottles dominates the export market, while bulk wine is second for volume but third per value. Sparkling wine, on the contrary, is third by volume, but second per value. This means that bulk wine is exported in greater

quantity, but its total value is not much high. Sparkling wine, even if sold in smaller quantity, is more expensive on the global market. BiB wine maintains a fourth position both per volume and per value.

As regards to countries, in 2020, the export of wine was dominated once again by three countries, historical exporters and, as it might be expected, major producers of wine worldwide: Italy, Spain and France, that together account for more than 55% of the world export market (Barbaresco *et al.*, 2021; OIV, 2021c) (Figure 12).

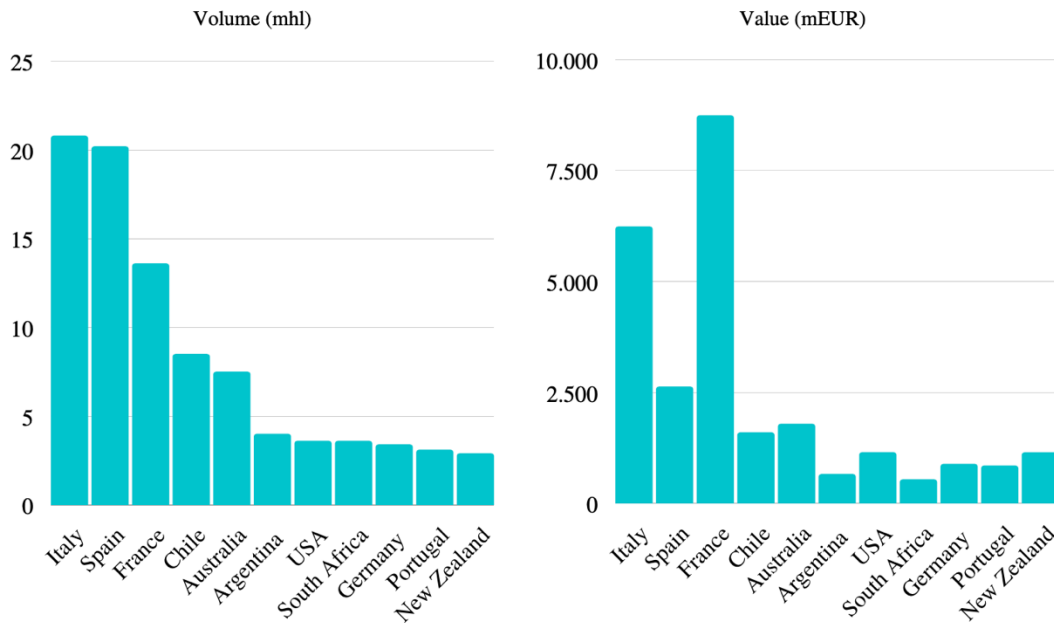
FIGURE 12: MAJOR WINE EXPORTING COUNTRIES (% ON TOTAL GLOBAL EXPORT)



Source: Area Studi Mediobanca, Sace, Ipsos, “Vino e Spirits: le sfide di un’eccellenza Italiana, July 2021.

International trade is extremely interesting to be analysed, as, being a consequence of globalisation, it also brought opportunities for producers from all over the world. In fact, internationalisation of wine can be intended as a strategic move from the part of the producers, that intend to go global in order to be able to maximise the sales (Köhr *et al.*, 2018). This is the reason why international trade should be considered by country per volume and per value, therefore it is interesting to indulge on graphs once more.

FIGURE 13: MAJOR EXPORTING COUNTRIES PER VOLUME AND PER VALUE



Source: OIV, “State of the World Vitivinicultural Sector in 2020”, April 2021, p. 16. Personal elaboration.

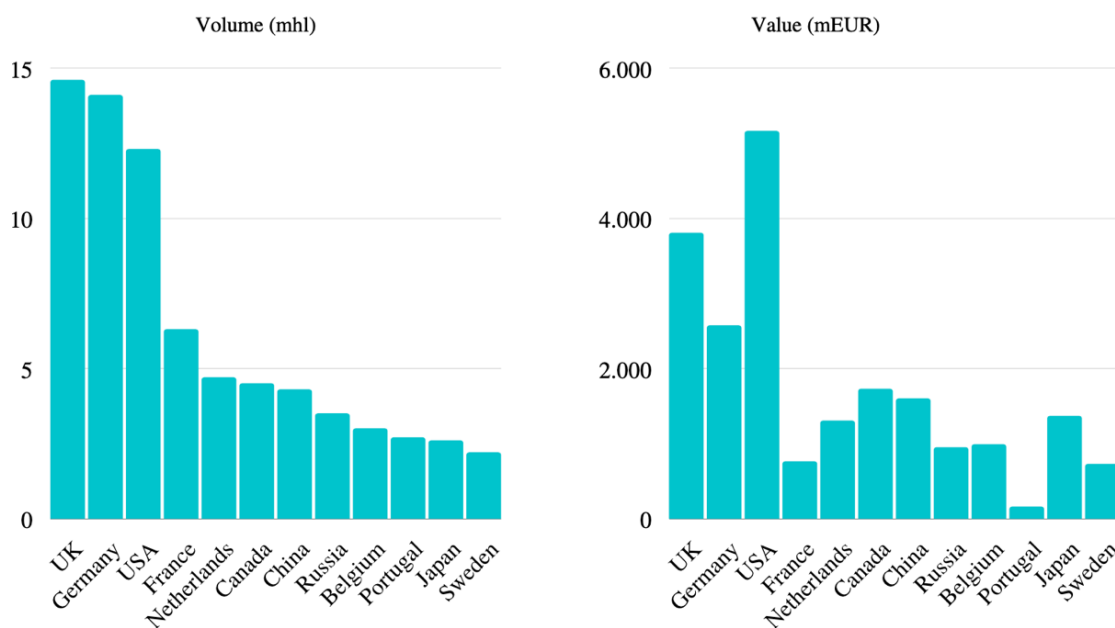
These graphs (Figure 13) demonstrate that the relation between the volume and the value of the exported wine should be equally considered. They demonstrate, for example, that although France exports a smaller volume of wine than Italy and France, the value of the exported wine is far greater, helping the country to establish itself as the greatest exporting country in the world.

Scholars noticed a recurring pattern in the international export sector of the wine industry, that connects the quality of wine to its export value: generally, quality wines with denomination of origin tend to score higher export values, as quality is recently being prioritised over price. This discourse leads back to the already mentioned trend of “premiumisation” of wine, but it also allows to reflect on the fact that low quality wines are easy to be substituted in the international panorama (Köhr *et al.*, 2018), they could be produced anywhere in the world, and imported from anywhere in the world, their low price is the appealing trait of the product, quality is not. Conversely, quality wines with denominations of origin guarantee the highest quality of the product and the highest standard of production, and thus are not easy to be substituted with another product in the international market (Köhr *et al.*, 2018). From data on export, it is clear that the top three exporting countries are countries from the Old World, and Italy and France score high

rates both per volume and per value, suggesting that their wines are deemed of high quality, and cannot be substituted by lower quality wines produced anywhere else in the world.

On the other end of international trade, there is import. A few considerations can be drawn from the following graph (Figure 14). It shouldn't be surprising that countries with high margins of productions are not enumerated among the biggest importers in the global scenario. However, France meets the requirements to end up in the list of the main importers, with numbers that stand diametrically opposite to the ones it scores in export: while it exports a modest quantity of wine of great value, it appears that on the side of import, France imports a great quantity of wine, but for a modest value. On the contrary, the USA, that figure among the most productive countries, figure also in the list of the greater importers of wine at a global level, importing high volumes and values.

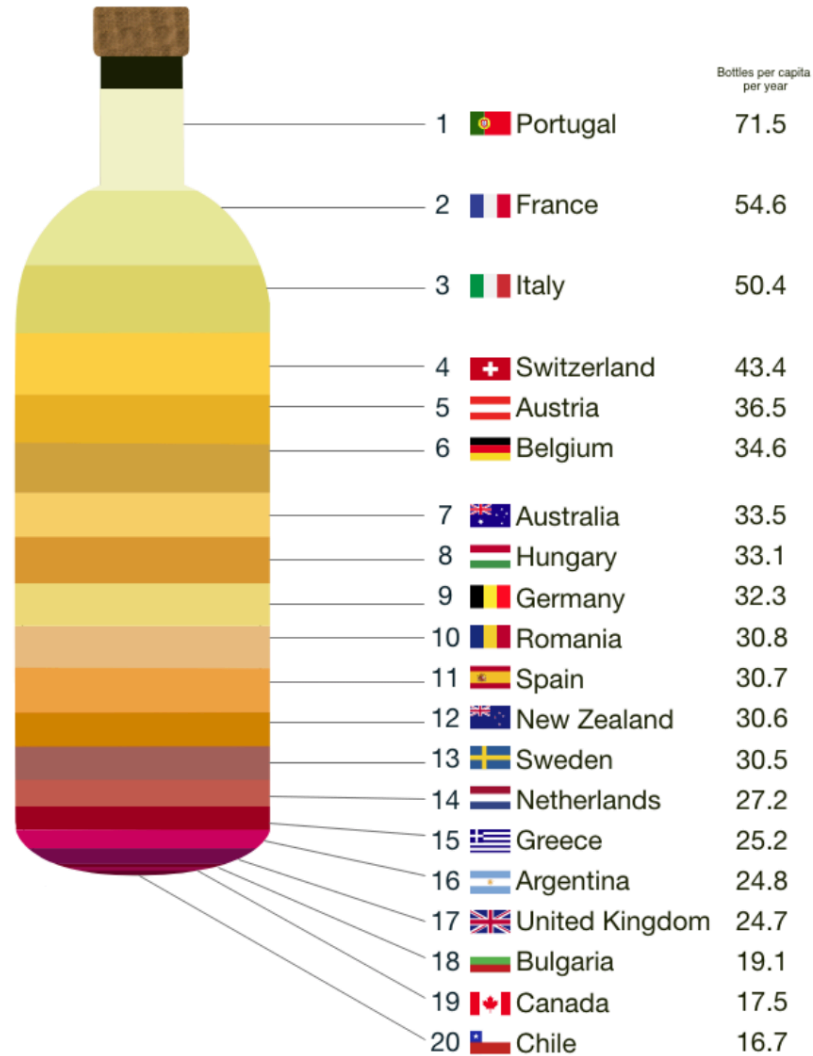
FIGURE 14: MAJOR IMPORTING COUNTRIES PER VOLUME AND VALUE



Source: OIV, "State of the World Vitivinicultural Sector in 2020", April 2021, p. 18. Personal elaboration.

After discussing the global trend of consumption and the data about the international trade of wine, it might be interesting to stop a second on a graph that combines the total amount of wine consumed globally and data on population, in order to create a sort of list of countries, from the most to the least apt to drink wine (Figure 15).

FIGURE 15: COUNTRIES RANKED BY WINE CONSUMPTION



Source: The Magazine, “Uncorking the World’s Best Wine Regions”. Data elaborated from the OIV 2019 State of the Vitiviniculture World Market Report

While it is not surprising to see Italy and France in the top three wine consuming countries, as they also figure among the most productive countries, it is neither a surprise to see great importers of wine in the top ten consuming countries. However, some other do not appear neither among the most productive, nor among the greater importers of wine, suggesting that the consumption is largely of wine locally produced.

The totality of these considerations allows us to understand the importance of exploring the global market in its entirety, otherwise misrepresented conclusions might

be drawn on the basis of reduced data. In this context, it was deemed necessary to give a general overview of the wine scenario that is being analysed, however, it is also necessary to focus on data and considerations about the Italian market of wine, which will be the focus of the next section of this chapter.

### 1.3 The Italian wine industry

The global overview of the wine sector is useful to frame the position of Italy, which is the true focus of this dissertation, that will explore the state of the Italian wine sector in relation to the level of digitalisation in use among producers.

The longstanding tradition of wine in Italy developed mainly in the Roman times, in which the beverage established as a source of energy, a substitute to water when water itself was unsafe to drink, and an important art of celebratory moments (Pomarici *et al.*, 2021). At the times, most of the cultivation was devoted to popular wine, while the production of fine wines for the upper class and the aristocracy grew later on. It is from this position of differentiation between popular and fine wines that the Italian wine sector encountered globalisation, which gave a twist in the state of the market, introducing large scale export and fuelled the democratisation of wine consumption around the globe (Pomarici *et al.*, 2021). With “democratisation” of wine, it is hereby intended the process of globalisation of wine products, which rendered wine accessible and desirable to people all over the world. It is this same process that opened a window for countries of the New World, and that pushed them to engage in the production of wine products, as previously discussed.

Wine, being fundamental in the Italian culture and its enogastronomic heritage, also represents a great resource in Italian agricultural environment. Even if Italy is not a country with a very large territorial expansion, it ranks quite high among the countries with the larger vined surface in the world, covering around 10% of the vineyard surface area in the world (Figure 3) with a 0.8% growth in 2020, as opposed to 2019 (Figure 3).



With almost 700 hectares of vined surface, the notable data concerns its internal positioning in the country.

FIGURE 16: VINEYARD CULTIVATED SURFACE PER REGION IN ITALY

(ha/1000)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Abruzzo	32.5	32.0	32.0	31.8	31.9	32.4	31.0	33.0	29.3	29.3	29.5
Basilicata	4.5	4.7	4.7	4.7	4.7	1.9	1.8	2.0	2.0	2.0	2.0
Calabria	13.2	13.4	11.1	10.2	10.0	10.1	8.7	8.7	8.8	8.6	8.8
Campania	29.8	29.0	25.9	29.4	25.4	25.3	24.3	24.3	24.6	24.6	24.7
Emilia-Romagna	53.5	52.0	52.0	51.2	51.1	50.5	49.6	50.1	49.8	50.0	49.8
Friuli-VeneziaGiulia	19.8	19.7	19.9	19.8	19.8	22.9	22.9	22.9	23.9	23.9	26.5
Lazio	26.2	26.5	23.4	23.7	21.2	21.9	20.1	20.3	19.9	20.1	20.2
Liguria	2.2	1.7	1.4	1.5	1.6	1.6	1.7	1.8	1.6	1.6	1.6
Lombardia	21.5	21.3	20.9	21.5	21.5	21.3	21.2	21.4	21.6	22.0	22.0
Marche	17.2	17.4	16.6	15.7	15.8	15.4	15.4	15.3	15.6	15.6	15.5
Molise	5.9	6.0	6.0	6.0	6.0	5.5	5.5	5.5	5.5	5.6	5.4
Piemonte	48.4	52.7	46.9	49.8	43.5	42.8	42.2	42.3	41.4	41.0	41.8
Puglia	97.6	85.1	84.6	84.4	84.5	84.0	84.9	85.5	84.8	85.4	86.6
Sardegna	28.2	31.5	31.1	29.9	27.2	26.4	26.6	26.7	26.6	26.6	26.7
Sicilia	107.2	106.2	115.4	112.5	110.4	106.6	107.1	106.6	106.2	119.0	113.3
Toscana	59.6	57.4	55.7	57.2	56.7	54.0	53.6	55.4	53.7	54.4	55.5
TrentinoAltoAdige	14.7	15.0	15.1	15.1	15.1	14.7	14.7	15.1	14.8	15.0	15.0
Umbria	17.6	17.8	18.0	13.3	13.3	13.0	13.1	12.2	11.9	12.1	12.1
Valled'aosta	0.5	0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4
Veneto	70.2	71.8	71.7	78.2	77.6	75.5	77.0	84.7	87.0	89.3	93.9
<b>Italy</b>	<b>670.3</b>	<b>661.9</b>	<b>636.3</b>	<b>656.2</b>	<b>637.7</b>	<b>625.9</b>	<b>621.9</b>	<b>634.1</b>	<b>629.2</b>	<b>646.5</b>	<b>651.1</b>
<b>North</b>	<b>230.8</b>	<b>234.6</b>	<b>228.4</b>	<b>237.5</b>	<b>230.7</b>	<b>229.5</b>	<b>229.8</b>	<b>238.7</b>	<b>240.4</b>	<b>243.1</b>	<b>250.9</b>
<b>Centre</b>	<b>120.6</b>	<b>119.2</b>	<b>113.6</b>	<b>109.9</b>	<b>106.9</b>	<b>104.3</b>	<b>102.2</b>	<b>103.1</b>	<b>101.0</b>	<b>102.3</b>	<b>103.3</b>
<b>South</b>	<b>318.9</b>	<b>308.1</b>	<b>294.2</b>	<b>308.8</b>	<b>300.1</b>	<b>292.2</b>	<b>290.0</b>	<b>292.3</b>	<b>287.7</b>	<b>301.1</b>	<b>296.9</b>

Source: "I Numeri del Vino", elaboration of ISTAT data

As it is possible to notice (Figure 16) the North and the South of Italy are the most vined regions of the country, although this data does not reflect the volume of wine produced nor its value. These are reflected, respectively, by the following charts:

FIGURE 18: VOLUME OF PRODUCTION PER REGION

(hl/1000)	12 I	13 I	14 I	15 I	16 I	17 I	18 I	19 I	20 I
Abruzzo	2,365	2,649	2,224	2,936	3,899	3,110	3,112	3,088	3,087
Basilicata	189	178	102	87	86	85	86	86	86
Calabria	400	368	314	404	428	337	337	305	294
Campania	1,542	1,644	1,183	1,614	1,286	1,293	1,376	1,391	1,412
EmiliaRomagna	5,643	6,717	6,334	6,752	7,165	5,457	7,340	5,766	6,611
FriuliVeneziaGiulia	1,281	1,073	1,367	1,872	1,856	1,639	1,709	1,709	1,839
Lazio	1,365	1,552	1,284	1,676	1,524	1,135	1,289	1,443	1,481
Liguria	46	46	63	79	69	76	78	84	89
Lombardia	1,222	1,301	1,424	1,410	1,473	1,183	1,719	1,327	1,505
Marche	918	1,039	915	959	956	860	878	878	878
Molise	319	319	297	232	250	339	467	451	488
Piemonte	2,366	2,580	2,402	2,467	2,549	2,043	2,658	2,525	2,571
Puglia	4,097	4,965	4,593	7,313	8,792	9,070	9,806	9,773	9,667
Sardegna	503	638	746	794	804	466	841	629	630
Sicilia	4,503	6,242	3,824	5,476	5,334	4,725	4,989	5,685	5,796
Toscana	2,098	2,657	2,778	2,825	3,025	1,901	2,597	2,627	2,601
TrentinoAltoAdige	1,210	1,362	1,029	1,230	1,213	1,018	1,355	1,153	1,133
Umbria	637	706	670	765	741	609	630	629	644
Valledaosta	17	-	15	14	21	10	20	19	19
Veneto	7,547	8,989	8,177	9,733	10,145	8,473	12,866	10,293	11,038
<b>Italy</b>	<b>38,265</b>	<b>45,044</b>	<b>39,741</b>	<b>48,635</b>	<b>51,615</b>	<b>43,829</b>	<b>54,150</b>	<b>49,859</b>	<b>51,916</b>
<b>North</b>	<b>19,331</b>	<b>22,067</b>	<b>20,811</b>	<b>23,557</b>	<b>24,491</b>	<b>19,898</b>	<b>27,744</b>	<b>22,875</b>	<b>24,804</b>
<b>Centre</b>	<b>5,017</b>	<b>5,974</b>	<b>5,648</b>	<b>6,223</b>	<b>6,246</b>	<b>4,506</b>	<b>5,393</b>	<b>5,576</b>	<b>5,651</b>
<b>South</b>	<b>13,918</b>	<b>17,004</b>	<b>13,283</b>	<b>18,855</b>	<b>20,878</b>	<b>19,425</b>	<b>21,013</b>	<b>21,407</b>	<b>21,460</b>

FIGURE 18: VALUE OF VINEYARDS PER REGION

(EUR/1000 per ettaro)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
PIEMONTE	59.3	60.9	62.6	63.8	64.9	66.0	67.6	69.0	70.2	72.1
VALLE D'AOSTA	44.7	45.8	46.8	47.4	48.1	48.2	49.4	50.1	52.1	52.6
LOMBARDIA	54.2	53.8	54.2	54.2	53.8	56.1	57.0	57.1	58.5	58.6
TRENTINO A.A	269.3	269.3	260.0	241.8	251.4	251.4	249.6	249.6	254.9	254.9
VENETO	135.7	133.1	131.3	130.1	133.0	134.3	136.6	142.1	140.9	139.3
FRIULI V.GIULIA	53.6	55.6	58.9	60.1	58.4	58.7	61.1	64.1	64.6	62.5
LIGURIA	39.9	39.2	38.6	37.5	37.5	37.9	38.1	38.5	39.0	39.4
EMILIA ROMAGNA	44.6	45.9	47.1	47.5	47.3	47.4	47.6	48.0	48.1	48.1
TOSCANA	58.5	56.7	55.0	54.8	55.0	55.2	55.2	55.9	58.2	58.7
UMBRIA	18.8	18.8	19.2	19.2	19.2	19.1	19.0	19.0	19.0	19.0
MARCHE	23.9	24.1	24.1	24.1	24.1	24.1	24.2	24.2	24.2	24.3
LAZIO	26.8	26.7	25.9	25.8	25.8	25.7	25.7	25.7	25.6	25.7
ABRUZZO	28.1	28.1	28.2	28.2	28.3	28.5	28.6	28.8	28.8	29.2
MOLISE	23.9	24.1	24.2	24.0	24.0	23.9	23.8	23.8	23.7	23.7
CAMPANIA	22.1	22.1	22.1	22.2	22.2	22.3	22.3	22.3	22.5	22.7
PUGLIA	19.0	19.4	20.0	20.0	20.1	20.2	20.5	21.1	21.3	21.4
BASILICATA	14.7	14.9	14.8	14.8	15.0	15.0	15.0	15.0	14.9	15.0
CALABRIA	20.1	20.1	20.0	20.0	20.1	20.1	20.3	20.3	20.3	20.5
SICILIA	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.1	15.2	15.2
SARDEGNA	12.6	12.7	12.7	12.6	12.6	12.6	12.7	12.7	12.8	12.9
<b>ITALIA</b>	<b>49.5</b>	<b>49.9</b>	<b>50.3</b>	<b>50.5</b>	<b>51.1</b>	<b>51.5</b>	<b>52.1</b>	<b>53.2</b>	<b>53.6</b>	<b>53.6</b>

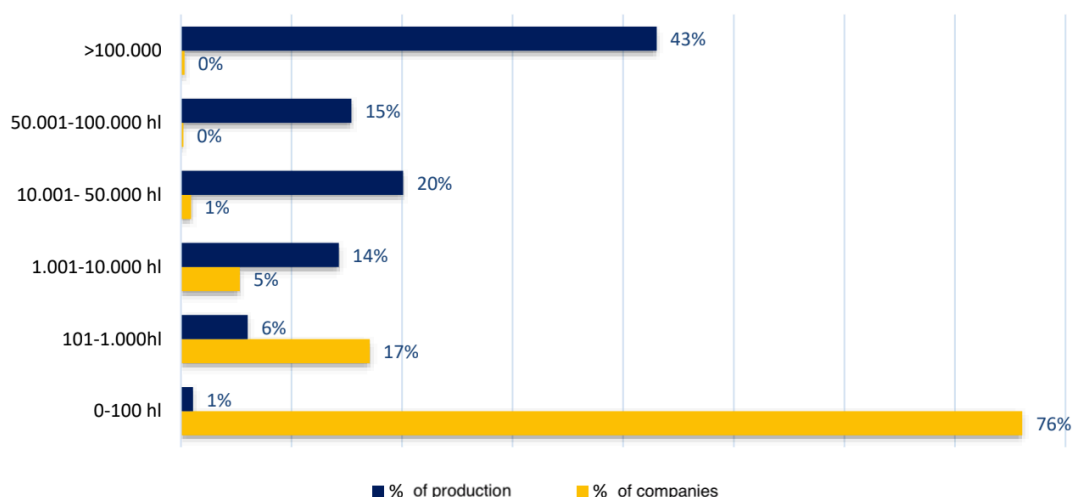
Source: "I Numeri del Vino", elaboration of CREA data.

Although data are not aligned as they are not as recent as representing 2020 in both charts, it is possible to read data regarding the total value of vineyards per Italian region, which saw a regular growth on the total amount (Figure 17). On the other hand, the volume of production grew slowly but regularly in the last three years, while it achieved a notable growth from 2014 onwards (Figure 18).

As noted in the previous section of this chapter, Italy always ranks quite high in analysis regarding the production, the consumption, and the export of wine. To recap quickly, in 2020 Italy covered around 18% of the world production of wine (Figure 5), while considering the slight fall of production registered, compared to the two previous years (Figure 6). Furthermore, data on export are quite notable, and feature Italy being the first exporter by volume of wine, and second exporter by value, after France (Figure 13). It is not surprising that Italy does not rank among the mayor worldwide importers of wine.

The Italian wine sector has another peculiarity, which is its fragmentation. More than 46.000 winemaking companies are present on the Italian soil (Pomarici and Sarnari, 2018), most of them are small sized companies, which do not account for a large cut of production. In fact, the most productive companies are less than 1% of the ones present in the Italian territory (Figure 19).

FIGURE 19: COMPARISON BETWEEN SIZE OF THE COMPANY AND PRODUCTION OF WINE

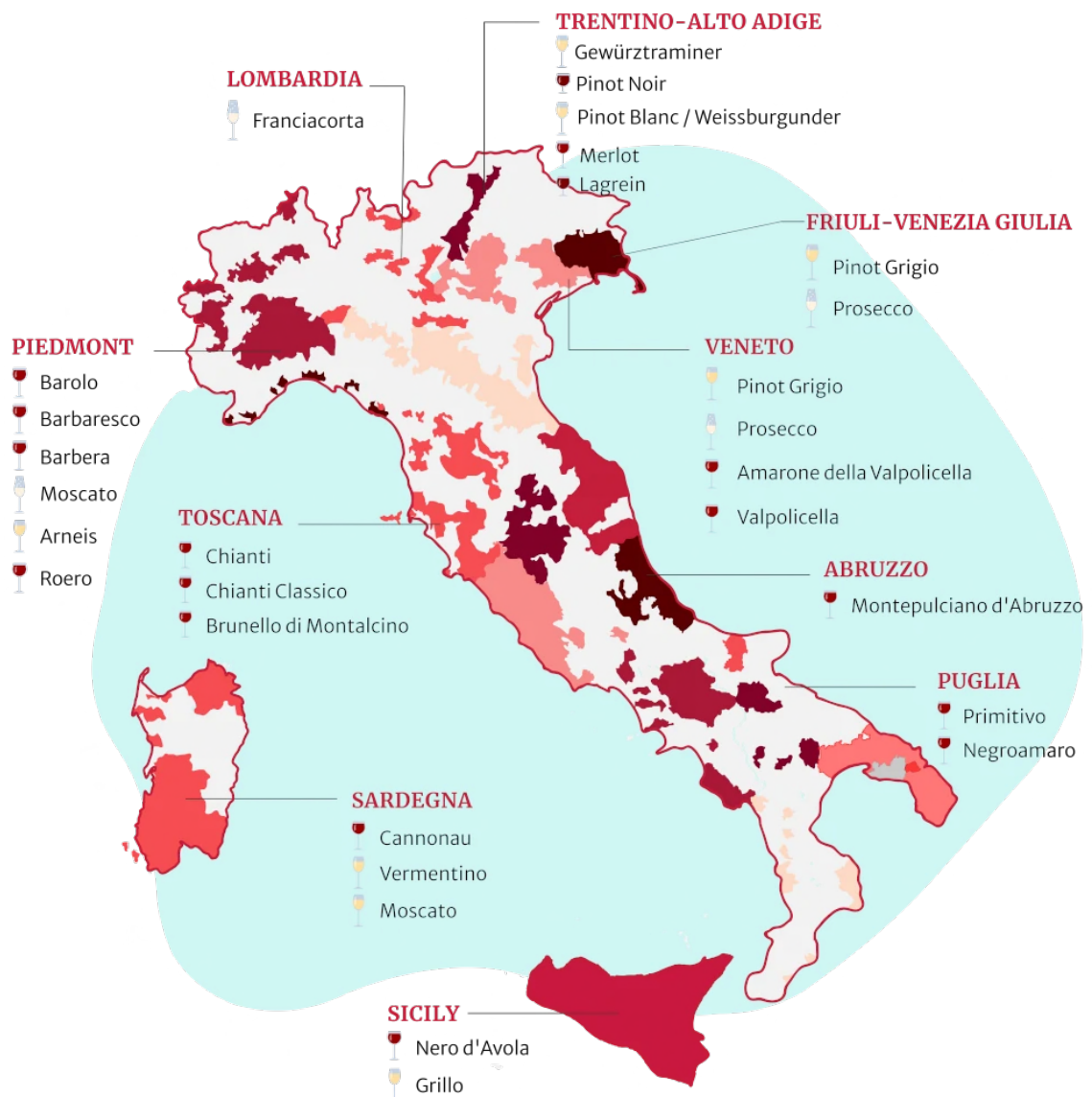


Source: ISMEA (2019) “Il settore vitivinicolo alla sfida della PAC post-2020: complementarità degli interventi tra I e II pilastro e prospettive”, p.60.

Foregrounding this data is the fact that almost half of the total turnover of the country is generated by 155 wine companies, the biggest, with individual turnover of more than 25 millions each (Pomarici and Sarnari, 2018).

There is great diversification even in the kinds of wine produced in the national territory, scattered on the whole of the peninsula (Figure 20).

FIGURE 20: KINDS OF WINE PRODUCED IN THE ITALIAN TERRITORY



Source: Independent Wine, “The complete guide to the best Italian wine with maps and tasting notes”, April 2020.

Although not every variety of wine is enlisted in the infographic map, it provides an exhausting example of the copious number of wines produced in Italy, covering almost the whole of the national territory.

To complete the general overview of the global wine situation, another differentiation must be made, that between conventional and organic wine, which will be the focus of the following part of this chapter.

#### 1.4 The Organic wine sector

In order to complete the overview of the overall worldwide wine sector, it is necessary to introduce some data and considerations about a specific branch which is greatly expanding nowadays, that of the organic wine sector.

The Organic approach is an ecologically oriented methodology of production of wine, aimed at safeguarding the natural equilibrium of the vineyard and the surrounding environment, avoiding the use of synthetic chemical fertilizers, insecticides, and herbicides, and preserving soil fertility (IFOAM, 2013). Thanks to the use of natural pesticides, organic winegrowers are able to control pests and diseases with environmentally friendly methods, thus limiting the contamination of the soil and aquifers. In addition, all aspects of organic viticulture aim at minimizing interventions in the cellar and of highlighting the quality of the product.

Differently from the general viniculture, whose development dates back to the ancient times, this specific sector originates mostly in the second half of the last century, when a group of winemakers introduced for the first time this ecologically oriented approach to the production of wine. After their first attempts, many others started to follow this approach. Therefore, around the 1980s, the need for an official organisation and regulation began to emerge and the first organic farming associations were founded.

The term “Organic wine” was firstly introduced through regulations, that governed the practice of organic wine farming. However, the steps for achieving an official recognition of Organic Wine began with the recognition of the whole Organic practice, with no particular focus on “wine”.

The first regulatory order is the European regulation on the production of organic food in 1991 (EEC Regulation no. 2092/91)<sup>1</sup>. It introduced rules on plant production, and states that to obtain organic recognition, growers must avoid the use of insecticides, fertilizers, and other chemical products. This regulation covered the whole plant production, therefore also including grapes. However, the holistic definition of “Organic Wine” was still not recognised, and thus wine produced following the organic practice was called “Wine from Organic Grapes”.

Therefore, organic winemakers began to follow private norms in the production processes, but after a strong request to have an official regulation specifically addressing the organic viticulture, the 1991 European regulation was replaced by EC regulation no. 834/2007, which introduced the definition of “Organic Wine” into its field of application, but again did not provide details about the techniques of production. This was still not enough in the eye of organic winemakers, who continued to put pressure on the European Commission and the member states to finalise a law regulating their practice.

The turning point arrived in 2012, when the limits to the use of sulphites, chemical substances that are used in food production processes, including winemaking, were established. From that moment it became possible to proceed with a general approval of Organic Wine rules. Thus, on March 8<sup>th</sup>, 2012, the European Regulation No. 203/2012 came into force, and it finally covered the entire production process of Organic Wine.

Starting from this moment, producers could obtain the Organic Certification and affix the official logo of the European Union (Figure 21) on the labels of their wines,

FIGURE 21: OFFICIAL ORGANIC LOGO OF THE EUROPEAN UNION



Source: Stanco and Lerro, 2020, p. 3.

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<sup>1</sup> EEC stands for Economic European Community. Following abbreviations will be EC, for European Commission, and EU, for European Union.

which means that “Organic Wine” started to be officially recognised (WinebioWine, 2017).

Other major recommendations contained in the EU Regulation No. 203/2012 concern cultivation, oenological practices or substances used in wine production, which winemakers must follow to obtain organic certification. In particular, the Regulation lists several prohibited practices, such as eliminating sulfur dioxide through a physical process; the tartaric stabilization by electro dialysis; the partial dealcoholizing; the partial cold concentration. Some other restrictions apply to heat treatments, centrifugation, and filtration: in organic production, a temperature of 70° C cannot be exceeded and the pores must have a maximum size of 0.2 micrometers. Also, particular attention is paid to the substances used for winemaking, as they must not be of chemical derivation, while alternatives of vegetable, animal and mineral derivation are allowed (European Commission, 2012)<sup>2</sup>.

Starting from January 1<sup>st</sup>, 2021, the scope of the existing legislation on the production and labeling of organic products (EC Regulation no. 834/2007) is extended on various aspects through the come into force of the EU Regulation 2018/848 of the European Parliament and of the Council of 30<sup>th</sup> May 2018 on organic production and labeling of organic products (European Union, 2018)<sup>3</sup>. The new regulation aims at reflecting effectively and precisely the changing nature of the organic sector to adapt and give solutions to the rapid and constant growth of the sector.

#### *1.4.2 The International organic wine scenario*

After a brief focus on the main regulations governing the organic wine sector, the analysis can now shift towards some data about this phenomenon.

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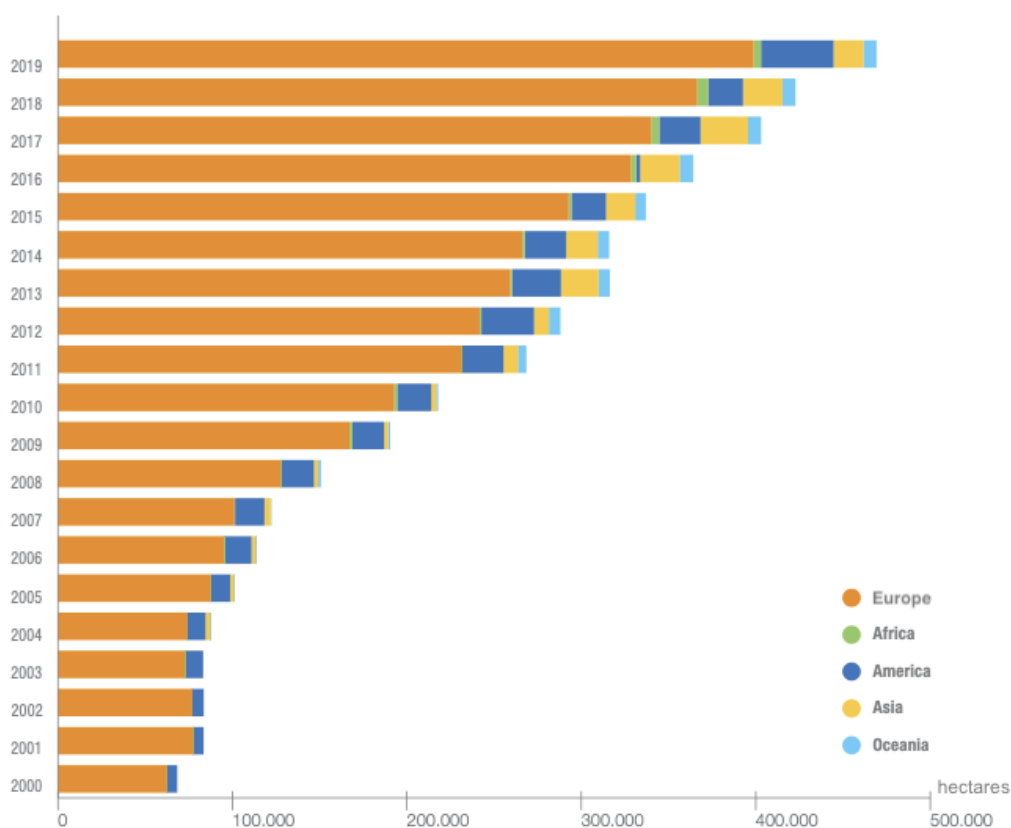
<sup>2</sup> Gazzetta Ufficiale dell’Unione Europea, *REGOLAMENTO DI ESECUZIONE (UE) N. 203/2012 DELLA COMMISSIONE dell’8 marzo 2012 che modifica il regolamento (CE) n. 889/2008 recante modalità di applicazione del regolamento (CE) n. 834/2007 del Consiglio in ordine alle modalità di applicazione relative al vino biologico*. 09.03.2012.

<sup>3</sup> Gazzetta Ufficiale dell’Unione Europea, *REGOLAMENTO (UE) 2018/848 DEL PARLAMENTO EUROPEO E DEL CONSIGLIO del 30 maggio 2018 relativo alla produzione biologica e all’etichettatura dei prodotti biologici e che abroga il regolamento (CE) n. 834/2007 del Consiglio*. 14.06.2018.

In recent years, the Organic Wine market has grown exponentially all over the world, gaining more and more prominence both among producers and consumers. This is due to the growing interest in sustainability, in all its facets, from the environmental aspects to the economic and social features. The growing interest is confirmed by the statistics, which report a growth in relevance both on the international market and in the national one, as it will be now outlined.

As for the international market, in September 2021 the OIV published a report entitled "The World Organic Vineyard" analysing the development of certified organic vineyard areas producing wine within the period 2005 to 2019. This analysis shows how in the global vineyard surface area, estimated at approximately 7,3 million hectares, in 2019 the certified organic area was estimated at 454 kha, corresponding therefore to the 6,2% of the world's total area under vines (OIV, 2021b). This data is the result of a process of growth of the organic sector, which took place essentially starting from beginning of the 21<sup>st</sup> century. In fact, the below graph (Figure 22) shows that in 2000, certified organic vineyard surface area was estimated at only 68.379 ha (SINAB, 2021) mainly distributed

FIGURE 22: ORGANIC VINEYARD SURFACE AREA PER CONTINENT - YEARS 2000-2019



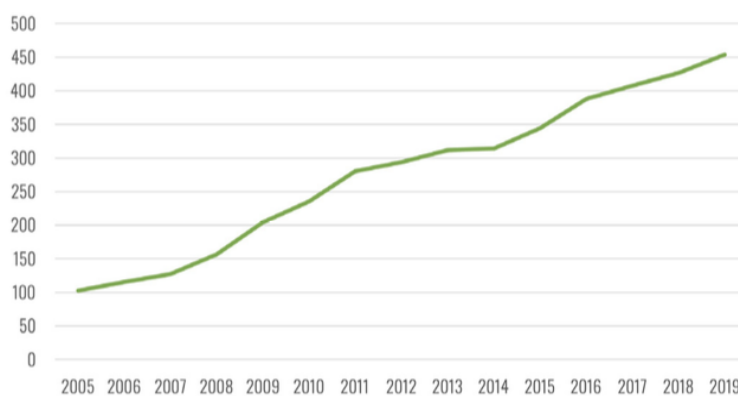
Source: SINAB, *La filiera vitivinicola biologica. Quaderno tematico 5*, February 2021, p. 16.



in Europe, while other continents, such as Asia and Australia, had not approached this sector yet, entering in the official organic statistics only starting from 2004 (Figure 22).

It should be underlined that the increase in the rate of conversion of vineyards to organic production has not always been constant and stable. From the following graph (Figure 23), it can clearly be observed that that global growth of organic vineyard can be divided into distinct growth periods, characterized by different tendencies. A significant growth can be observed between 2005 and 2011 (+18% per year on average), while between 2011 and 2014 the growth seemed to be much slower with an average annual rate of +4%. From 2014 to 2019, the growth rate increased again reaching an average of +8% per year. Nevertheless, data show that from a general point of view, between 2005 and 2019 the certified organic vineyard surface area increased of 13% per year on average, differently from the ‘non-organic’ area which has shown instead a decrease by average of 0,4% per year within the same period.

FIGURE 23: EVOLUTION OF ORGANIC VINEYARD SURFACE AREA



Source: Focus OIV, *The World Organic Vineyard*, September 2021, p. 11.

Observing the distribution of organic vineyards from the point of view of the different countries, it can clearly be observed that the European share represents almost the 85% of the total area, while USA, Asia, Oceania, and Africa represent respectively the 9%, the 4%, the 2% and the 1% (Figure 24). This brings to the conclusion that also in this specific wine sector Old World countries play the greatest role.

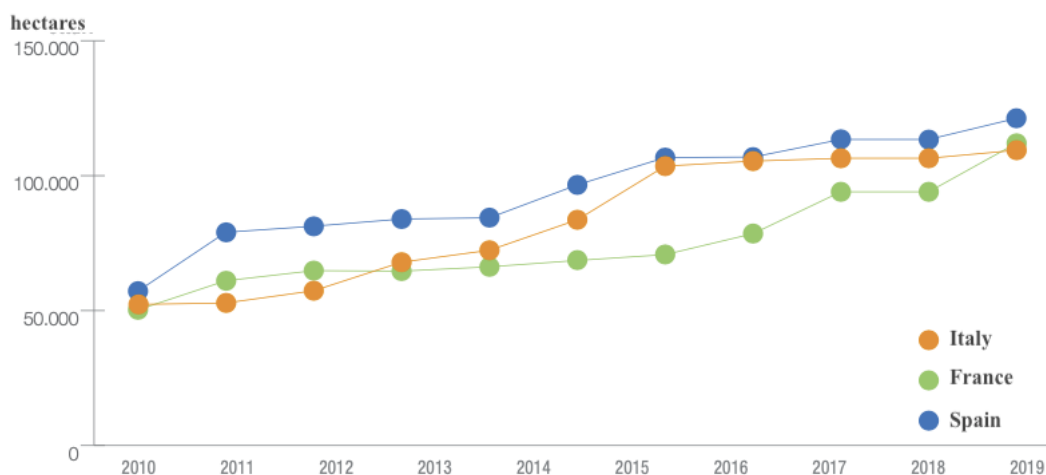
FIGURE 24: WORLD ORGANIC VINEYARD SURFACE AREA

	2010	2019	Difference 2010-2019	Variation 2019/2010 (%)	Share 2019 (%)	World vineyard surface FAOSTAT (2019)	Incidence 2019, %
<b>World</b>	<b>217.953</b>	<b>466.539</b>	<b>248.586</b>	<b>114</b>	<b>100</b>	<b>6.925.972</b>	<b>6,7</b>
<b>Europe</b>	<b>192.730</b>	<b>396.022</b>	203.292	105,5	84,9	<b>3.463.472</b>	11,4
<b>Africa</b>	<b>1.719</b>	<b>4.300</b>	2.582	150,2	0,9	<b>342.620</b>	1,3
<b>America</b>	<b>19.525</b>	<b>41.598</b>	22.073	113,0	8,9	<b>959.071</b>	4,3
<b>Asia</b>	<b>2.897</b>	<b>17.116</b>	14.218	490,7	3,7	<b>1.990.717</b>	0,9
<b>Oceania</b>	<b>1.082</b>	<b>7.503</b>	6.421	593,4	1,6	<b>170.092</b>	4,4

Source: SINAB, *La filiera vitivinicola biologica. Quaderno tematico 5*, February 2021, p. 16.

Moreover, if we focus the analysis on the specific countries involved, the world top 3 leaders in organic production are precisely European: Spain, Italy, and France. Together they account for 73,5% of the world’s certified organic vineyard surface area (SINAB, 2021). From the graph here below, it is easy to observe that the tendency of production of the three countries is quite similar, even if the Italian growth rate seems to be lower compared to that of France and Spain (Figure 25).

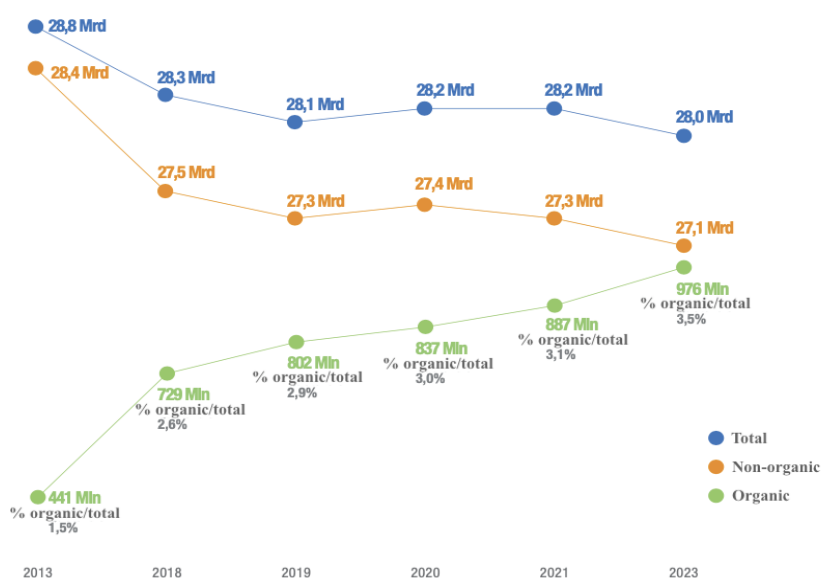
FIGURE 25: ORGANIC VINEYARD SURFACE AREA EVOLUTION IN THREE LEADER COUNTRIES



Source: SINAB, *La filiera vitivinicola biologica. Quaderno tematico 5*, February 2021, p. 17.

Other data on production and consumption can be obtained by analysing the results published during the last edition of the European exhibition MillésimeBio, the most important world fair dedicated to the organic sector, which usually takes place in Montpellier in France, but in 2021 took place between January 25<sup>th</sup> and 27<sup>th</sup> online only, due to the emergency of the pandemic of Covid-19. The exposed data have shown a negative trend of global wine consumption, which is counterbalanced by the continuous growth of organic wine that in the next two years is expected to increase its market share. Driven by consumer demand for environmentally friendly products, the worldwide consumption of organic wine has nearly doubled since 2013 (Figure 26).

FIGURE 26: EVOLUTION OF NON-ORGANIC AND ORGANIC WINE CONSUMPTION



Source: SINAB, *La filiera vitivinicola biologica. Quaderno tematico 5*, February 2021, p. 42.

Data show that up to 2020 the country with the highest consumption of organic wine in the world is Germany, but according to the data collected by Agrifrance, the BNP PARIBAS subsidiary dedicated to real estate activities, by 2022 France could overtake Germany as the world's leading organic wine market (AGRIFRANCE, 2020). France is in fact destined to reach the 19,8% of the world market for organic wine, with a consumption forecast of 155 million liters in 2022, against Germany's 127,8 million in 2023.

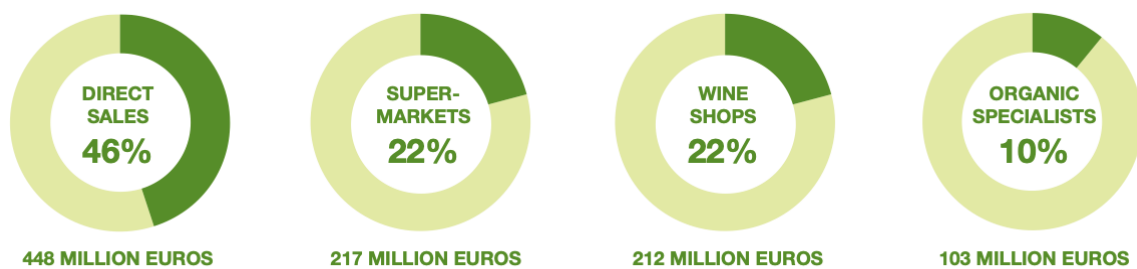
The importance of the role of France in the international organic wine scenario has been underlined also by the data shared by SudVinBio during MillesimèBio 2021,

which underlined that there were over 8000 organic wineries in France in 2019, with a 20% increase over the previous year. Previously analysed data have shown that the organic surface area increased by 23% too, reaching 112.057 hectares in 2019 (Figure 25) and now it represents the 14,1% of the total French area planted with vines: in ten years, organic vineyards in France have practically tripled.

One of the main reasons of this increasing interest towards the organic is the strength of the organic French market: between 2010 and 2019, the organic wine market in France has practically quadrupled, to the point that more than one in ten bottles of wine sold in France is now organic (MillésimeBIO, 2021). In 2019, this resulted to a total consumption volume of 1,25 million hectoliters for a value of almost 1 billion euros.

As for the value of organic wines in France, 46% are sold directly to the consumer, while 22% are retailed by supermarkets and wine merchants. Only 10% of value is made from organic specialist stores (Figure 27).

FIGURE 27: MAIN DISTRIBUTION CHANNELS IN FRANCE



Source: From Millésime Bio, *Millésime BIO 2021 – “The world fair for organic wines and other alcoholic beverage”*, January 2021, p. 14.

After this overview over the international organic wine sector, the analysis moves towards the specificity of the Italian market which represents one of the major organic wine producers in the world.

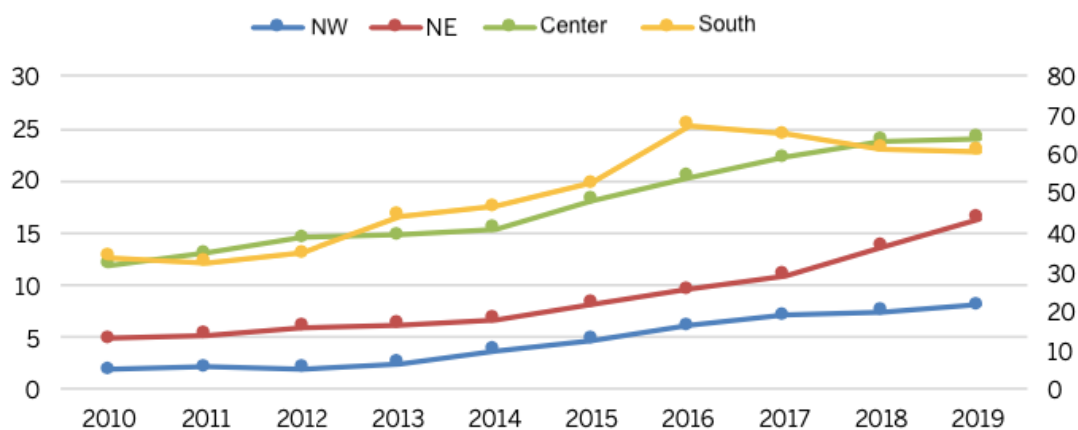
#### 1.4.3 The Italian organic wine scenario

Italy occupies the third place in the podium of countries with the largest organic vineyard surface areas worldwide in 2019. According to SINAB data (SINAB, 2021), the

organic vineyard surface area in Italy reached 109.423 hectares in 2019 with an increase of 3% compared to the previous year. It is important to underline, however, that compared to 2010 there was a growth of 112%, in numbers 56.580 hectares more, to which all areas of the country contributed.

An examination of the main Italian areas (Figure 28), presented in the below graph, for the period 2010-2019, shows the different tendencies of the evolution of organic wine-making areas. In the North-West, North-East and Center Italy, growth has doubled during this period, while in the South Italy, after a period of significant growth (2010-2016), there has been a slowdown in recent years (2016-2019).

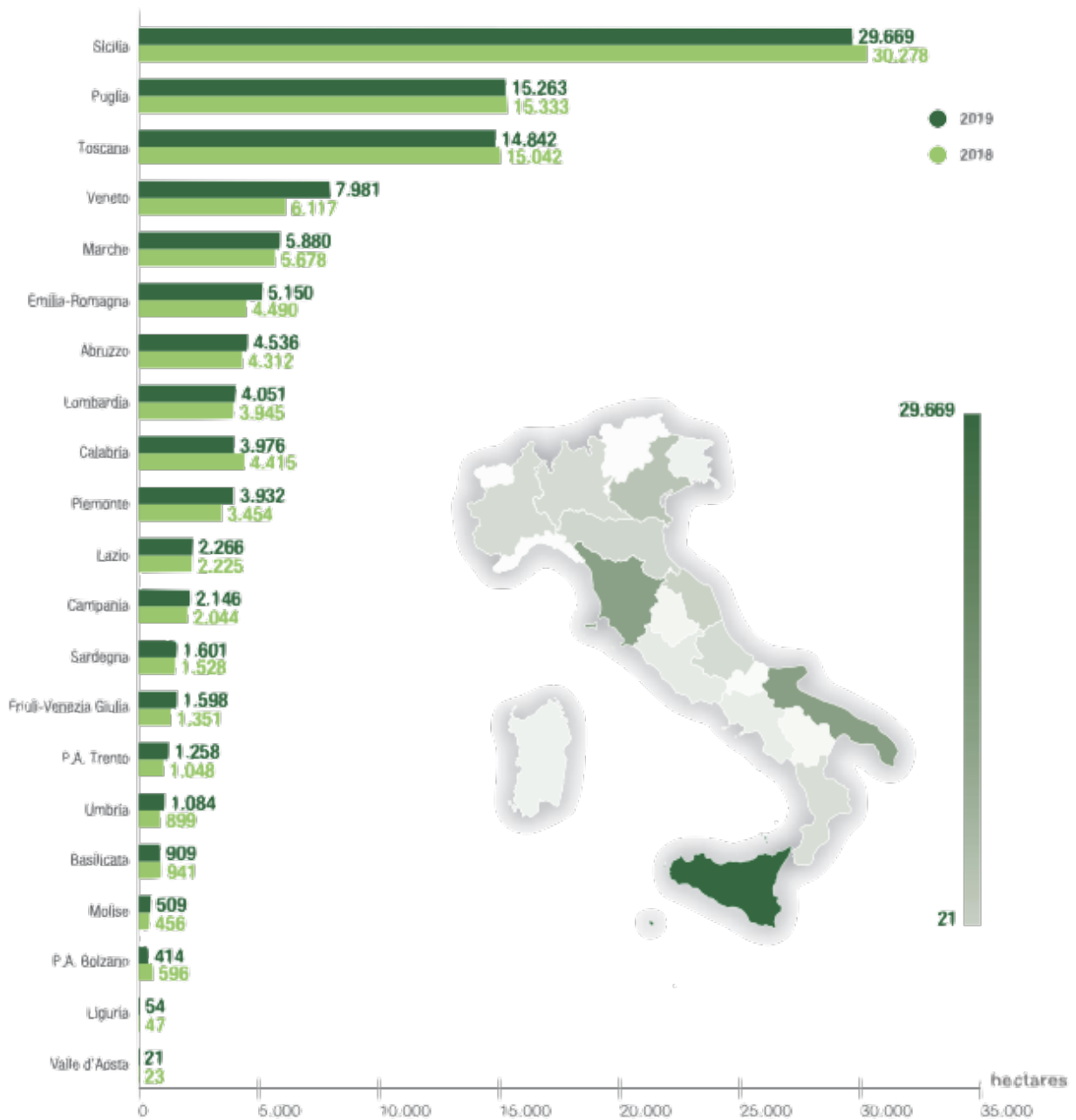
FIGURE 28: EVOLUTION OF ORGANIC VINEYARD SURFACE PER AREA



Source: Somma G., Flamini, C., Il Corriere Vinicolo, "Il Vino in Cifre", p. 56.

Despite this, Sicily is the region of the country with the largest organic vineyard surface (29.669 hectares in 2019) followed, with a difference of over 10 000 hectares, by Puglia (15.263 hectares in 2019) and Tuscany (14.842 in 2019). In the regional distribution of areas under organic cultivation other 5 Regions in constant growth can be identified: Veneto with 7.981 hectares, Marche with 5.880 hectares followed by Emilia-Romagna, Abruzzo, and Lombardy in the range of 4.000 hectares. As it can clearly be observed from the following graph (Figure 29), 12 regions have an organic vineyard surface area of over 2.000 hectares.

FIGURE 29: DISTRIBUTION OF ORGANIC VINEYARD SURFACE AREA PER REGION



Source: SINAB, *La filiera vitivinicola biologica. Quaderno tematico 5*, February 2021, p. 22.

As far as consumption is concerned, the constant increase of the areas under organic vines is a sign of the fact that consumption of organic wine is a phenomenon in constant growth as well. According to the data reported in the Nomisma Wine Monitor report for Valorialia 2021, sales in this sector have increased by 60% in three years. As

for internal consumption, in 2020 it was worth about 40 million euros and from the first processing of 2021 data, it is expected to reach 50 million.

The reason that led to these results lies in the fact that 59% of consumers see in organic wines a higher quality than in conventional wines, and for the majority of them the main aspect which creates added value is the respect for the nature and the environment (NOMISMA, 2021b). “Origin, sustainability and attention to health represent the three main guidelines in the choice of Italian food products. These are issues that necessarily involve wine as well”, says Denis Pantini, Nomisma's agri-food & Wine Monitor manager (NOMISMA, 2021b).

Furthermore, in order to let organic emerge in the market, marketing is crucial as well, and the Organic Wine bottle must attract the consumers to be chosen. Companies therefore play an important role in the consumer's choice process, thus trying to make the product as attractive as possible through the labels, the bottle format, the use of innovative advertising campaigns and through participation in trade fairs (Di Vita *et al.*, 2019). The success of “Made in Italy” Organic Wine, therefore, could be attributable to a winning strategy based both on the quality-price ratio and on effective marketing campaigns.

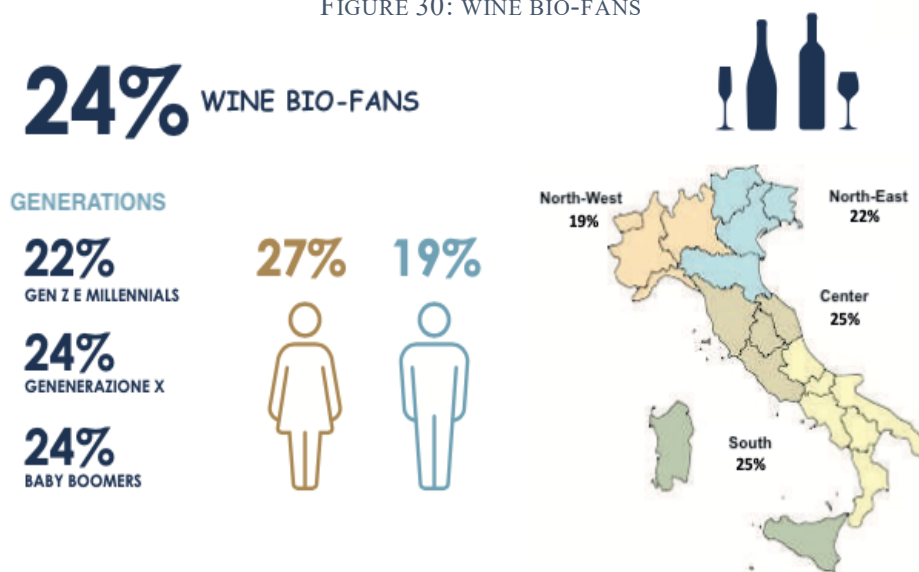
From the point of view of consumption, collected data (Barbaresco *et al.*, 2021) underline that in Italy the development of organic wine leads to three different levels of interest on the side of consumers. The first one is that of the so-called “bio-attracted”, the share of consumers highly interested in organic wines, those people who, on a scale from 1 to 10 to define the value of their interest in organic wine, assign a vote between 8 and 10. This type of consumers represents 36% of wine consumers. The second level, equal to 33% of Italians wine drinkers, has a sufficient or moderate level of interest in the organic. These are defined “bio-lights”, those whom, on a scale of 1 to 10 with respect to their interest in organic wine, assign a value between 6 and 7. The third level, the remaining 31% of wine consumers, consists in the so-called “bio-refractories”, representing that part of consumers who are not interested in the organic products and on a scale from 1 to 10, assigns a score under 6.

The shares of consumers who are in the high range of interest in organic wine, the “bio-attracted” ones, from a territorial point of view can be traced to 41% in the South Italy, an important and certainly predictable result given the greater presence of organic vineyards in this area compared to the others, as already presented. In Central Italy, the

“bio-attracted” represent the 39% of consumers. As for the presence of this type of consumer in reference to the demographic aspect (age and gender), 39% is placed among Baby Boomers, while 38% among women.

The disinterested ones, the so-called “bio-refractories”, locate more in the North-West Italy (38%) and among the Baby Boomers (35%). People who show an average interest in organic wine (“bio-lights”) rank more among young Millennials (37%) and among Generation X people (37%).

FIGURE 30: WINE BIO-FANS



Source: Area Studi Mediobanca, Sace, Ipsos, “Vino e Spirits: le sfide di un’eccellenza Italiana”, July 2021, p. 74.

According to Ipsos data, within the category of “bio-attracted”, we can find the real wine bio-fans. This is the portion of consumers who assigns a vote between 9 and 10 to their willingness to buy organic wine. Wine bio-fans account for around 24% of total wine consumers, and they are predominantly females (27% of women against 19% of men). Furthermore, most consumers are aged between 35 and 65, while interest appears weaker among the younger part of the Millennials and Generation Z<sup>4</sup>. In territorial terms, wine bio-fans are more deeply rooted in the regions of Central Italy and the Southern Italy

<sup>4</sup> Baby Boomers: those born between 1946 and 1964; Millennials: those born between 1981 and 1996; Generation X people: those born between 1965 and 1980; Generation Z people: those born between 1997 and 2012



(with an average of 25% in both areas), while they are less participating in the North-West (19%) and North-East (22%) areas (Figure 30).

It can be concluded that it is probably this consumer segment that has been driving the positive trend of constant growth of the Italian organic wine sector for years: it is mainly thanks to wine bio-fans that a sector that was considered a niche interest until a few years ago is now transforming itself into a new lifestyle, which is spreading and consolidating.

### 1.5 The Covid-19 impact on the wine scenario

To conclude this analysis of the overall wine scenario, an aspect that should be necessarily considered in order to have a more complete overview of the whole sector is the impact that the Covid-19 pandemic had, and is having, on the wine sector.

A consistent share of literature explains the main consequences of such a pervasive phenomenon on the wine environment. Nevertheless, this brief focus on the effects of the pandemic on the wine sector is useful to prepare the ground to explain part of the survey conducted for this dissertation, since, as it will be possible to see in the next chapter, the impact of Covid-19 had reflections on the degree of adoption of digital tools. To better understand which have been the consequences of this terrible virus on the overall wine scenario, it is better to separately analyse them firstly from the point of view of the consumers and secondly from the point of view of companies.

#### *1.5.1 Impact on consumers*

The main consequence of Covid-19 on wine consumption is a concrete change in wine consumer behaviour (Barbaresco *et al.*, 2021). Driven by the restrictions imposed by governments during the most difficult phases of the pandemic, wine consumers inevitably changed their approach to wine consumption, moving especially from an On-Trade (restaurants, bars, locals) to an Off-Trade (GDO and e-commerce) consumption (Pantini and Di Fuastino, 2021). According to a research presented by Ipsos, in the US,

consumers have shifted most of their consumption of wine to occasions that were previously atypical for them: at home (+ 35%), alone (+ 32%), in relaxing situations (+ 53%). The change had already begun before Covid-19, but the pandemic has accelerated the shift from On-Trade consumption occasions to Off-Trade (Barbaresco *et al.*, 2021).

Focusing on data, the OIV underlined that with only 234 million hectolitres and an estimated -3% on 2019, the volumes of wine consumed globally in 2020 reached the lowest level since 2002 with a loss of 7 million hectolitres, same results which followed the 2008/2009 financial crisis (OIV, 2021c). Surprisingly, a different result is what has been observed for Italy, in fact in 2020 it reached the highest level of consumption in the last ten years: 24,5 million hectolitres with + 7.5% compared to 2019. This happens especially thanks to an increase in the daily consumption of wine at home.

The situation created by the spread of the pandemic probably pushed wine consumers to find a way to escape from the negativity generated by the Covid-19 in wine consumption, but also a way to improve family social cohesion, which is one of the main aspects that has been subtracted to the global population during this period (Barbaresco *et al.*, 2021).

Other main trends that globally emerged during the Covid-19 era have been presented by Pierpaolo Penco during the 2021 edition of the Wine2Wine Business Forum event. The most important trend underlined is the global increase in frequency of wine drinking occasions. Despite the closure of most of the on-trade, the lack of tourism and vacation opportunities during 2020, as presented in the below graph (Figure 31), the total number of wine drinking occasions remained steady and, in many markets, such as Canada, Germany and USA, even grew to above 2019 levels. This also resulted in the fact that consumers changed their purchasing behaviours, preferring wine over other beverages (Penco, 2020).

FIGURE 31: CHANGE IN FREQUENCY OF GLOBAL WINE CONSUMPTION DURING



Source: Penco, P., Wine2wine Business Forum, “Wine consumers trends in the Covid-19 Era – Focus Millennials”, 2020, p. 7.

Wine occasions outside mealtimes, as meeting friends online with wine, have been the biggest driver of growth in consumption frequency in recent months.

Another trend that deserves to be underlined is the search for simplicity and naturalness (Barbaresco *et al.*, 2021). This has been a growing trend for years in both the food and beverage world, but primarily that of wine. With Covid-19, this trend expanded, with people becoming more and more focused on the idea of “healthy and clean”. This aspect was confirmed by the IWSR, declaring that consumers are more inclined towards wines perceived as “healthy” when they choose what to buy. This resulted in the fact that, contrarily to the overall global wine situation, the organic wine sector faced an incredible increase in popularity during the pandemic, since it was perceived as “healthier” by consumers. For example, in Japan, in the first half of 2020, organic sparkling wines saw a growth of the 169% in sales (MillésimeBIO, 2021).

### 1.5.1 Impact on companies

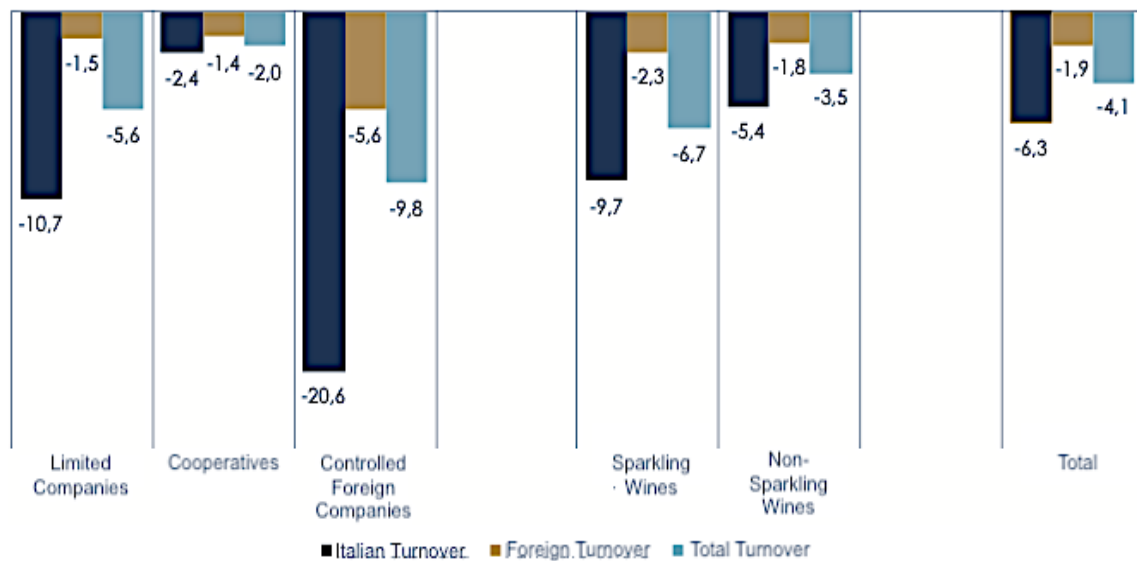
Let's shift now the attention towards the other main impact that the pandemic had on the wine scenario, which is the one on companies.

Covid-19 arrived in a period already dominated by great uncertainties in the world markets, linked to the evolution in terms of trade balances between countries and of global geo-political structures. First of all are the negative effects brought by the Brexit, between which the loss in competitiveness for the EU wine emerged (Sottile *et al.*, 2021)

The pandemic emergency caused a global impact on the consumption and trade of wine in almost every world country. Among the measures adopted by many governments to limit the spread of the Covid-19, the one that had the greatest impact on the overall wine market was the closure of the Ho.re.ca channels. In fact, this measure determined the interruption of wine supplies and the collapse of sales destined to this channel, as it will be later explained.

Nevertheless, the effects of the pandemic have not been the same for all wine markets around the world: side effects of the pandemic heavily changed from one country to another, but they also depended on the type of wine in question and the type of business affected.

FIGURE 32: TURNOVER VARIATION IN % (2019-2020)



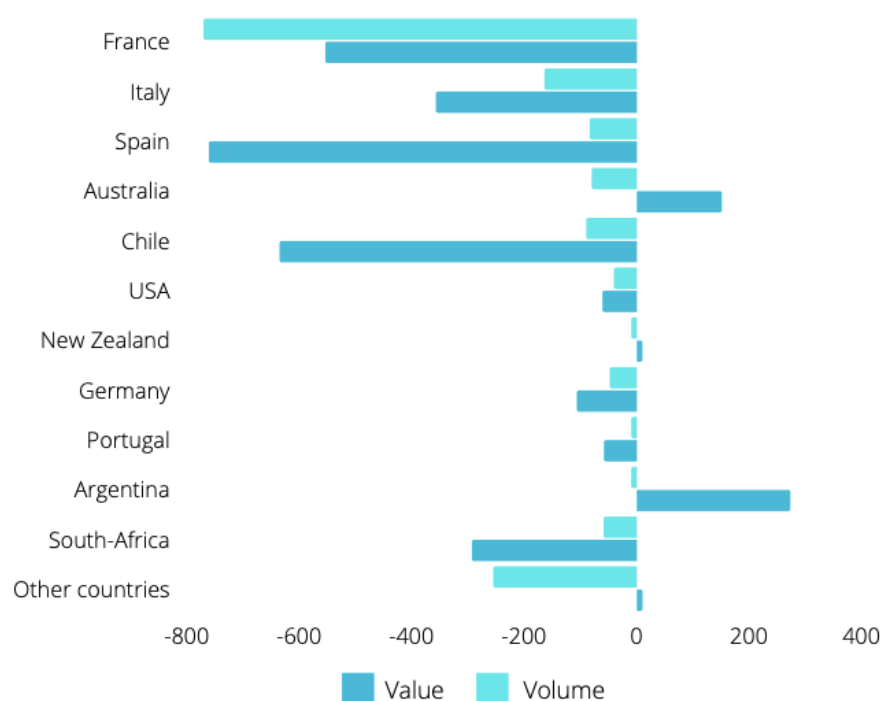
Source: Area Studi Mediobanca, Sace, Ipsos, "Vino e Spirits: le sfide di un'eccellenza Italiana", July 2021, p. 44.

Data presented by Ipsos shown that in 2020, overall wine sales decreased by 4,1% compared to 2019: the strong contraction on the domestic market (-6,3%) was attenuated from the international one (-1,9%). Sparkling wines suffered the most since, being more linked to social occasions, were less suitable for home consumption.

The cooperative system has better tolerated the consequences of the pandemic crisis: overall sales have dropped by 2% only, domestic sales by 2,4% and foreign sales by 1,4% (Figure 32).

By focusing the analysis on the consequences of the pandemic on the different countries, it can be seen that all the major wine-making countries suffered a loss in terms of international sales in this period, both in terms of value and in terms of volume, with the exception of Argentina and New Zealand which showed greater stability in terms of volumes traded (Figure 33). On the other side, France is the country that suffered the most in the first months of the pandemic: as shown by the below graph between March and May 2020, in fact, the French wine sector lost 770 million euros and 55 million litres (Figure 33).

FIGURE 33: WINE EXPORTS IN VALUE AND IN VOLUME (MARCH-MAY 2020 VS MARCH-MAY 2019)



Source: Del Rey, R., Piccoli, F., "Il mercato del vino in Italia e nel mondo prima e dopo il Covid-19 - Situazione, tendenze e sfide per il vino a livello mondiale", 2020, p. 59.

The main aspect characterising the period of the pandemic was the change in the sales channels. As already mentioned, the sudden closure for a significant part of the year of the Ho.Re.Ca channels and of wine shops and wine bars brought to a collapse of sales in these sectors, which was significantly replaced by an increase in sales in the large-scale distribution and e-commerce sectors (ISMEA, 2020). Data shown that in the Italian wine scenario this has resulted in a contraction in the value of the Ho.Re.Ca. of 32,7%, and of wine shops and wine bars of 21,5%. The fall in on-trade consumption has favoured the growth of large-scale distribution (+ 2,3%) which absorbed 38% of the entire market (Barbaresco *et al.*, 2021).

FIGURE 34: NATIONAL SALES FOR CHANNEL (2019-2020)

SALES CHANNEL	2019	2020	Var. % 2019-2020
	In % over total Italian turnover		
Direct sale	9,5	10,6	+4,5
Large-scale distribution	35,3	38,0	+2,3
Ho.Re.Ca	17,9	13,4	-32,7
Wine shops and wine bars	7,0	6,7	-21,5
Proprietary Websites	0,7	1,2	+74,9
Specialized sales sites	0,2	1,2	+435,2
Generic online platforms	-	0,2	+747,0

Source: Area Studi Mediobanca, Sace, Ipsos, “Vino e Spirits: le sfide di un’eccellenza Italiana”, July 2021, p. 45.

The loss of traditional distribution channels pushed wine producers to drastically increase their focus on digital marketing, and anything connected to the digital world, which started to be the main channel through which they could communicate with their customers (Coyne, 2020). The emergency caused by the pandemic brought in fact to the rise of new tendencies for the wine sector, in particular the high diffusion of the use of e-commerce platforms, the increasing diffusion of virtual wine tastings and the spread of home delivery services (NOMISMA, 2020).

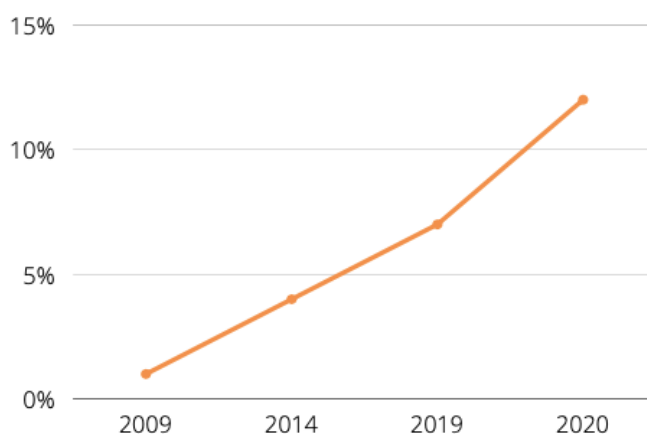
As far as virtual wine tastings is concerned, collected data from Nomisma in a survey to assess pandemic effects over Italian wine companies, shown that compared to 2019 (16% rate of adoption) in 2020 84% of the companies adopted them as a way to preserve the usually offered services to customers, even during the difficult period of the pandemic (Dell’Orefice, 2020).

This desire can be reflected also in the spread of the so-called “wine clubs”, restricted clubs around a brand or a denomination born in the 80s in California, in which the wineries create a direct and privileged relationship with consumers, who often adhere to a subscription, which ensures them regular supplies of wines and access to special offers. In 2019 wine clubs were a niche tool (11% companies used them), while in 2020 the percentage rose to 57% (Dell’Orefice, 2020).

Finally, what data have underlined is that wine e-commerce was the real winner in the year of the pandemic with + 74,9% for sales through proprietary websites, + 435,2% for pure players, or specialized sales sites, and + 747% for generic online platforms (Figure 34).

Data presented by Nomisma (NOMISMA, 2021a) shown that globally in 2009 the online accounted for just 1% of the wine sales of the off-trade channel, while in 2019 it reached the 7%, almost 2 billion bottles in absolute value, and in 2020 a weight of 10-12% was reached (Figure 35).

FIGURE 35: GROWTH OF WINE E-COMMERCE OF OFF-TRADE



Source: Nomisma, “L’e-commerce nel vino prima e dopo l’emergenza coronavirus: un’analisi dell’Osservatorio Nomisma Wine Monitor”, January 2021.

In Italy, the acceleration took place in 2020, when after the lockdown over 8 million consumers chose to buy their bottles of wine online. It represented the 27% of total wine consumers, a very significant figure when compared to the 17% of 2018. The main protagonists of this growth, as exposed in Figure 34, are both the pure players, such

as Tannico, Vino.com, Callmewine and all those platforms specialized in wine e-commerce, together with supermarket sites and Amazon (Alaimo *et al.*, 2020).

Furthermore, collected data state that wine e-commerce use will remain strong even after the end of the pandemic. It is destined to expand further in future years, which is confirmed by the growing investments that are affecting the sector and the increasing attention paid by wineries towards this channel, and the digital channels in general (social media, web marketing, etc.) (NOMISMA, 2020).

In the view of all collected results, it can be concluded that the main aspects on which companies should continue investing in the years after the Covid-19 are export, multi-channels sale, brand awareness, market diversification and above all digitalisation (Del Rey and Piccoli, 2020). The common denominator of the actions activated by companies in response to the Coronavirus emergency, in fact, is digital.

Nothing like this dramatic experience has allowed such a rapid acceleration of the use of digital tools. For years, the need for wine companies to speed up their digital transformation has been underlined by scholars, and surely this emergency has necessarily forced companies to amplify the use of these tools, stressing how digitalisation is an essential aspect for the wine sector as well as any other, which is an issue that will be better explored in the next chapter.



## **2. DIGITAL STRATEGY IN THE ITALIAN WINE SECTOR**

It becomes important at this point of the dissertation to dive deep in the definition of the industrial digitalisation as to begin to talk about the digitalisation in the wine industry itself and focus on the use of social media in the abovementioned sector. In order to do so it is paramount to define the context of development of the wine sector, that greatly changed in the last few decades. The general aim of this chapter is to understand and explain the importance of the use of digital tools in the wine sector, therefore after a general framing of the agricultural sector and its recent developments, it will be possible to contextualise the use of digital tools both in production and in marketing, understanding and clarifying the advantages and the disadvantages of the application of digital technologies in the wine sector, which remains profoundly grounded in tradition.

### 2.1 From industry 1.0 to agriculture 4.0

In the 18<sup>th</sup> century the First great Industrial Revolution introduced the use of machineries in industries, but the rapid changes in the global scenario brought mass production alive shortly after, at the beginning of the 20<sup>th</sup> century, during the Second Industrial Revolution. By the '70s electronic components and IT further automatised industry, generating the so called Third Industrial Revolution.

To this moment, the world witnessed a decisive rise in the use of technology, that is becoming a pervasive presence in the life of the single individual, as well as in the life of entire communities, cultures, and enterprises of all kinds, with a widespread worldwide development. The rapid development of technology brought new changes in industries, generating the so-called Fourth Industrial Revolution, that gave life to the concept of Industry 4.0, that stands at the basis of the process of industrial digitalisation.

The concept of Industry 4.0 continues to present blurred boundaries, but it might be defined as the result of a process of integration of “physical objects, human actors, intelligent machines, production lines and processes across organizational boundaries” (Agostini and Filippini, 2019). This definition gives the same relevance to the mere presence of the smart tech tools, as to their integration in the line of production, and to

the organizational structure of the firm. These elements are combined to create a line of integration that moves in the direction of full interdependence. This idea is paramount to the development of this chapter and is one of the pillars onto which the concept of full integration and interdependence of factors in Industry 4.0 are grounded.

Therefore, Industry 4.0 is a system that allows a continuous exchange of information between the singular autonomous elements that constitute the intelligent network that stands at the basis of this technologically developed industry (Agostini and Filippini, 2019). What has been observed is that there is still reticence toward the introduction of tools that create industry 4.0 in traditional firms, that are already late in the application and in the process of full integration of tech tools that are functional across the whole self-interactive chain. Although literature on the topic of industrial digitalisation is still limited, it might be possible to say that the digitalisation of the industrial sector in general seems to have repercussions on the entirety of the organization of the firm. At a functional practical level, physical, smart, connected devices are integrated in the internal structure of the enterprise itself, that needs to adjust and make functional choices in organic and managerial practices as to become able to read and react to the new data resources that the smart devices collect (Porter and Heppelmann, 2015; Agostini and Filippini, 2019). It is therefore paramount to understand in practical terms what does digitalisation means, with a focus on the Italian situation.

For what concerns Italy, the Fourth Industrial Revolution was framed in 2016 by the Ministry of Economic Development in the “National Plan for Industry 4.0”<sup>5</sup>. The national bureau issued a document that clearly defines the technologies that are to be considered part of the Industry 4.0 and are to be financed and promoted:

1. Advanced manufacturing solutions, such as presence of easily programmable, interconnected, interactive robots.
2. Additive manufacturing, such as 3D digital printers connected to IT software.
3. Augmented reality to support the productive processes.
4. Simulation between interconnected machineries to optimize the process of production.

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<sup>5</sup> 21 settembre 2016, Ministero dello Sviluppo Economico, “Piano Nazionale Industria 4.0”, [https://www.mise.gov.it/images/stories/documenti/2017\\_01\\_16\\_Industria\\_40\\_Italiano.pdf](https://www.mise.gov.it/images/stories/documenti/2017_01_16_Industria_40_Italiano.pdf)

5. Horizontal and vertical integration of information along the chain of value that stretches between the producer and the consumer.
6. Industrial internet: multidirectional communication between productive processes and products.
7. Clouds, and the management of a massive quantities of data on a dedicated cloud.
8. Cyber security on both online and open networks.
9. Big data and analytics to optimize both the product and its process of production.

The ministerial directives issued aimed at boosting the integration of the smart technologies abovementioned through national budget allocation, and at offering incentives to the enterprises in order to help them move from Industry 3.0 to the achievement of Industry 4.0. Nevertheless, ministerial directives and incentives are never enough to push firms to a full development and technological advance. As demonstrated in Agostini and Filippini (2019) the Italian industrial panorama is still fragmented: in their study, through an empirical analysis, they analysed the data collected with a cluster of 257 questionnaires, that were completed by the same number of Italian small, medium, and large manufacturing firms, as to understand that randomly selected manufacturing firms can be divided into three definite groups according to their level of adoption of Industry 4.0. The results confirmed that the higher percentage of firms (49,4%) did not adopt I4.0 technologies, while 38,2% are beginners, and only 12,4% of firms are full adopters of the Fourth Industrial Revolution technologies (Agostini and Filippini, 2019).

Facts and figures about this issue are hereby relevant in the light of a more appropriate focus on the concept of Agriculture 4.0 and most importantly in the digital revolutions that are undergoing in the wine sector.

It should be noted that “agriculture” is not anymore about a single farmer working on his piece of land with his bare hands and his field knowledge handed down from one generation to the other. Contrarily, agriculture has become in recent years a complex system that balances advanced technologies and attention to the environment.

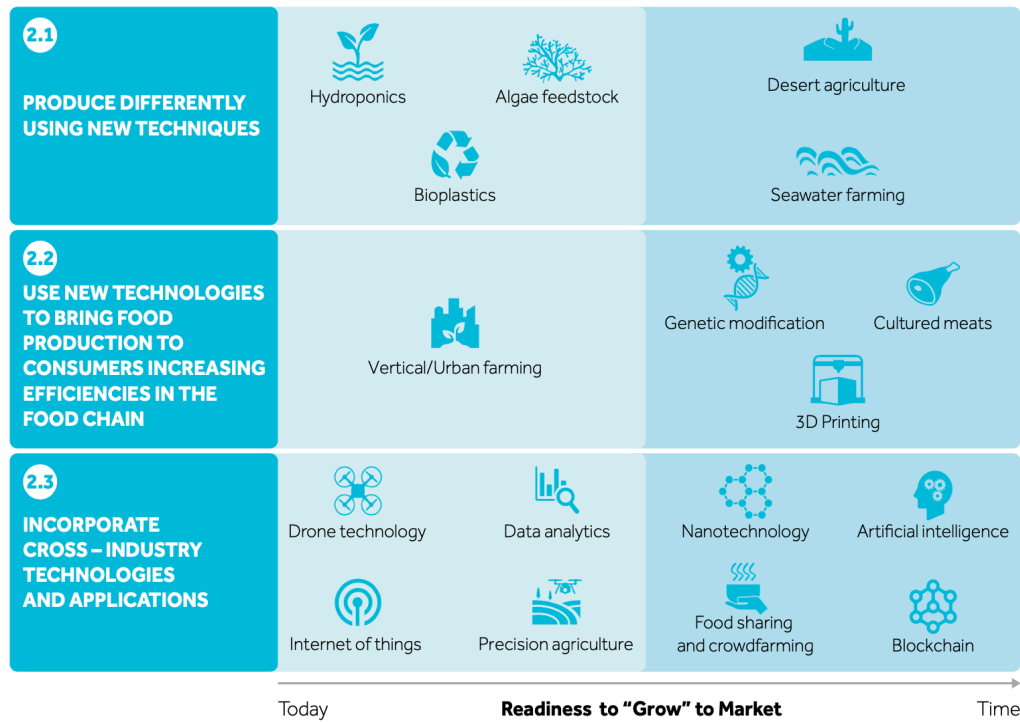
The decisive population growth and the rise in the demand for food are the main factors influencing the present and the future of the agricultural sector, that is facing challenges to become more and more sustainable. Agriculture 4.0 and precision farming are, up to this moment, the best solution to several problems. To define the concept of Agriculture 4.0 one must keep in mind the same idea that stands at the basis of the Fourth

Industrial Revolution, that is the vertical and horizontal integration of systems and technologies in the process of production. Agriculture 4.0 allows a whole new way of farming (Figure 36), allowing the integration of tech tools that are part of the Internet of Things with a large use of big data analytics, creating the so-called Internet of Farming system (Di Santi, 2020). The Internet of Farming uses the data collected by smart sensors to elaborate strategies to maximise the production in farming, without exploiting the natural resources in use. In fact, if the Third Industrial Revolution saw the mechanisation of the production process through the use of specialised devices, the Fourth Industrial Revolution increased the use of interconnected devices that are valuable for industries as well as eco-friendly. They foreground not only a system that maximises the production and the quality of the product, but that has a special focus on sustainability (Matese and Di Gennaro, 2015; Di Santi, 2020), consequently generating economic and energetic advantages for the enterprise.

Di Santi (2020) sustains that there is still a wide gap to be filled in order to understand and be able to correctly apply the technologies of Agriculture 4.0. This becomes particularly relevant in the light of the wine industry, which is of course part of the agricultural system.

The application of smart technologies to the wine sector is a field not yet deeply studied, and as per today very few authors and experts treated the subject in detail. However, it is generally accepted the idea that the wine sector is among the ones that could benefit more from the application of Agriculture 4.0 technologies, but it is also one that is still behind the times in the adoption of such means (Di Santi, 2020; Dressler and Paunovic, 2020) in production. Even if there is an abundance of tech tools that can be applied to the use of agriculture and to precision farming, there is still reticence, both economic and cultural, to the use of these technologies (Matese and Di Gennaro, 2015) in the production of wine, a product that is very different from other manufactural products for its strong connection to tradition.

FIGURE 36: AGRICULTURE 4.0 CURRENT AND FUTURE TECHNOLOGIES



Source: De Clercq *et al.*, "Agriculture 4.0: The Future of Farming Technologies", p.13 (2018)

It is important to underline the idea that the digitalisation process is not only limited to the production of wine in viticulture, but digitalisation is a process that begins with the employment of tech tools in production, and expands up to the selling of the product, also affecting the business models and the marketing arrangements that each firm has to address. A discourse on the state of the art in the Agriculture 4.0 sector is paramount to be able to better comprehend the grand context in which this thesis focuses on, keeping in mind that digitalisation process of the viticulture sector involves both the installation and the integration of digital tools for precision farming in the fields, and the redefinition of the company's asset and business model, and the application of technologies for marketing purposes, that is the main focus of this chapter.

## 2.2 Digitalisation in production

After the birth of the Old World/New World dichotomy, and the following addition of the third party Third World of Wine, discussed in the previous chapter, it is

possible to determine the fact that the wine market is extremely unstable (Wongprawmas and Spadoni, 2018). This is due to the fact that the field underwent several major changes in the last 20 years, both concerning the production of wine, but also its consumption. This is the consequence of changes in the habits of consumption, in which the new generations play an important role, that led to several consequences for the wine sector such as a drastic decrease in production, a decrease in consumption due to changes in behavioural patterns of the consumers (Neilson *et al.*, 2010), and a notable increase in the quality of the wine produced (Wongprawmas and Spadoni, 2018).

Moving back to our focus on digitalisation, experts agree in saying that the wine sector is not yet high tech (Wongprawmas and Spadoni, 2018), even if multiple measures have been taken to encourage the digitalisation of the viticulture productive system both by governments and by the OIV, the International Organisation of Vine and Wine (Di Santi, 2020). There are still noticeable differences in the degree of adoption of new technologies in the Old World and in the New World, fact that opens a whole discourse on the polarization of the methods and objectives that is factual in the dichotomy Old World/New World (Wongprawmas and Spadoni, 2018; Dressler and Paunovic, 2020). As already mentioned, since the Old World grows upon profound roots well embedded in tradition, a great effort has been noticed in trying to find a balance between maintaining the traditional company values and adopting innovative strategies to remain competitive in a world-wide market (Wongprawmas and Spadoni, 2018). On the contrary, New World firms, that generally do not have longstanding traditions in viniculture, try to emphasise the use of innovative tools and strategies in their companies (Wongprawmas and Spadoni, 2018). As demonstrated by a recent study conducted by Wongprawmas and Spadoni (2018), among the operators of the vitiviniculture field there are discordant opinions about the usefulness of digitalisation in the wine sector, but that might be explained by the mere fact that the cluster of reference is mainly composed of Italian operators that belong to the Old World pole of the dichotomy. This confirms and reinforces the idea that there is an extreme need to find a balance between innovation and tradition before being able to fully take advantage of the latest technologies that can help the production and the commercialisation of wine.

Technologies in use in the most digitalised wine firms for precision farming are connected mostly to the monitoring of the vine and the grapes, using GPS and remote

sensing techniques for image acquisition, giving live information about the state of the vine. Among the tools employed are remote sensing sensors that analyse the state of the health of the vine, wireless sensor network technologies, soil, crop, yield and quality monitoring devices (Matese and Di Gennaro, 2015). Furthermore, among the digital tools for precision farming are the technologies providing site specific agronomic inputs such as VRTs and robotics, that allow to manage and understand how to satisfy the real needs of the vines that are not heterogeneous throughout the same field (Matese and Di Gennaro, 2015).

The innovations in technologies that are under discussion hereby are those that can help improve the position of the firm in the viticulture field both technically and economically (Wongprawmas and Spadoni, 2018), but it is important to enumerate the benefits of the use of tech tools in the farming of vines and the production of wine. An increased rapidity and a consequent lengthening of the time span of production are two among the multiple benefits that the agriculture of precision driven by the use of smart and connected tech tools can bring to viticulture, along with an improvement of the conditions of work of the employees, the decrease in use of large cultivators machineries and consequent a lessening in the use of petrol, but also a more precise knowledge of the condition of the vineyard itself that permits an abatement in the use of chemicals that allows the maintenance of the food safety protocols (Di Santi, 2020). In other words, the adoption of technologies of the Agriculture 4.0 generates general optimisation of the whole production chain, that has been observed consequently to a digitalisation of the whole chain itself (Di Santi, 2020; Luna *et al.*, 2020).

### 2.3 Digitalisation in the organizational structure of the enterprise

The use of digital technologies is not limited to the productive sector of wine firms. In fact, thanks to the use of the Internet and the advent of Industry 4.0 technologies, it becomes interesting to discuss the repercussions of the digitalisation on the organisational part of enterprises. As previously mentioned, digitalisation is not the mere introduction of digital tools in production, but it is a process that comprises several changes in the way in which the enterprise operates both internally, and on the market.

Literature on the topic is far from abundant and often focuses on very specific case studies of technologies in use in different enterprises. However, in order to talk about the digitalisation of the wine sector, it becomes useful to firstly discuss the most generic changes that digital instruments brought to enterprises adopting an I4.0 integration model. Two very different aspects can be identified in this context, one that is predominantly connected to the structure of the I4.0 enterprise, and one that is more focused on the firm's relationship with the consumer, and thus on marketing.

Due to the use of technologies, enterprises feature human and non-human actors that collaborate to generate complex systems (Babar and Yu, 2015). Those systems continuously have to change and adapt to remain competitive on the market, and to do so they have to analyse data excerpted from tech tools. This creates a sense-and-respond loop (Babar and Yu, 2015) that keeps the enterprise up to date in the market, both for what concerns production and for what concerns the human and organisational factors.

Digital technologies outside the productive domain are, as for example, big data analytics, cloud computing and social media. All of these instruments enable changes in the business models of the enterprises, improving operational processes for the firms and for customer's experience (Babar and Yu, 2015). Studies (Ablyazov *et al.*, 2018) demonstrate how structural changes due to the adoption of digital tools in the management of enterprises allow them to achieve higher incomes earlier, also influencing their size. Therefore, the sense-and-respond loop generated by the use of technologies gave a significant contribution to the development of the organisation of enterprises (Zoppelletto *et al.*, 2020) foregrounding the achievement of superior performances basing their actions and decision on an holistic approach (Babar and Yu, 2015; Zoppelletto *et al.*, 2020) that comprises the design of an organisation structure that is based on the use of new technologies, but also keeps in mind the issue of sustainability.

It has to be acknowledged the fact that an increased use of technology in the chain of production of agricultural products such as grapes, and in the process that brings the bottle of wine on tables, might have a whole other set of positive aspects that impacts the possibility for the final consumer to gather information about the product. In fact, by using the data collected and transmitted along the chain of production, the process that brings the finished product on the table becomes less opaque (Di Santi, 2020). Digitalisation



incentives transparency, which is a positive side effect from the consumer's point of view, but also a facilitation for the producer since traceability becomes notably easier.

When discussing the organisations structure of a business and its strategies maximise profits and competitiveness, it is interesting to introduce the concept of business model. According to Dressler and Paunovic (2020), a business model can be defined as such:

A business model (BM) constitutes a viable value creation logic for achieving organizational goals. Simply stated, it is a tool (real or abstractly created) that represents a way of financing organization's activities. Business models can also be regarded as realized company strategies that support the creation and selling of products on the market, but it cannot be regarded as any single business model element by itself: value proposition, revenue model and network of relationships. In order to comprehend all the elements of the business model in a simplified manner, they are often represented through organizational and entrepreneurial value logic. (p. 4)

What is interesting about the function of a business model in the context of wine firms is the fact that a functional, well thought, and forward-looking business model became of central relevance for the New World firms to become global wine brands. In the same perspective, Old World firms should pursue the same objective by balancing traditionality, technology-induced innovations and better business models to the benefit of the same result (Dressler and Paunovic, 2020). In these days, companies, in order to survive, need to integrate the use of the internet in their business models and strategies, without forgetting the basic business rules and evolving into a consumer-oriented direction. This will guarantee their survival much more easily than the strategy of pushing on innovative products. In fact, it should be noticed that according to a study by Wongprawmas and Spadoni (2018) on a cluster of consumers from Italy, innovation in the wine industry should not go in the direction of producing innovative products that derange from the traditional wine, as for example the creation of innovative products such as a blue wine. Their inquiry demonstrates not only that traditionality is part of the wine culture, but also that the innovation in the wine culture should be directed more on the informative side, creating new ways to spread consumer's knowledge, without forgetting to work on the sustainability of the product (Wongprawmas and Spadoni, 2018).

Therefore, even if products and technological processes in the production of wine and vineries are stable, business models of the enterprises have changed (Dressler and Paunovic, 2020).

#### 2.4 Digital tools in marketing

This is the last field under scrutiny in a discourse about the digitalisation of wine enterprises, therefore this section will enumerate the strengths and the barriers in the use of digital technologies in marketing, before diving deep in an analysis of the most common digital marketing tools used by wine firms. Although the approach is holistic, it should be noted that most of the following discussion refers to the use of digital tools in marketing in small and medium enterprises (SMEs), in the specificity of the wine sector, that can nevertheless be considered as the emblem of the companies starting to engage in digital marketing.

After the advent of the internet in people's everyday life, marketing moved past traditionality and opened up to the adoption of technology, using it to maximise its efficiency. Nowadays, the most common digital marketing tools are the company's own website, blogs, social media, and the internet in general (Khan and Siddiqui, 2013; Chironi *et al.*, 2020). The most obvious reason for this change of means in marketing is of course the widespread accessibility to the internet, that allows firms to reach consumers in a simpler and cost-effective way (Carpio *et al.*, 2020; Chironi *et al.*, 2020).

According to a recent study (Finotto and Mauracher, 2020), the scholarly debate over the use of digital tools in marketing focused mainly on:

1. The creation of new geographies of communication determined by the use of digital tools
2. The increase of technology driven data that allow firms to profile and target consumers
3. The significant decrease of costs of marketing dictated by the affordability of the new means of communication.

These are fundamental debates that explain the popularity and the repercussions that digital marketing has on the managerial choices to use it. However, these three pillars

cannot sustain the complex discourse that revolves around the concept of digital marketing, neither generically speaking, nor focusing on wine companies. It is therefore important to treat this subject globally, by reflecting firstly on the positive aspects noted in the use of digital tools in marketing, and secondly on the negative sides, that are the barriers that still to these days limit the full adoption of these technologies.

The first driver to the use of digital marketing is its intrinsic tendency to easily develop, strengthen and preserve the relationship between the company and the consumer (Finotto and Mauracher, 2020), that has interesting turnovers. In fact, by trying to reinforce the company's brand on the market, firms were forced to enter the world of the internet, where they had to face the presence of consumers. Internet related tools are important factors in the producer/consumer relationship because they represent a way both to spread and to gather information, but they also create and encourage the exchange of information that happens among consumers only, and that represents a valid marketing tactic (Neilson *et al.*, 2010) and resource for firms. In fact, since the internet altered the relationship in place between the producers and the consumers (Muñoz *et al.*, 2019), enterprises had to learn how to conveniently use consumers' opinions at their own favour. The consumer on the internet is able to express its opinion, it is no longer passive. Therefore, companies began to listen to complaints and advices emerging from the consumers perspectives (Bernoff and Li, 2008) and reacting to the information they gathered. Communication on the internet, especially on social media, is facilitated (Sogari *et al.*, 2017), and therefore the internet bridged the gap between the producer and the consumer, which became an active actor that retains power over companies' decisions (Bernoff and Li, 2008) that are now "customer centric" (Bernoff and Li, 2008; Fiore *et al.*, 2016).

The second driver is much more connected to one of the fundamental needs of any firm, that is to be cost effective. Traditional marketing - meaning the use of television, radio and newspapers as communication tools - requires quite a lot of resources, both in terms of human actors and of capital invested, so the advent of digital marketing, which is far less expensive than traditional marketing both for firms and for consumers (Bernoff and Li, 2008; Watson *et al.*, 2018; Galati, Tinervia, *et al.*, 2019), represents an important point of favour in its employment. Digital approaches to marketing are cost effective because they cover both the distribution and the production channel, cutting the costs for

the company and improving marketing efficiency. Furthermore, with traditional marketing, SMEs usually are limited in their user base, as the cost for international marketing is extremely high and beyond their possibilities. However, because of the cost-efficiency of digital marketing, the economic risk of engaging in an international marketing campaign is notably lower, while the response in communicating with foreign markets is remarkably more rapid (Watson *et al.*, 2018; Finotto and Mauracher, 2020). This explains the abovementioned idea that digital tools created new geographies of communication, because they broadened the firms' potentialities to reach markets that were out of their reach with traditional marketing tools.

On the other hand, to have a comprehensive image of the use digital tools, it is also important to understand what are the main barriers that limit a widespread adoption of technological instruments in marketing.

Firstly, often in SMEs the marketing department receives little to no attention. This idea translates on the concrete with a lack of funds both for traditional marketing campaigns and to hire specialised employees (Finotto and Mauracher, 2020). This results in the fact that unqualified and unknowledgeable employees find themselves handling often disregarded marketing campaigns, making the most out of their inexperience, and creating contents that do not benefit the enterprise (Galati *et al.*, 2016) but only enhance the reticence to invest in its development. On the other hand, an increase in the business revenue often has a positive impact on the quality of the company's website (Galati *et al.*, 2016), which is an aspect that is very important for digital marketing, signalling that there is not a complete disinterest toward the use of digital tools in marketing, but the reason for disregarding it is often connected to the company's economic situation.

Secondly, the lack of appropriate funds is emblematic of the general perception of the marketing department in SMEs. This idea opens a whole discourse on the perception of the usefulness of digital marketing, of which company managements are still distrustful of. Some scholars noted that the economic impact of digital marketing is not easy to be calculated (Galati, Tinervia, *et al.*, 2019), and thus the management often does not have a concrete driver to its use. Web marketing, for example, is perceived as time consuming and resource eating (Canovi and Pucciarelli, 2019; Finotto and Mauracher, 2020), which explains the managers' reticence to adopt it. However, according to several studies (Galati *et al.*, 2017; Galati, Sakka, *et al.*, 2019; Galati, Tinervia, *et al.*, 2019), there is a connection

between the age and the level of education of the managers of the companies and their propensity to engage in the use of digital marketing tools. Younger managers with a higher level of education are more prone to the adoption of digital tools in marketing, especially in the use of social media. In fact, not only they stimulate their adoption, but the manager's skills are an undeniable driver to the use of digital strategies (Agostini and Filippini, 2019; Finotto and Mauracher, 2020). Young highly educated managers are more aware of the benefits of the use of digital tools than their elder counterpart, but they also are prepared at organisational and managerial level to work with technologies, and this impacts positively the efficacy of digital marketing (Galati *et al.*, 2017).

Giving a general overview of the pros and cons of the use of digital marketing tools as part of a larger marketing strategies for SME is useful to create a framework for reding the situation. However, it is more important for the aim of this dissertation to understand in detail what is the role of the most common tools used in digital marketing. In the next section it will be possible to focus on the role of websites, social networks, and e-commerce platforms as part of a marketing strategy, and understand their interrelation, which is increasingly significant for the future of wineries.

#### 2.4.1 Websites

Communication on the internet mainly happens through the company's own website, that is used primarily to inform consumers on the history of the enterprise and its products (Neilson *et al.*, 2010; Finotto and Mauracher, 2020). However, small and medium wineries are still significantly behind in the use of websites to create a communicative channel with consumers, when other kinds of enterprises are more advanced in the use of this digital tool (Neilson *et al.*, 2010). This happens because websites are extremely expensive both to be created and to be maintained up to date, which, as mentioned, is a notable barrier for SMEs (Neilson *et al.*, 2010).

Studies on websites as marketing tools (Neilson *et al.*, 2010) identified three main objectives that websites should meet to be effective on all fronts. The first objective is the most important for websites and is to provide information. Studies such as Chironi *et al.* (2020), among many others, aimed at discovering the effectiveness of online

communication through the use of websites. Chironi *et al.* (2020) suggested the use of an AGIL scheme (i.e., adaptation, goal-attainment, integration, latent pattern maintenance) that features detailed indicators that allow to measure the effectiveness of websites.

The AGIL scheme (Figure 37) in the study by Chironi *et al.* (2020) was used to understand the efficacy of the communication of wineries' websites in the Etna Mountain territory in the Italian region of Sicily, but it is potentially applicable to the study of any website. This is not the only method that can be used to assess the quality of a website (Galati *et al.*, 2016), but it is the one that hereby most clearly allows for considerations about the importance of the formal dimension, the one more closely connected to technologies and accessibility, and the importance of the content and information of a website.

FIGURE 37: AGIL SCHEME WITH DIMENSIONS, SUBDIMENSIONS, INDICATORS AND SCORES TO MEASURE THE EFFECTIVENESS OF A WEBSITE

Dimension	Sub-Dimension	Indicator	Score	
A-Adaption	1	Site design	Quality of site design	From 0 to 5
	2	Ease of access and browsing	Ease of navigation on the website	From 0 to 5
	3	Quality of images	Quality characteristics of pictures of the territory	From 0 to 5
G-Goal attainment	1	Information provided	Quantity of information about the link with the Etna Mountain territory	From 0 to 5
	2	Thematic areas	Quantity of touristic information, i.e., information and other activities linked to the territory (culture, wine & food activities, nature, sport, art, folklore, etc.)	From 0 to 5
	3	Pictures of the territory	Number of pictures evoking (linking with) the Etna Mountain territory	From 0 to 5
I-Integration	1	Communication style of the website's reception	Communication style	From 0 to 5
	2	International profile	Number of foreign languages used	From 0 to 5
	3	Interactivity of website	Chat rooms, forums, social networks	From 0 to 5
L-Latent pattern maintenance	1	Identity	Distinctiveness of the website	From 0 to 5
	2	Originality/innovation	Originality and innovation of the website structure	From 0 to 5
	3	Coherence/consistency	Coherence of communication (images, language, contents, text, immediacy of the comprehensibility of the message, evocation of the territory)	From 0 to 5

Source: Chironi, *et al.*, (2020) 'Study of wine producers' marketing communication in extreme territories-application of the AGIL scheme to wineries' website features', *Agronomy*, 10(5).

While the adaptation dimension and the latent pattern maintenance dimension evaluate the formal features of the website, the goal-attainment dimension focuses more on the informative function of the website, and the integration dimension measures the openness of communicative channels. From an analysis of the AGIL scheme emerges the

fact that design and accessibility of the website are as important as the company's communicative intentions and are measured through the assignment of multiple scores in well-defined indicators. At a general level, this sustains the idea that providing information is crucial, and is an aspect that should be fostered and cultivated especially in the wine sector, mostly because it is a sector in which the consumer needs to be sufficiently knowledgeable to make competent decisions about its purchases (Nosi *et al.*, 2019). Consumers buy wine basing their decisions on intrinsic cues, that are information on the product attributes, and on extrinsic cues, that are mainly the price, the name of the brand and the content of the label (Nosi *et al.*, 2019). For this reason, wine companies need to fill the gap in consumer's knowledge as much as possible, as to give them the tools to make an informed choice. One way to do so, in marketing terms, is for wineries to bet on the efficiency of digital narration (Vergamini *et al.*, 2019), that is the idea of selling the company's history and peculiarities in production to the consumer through the use of narrative, transforming their identity into a communicative asset.

The second objective of a website is to foster the e-commerce. The e-commerce mechanism is still not very developed in wineries websites, and on this idea we will return in the e-commerce section of this analysis, that will explain in detail the functioning of a website and its features. However, it should be noted hereby that it appears that websites that over the years remained cemented in a role that is predominantly informative and do not include or foster an e-commerce are those websites are generally lower in quality (Galati *et al.*, 2016). This aspect is not seldomly taken in consideration when assessing the quality of a website, although it represents an important factor in the usability of the website itself.

The third objective of a website is to create a relationship with consumers. The idea of building a relationship between the company and the consumer is now the dominant logic of the market. Consumers started to unite in groups that are product focused or participate in brand communities, and this signals the opening of a new frontier for the benefit of e-marketing. According to Neilson, Madill and Haines (2010), by creating and maintaining strong relationships with consumers, companies have to achieve

increased brand loyalty and repurchase rates, reduction in consumer switching behaviours, increased positive word of mouth, access to grassroots research and

suggestions for product improvements and the development of long term symbiotic consumer-marketer relationships (p. 131)

As much as for the third objective, this second one will be further analysed in light of the increasing use of social networks, that provide another useful way of creating a relationship with the consumer.

#### 2.4.2 Social Media

Kaplan and Haenlein (2010) define social media as:

a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content. (p.61)

Digital marketing can be envisioned as a master category that includes technologies and instruments that interconnect through the use of the internet, and social media are one among the various subcategories of digital tools. In marketing digital tools such as social media grew recently and notably in relevance, so much so that they attracted the interest of researchers and of the academia (Canovi and Pucciarelli, 2019). Social media extended the concept of traditional marketing (Galati *et al.*, 2017) precisely because of its interactive nature, that grants the possibility to create connections. In the last few years scholars (Kaplan and Haenlein, 2010; Canovi and Pucciarelli, 2019) outlined six types of social media. Each of them has different structure but they all share the same intention, that of communicating:

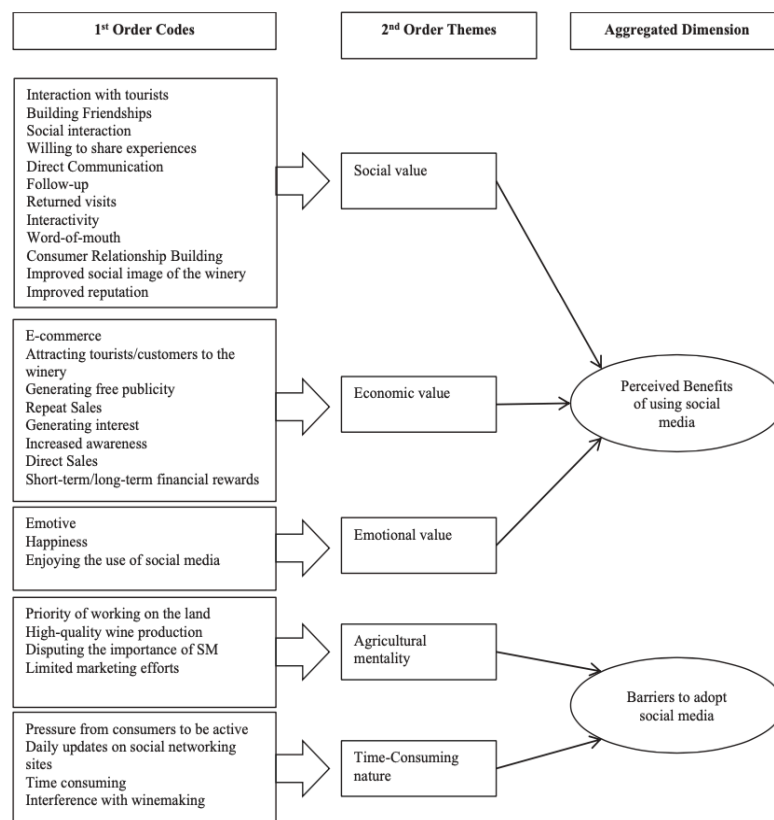
1. Collaborative projects
2. Blogs and microblogs
3. Content communities
4. Social networking sites
5. Virtual game worlds
6. Virtual social worlds



Naturally, not all of them have a relevance for companies in the marketing word, but blogs and microblogs such as Twitter, content communities such as YouTube and social networks such as Facebook, established as relevant tools to create marketing content. The relevance of the use of social media in marketing is the aspect that should be considered in this context, that is the companies’ practical application of social media in their marketing strategies, especially in the wine sector.

Scholars (Galati *et al.*, 2017) theorised three ways in which companies uses social media. The first is a traditional approach, in which social media are considered as any other traditional marketing channel and the firm expects a direct return on investment. The second is a traditional-experimental approach “where purely economic aspects are also associated with social interactions (social-ROI)” (Galati *et al.*, 2017), while the third approach is more experimental, in which the firm uses a human voice to influence consumer’s impressions on the firm and the products.

FIGURE 38: DRIVERS AND BARRIERS IN THE USE OF SOCIAL MEDIA IN WINE



Source: Canovi and Pucciarielli, (2019) ‘Social media marketing in wine tourism: winery owners’ perceptions’, *Journal of Travel and Tourism Marketing*, 36(6), pp. 653–664.

Nevertheless, the different ways to use social media does not influence the fact that scholars have observed drivers and barriers in the use of social media, as much as for digital tools in general, and Canovi and Pucciarelli (2019) created a scheme that summarises them (Figure 38).

It should be noticed that most of the drivers and barriers highlighted by Canovi and Pucciarelli (2019) are the same drivers and barriers previously discussed in the general context of digital tools in marketing, and they are all generated from the same specific needs and observations. However, the focus on social media is useful to contextualise the actual decision of the firms to use specifically social media to communicate, connecting the barriers with a specific mindset of the entrepreneurs rather than tangible assets or economic drawbacks. For the same reason, according to study by Szolnoki *et al.* (2018), big firms are more likely to adopt the use of social media, confirming and reinforcing the idea that the likeliness of use is connected to various reasons that are predominantly economic, and not only social and emotional.

It is interesting to underline once again that there seems to be a discrepancy between the Old World producers and the New world producers in the domain of social media adoption in the wine sector, with a higher degree of adoption by New World producers. However, Szolnoki *et al.*, (2018) observed a general increase in the degree of adoption both in the New and the Old World, maintaining the fact that Old World countries still prefer a traditional approach through old-school communication channels such as post or phone and fax, confirming that the use of social media does not erase the traditional personal communication means (Szolnoki *et al.*, 2018).

The fourth type of social media suggested by Kaplan and Haenlein (2010) is the main focus of this section: social networks. They became part of people's daily life (Carpio *et al.*, 2020), and quickly imposed as a source of information for the general public. In fact, consumers turn more and more often to social media to acquire information about products and brands, therefore it should not be surprising the fact that companies are now including the use of social media in their e-marketing strategies.

As already underlined, wine is an intimidating product for non-knowledgeable consumers, and because of that the amount of information that a company should provide about it is great. Social networks allow not only the promotion of the products, but incentive the building of a relationship with the company, granting a certain amount of

loyalty to the brand and to the product without being extremely expensive for companies. Furthermore, they can also be deemed a useful tool to provide details about events, that are increasingly popular after the boom of the wine tourism phenomenon, that is becoming quite important for wineries and the touristic sector in general (Canovi and Pucciarelli, 2019), rendering the presence of wineries and vinerias a touristic attraction for wine enthusiasts.

Social networks are valuable tools to spread information, but thanks to their interactive nature they also allow the consumer to generate valuable content through the use of comments. In the world of e-marketing through social media, the consumer is neither an indistinct figure that generates sales and increases revenues nor a passive observant of marketing campaigns. On the contrary, consumers are active subjects that have the ability to influence the effectiveness of a brand, its position on the market, and the production of targeted products with the mere action on commenting on the company policy or its products (Szolnoki *et al.*, 2018). Through the use of social networks and by analysing consumers' opinions, companies underwent a process of democratisation of the production, that is now consumer centric (Fiore *et al.*, 2016).

Furthermore, the interactive nature of social networks lead consumers to take on another very important role in nowadays e-marketing campaigns – consumers are influenced by the marketing strategies of the company, but they are also becoming influencers for other perspective clients that increasingly rely on the opinion of other consumers to make their choices (Pucci *et al.*, 2019), especially in the market of wine (Sogari *et al.*, 2017). This phenomenon, even if is not directly part of the marketing strategy of companies, can bring many benefits such as<sup>6</sup>: an increase in the popularity of the brand that benefits of unintended advertisement generated by its own clients; an enhancement of a positive electronic word of mouth (EWOM), the informal communication about products, that is extremely important in the wine sector as the success of a wine depends very much on its reputation (Galati *et al.*, 2017); a boost in sales, thanks to word of mouth (WOM) as positive reviews positively influence sales (Szolnoki *et al.*, 2018; Hölle *et al.*, 2020); a growing engagement in social networks, that

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<sup>6</sup> Benefits are listed in Sogari *et al.* (2017), p. 275-276. All others information are referenced in-text.

has a positive return on the popularity of the company's profile itself; an influence of end-users' entrepreneurship drive.

### 2.4.3 E-commerce

The broadening of the use of the internet brought with it the possibility to carry out economic transactions and exchanges of goods and services through the web, bringing e-commerce to light. E-commerce is “the process of buying and selling products or services using electronic data transmission via the Internet and the www” (Grandon and Pearson, 2004), and the wine sector was affected, as any other sector, by the use of this technological tool.

In addition to the benefits of the use of digital tools highlighted up to now, there are several benefits connected to the use of e-commerce too that should be mentioned. First of all, the broadening of markets is a significant advantage for firms, as through the use of the e-commerce they can enlarge their consumer bases. This happens because e-commerce gives the idea of being able to eliminate geographical boundaries (Saba *et al.*, 2017) since, through the internet, consumers can buy products from all over the world. However, this is not entirely true as both geographical and legislative boundaries must be taken into account with all the consequences of the cases (Saba *et al.*, 2017). For what concerns the respect of legislation, for products belonging to the food and drink category, such as wine, legislations on the topic may vary from one country to another, complicating the idea of a possible, unlimited, and unregulated process of buying and selling of alcoholic drinks online. Nevertheless, the numbers registered in sales increased notable between 2010 and 2017 (Sohn *et al.*, 2020), and continue to grow (Hölle *et al.*, 2020).

The second advantage that firm registered from the use of e-commerce is a significant reduction of costs in sales. Even if in recent years the wine sector adopted direct sales channels (Cobelli and Wilkinson, 2020) and consumers' adoption of online channels to buy wine is still limited, it should be considered that the cost of creating and maintaining an e-commerce channel is far less relevant than the cost of maintenance of the classic direct sales channels. Therefore, the reduction of costs for selling products for

firms is drastically cut down with the adoption of e-commerce channels (Jorge *et al.*, 2020).

In the use of e-commerce there are also several advantages and disadvantages on the side of consumers<sup>7</sup> that an enterprise should consider when deciding if opening an online shop is worthwhile for the benefit of the revenues of the enterprise itself. Among the advantages of buying online for consumers the possibility to shop anywhere and in any moment should be mentioned, as convenience is always appreciated by consumers. Furthermore, there is also the possibility to have a global choice both if they rely on intermediary companies and if they choose to buy from foreign producers. Online shop is thus time saving and offers the possibility to compare wines both in terms of quality and of price. On the side of disadvantages in the use of e-commerce technologies to buy online, at the top of the list there are issues connected to the possibility of misevaluating the quality of a new product online. These issues are closely linked to a general lack of trust that the average customer online has, such as lack of trust in virtual sellers, or security risks in transactions. Furthermore, it should be noted that buying online might not be the preferential method for some customers that still prefer to buy products face to face with a seller, having thus human interactions. These considerations have a holistic take, they consider the advantages of online buying in general, but they are nevertheless applicable to any product category, especially that of wine.

In line with the poor adoption of online digital tools in Italy, the field of e-commerce is still underdeveloped compared to the same field in several different countries, both of the Old and of the New World (Festa *et al.*, 2019; Cobelli and Wilkinson, 2020). It should however be noticed that the fact that Italy is lagging in the use of e-commerce solutions is not entirely due to entrepreneurial choices, even if the old mentality of the managerial department of firms still plays a central role in the non-adoption of this technology, especially for SMEs. In the specific case of e-commerce, there is also a resistance to the adoption of this technology from the side of the customer, that is still reluctant to the use of this kind of technology (Cobelli and Wilkinson, 2020). Nevertheless, a trend in the purchasing of wine online can be identified, placing expensive wines as the most bought (Cobelli and Wilkinson, 2020). It is notable that most successful

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<sup>7</sup> Advantages and disadvantages hereby listed are drawn from Jorge *et al.*, 2020.

stories of well-working e-commerce platforms in Italy are those of intermediaries (Festa *et al.*, 2019). This can be easily explained considering the fact that intermediaries e-commerce platforms obviate the problem of the lack of security in payments that seems to be a dealbreaker for the average online buyer, and they also offer the possibility to explore several propositions and read other buyers' comments, emphasizing the prominent role of WOM and EWOM in the wine sector.

An e-commerce is a website, and this means that it encompasses all the features of a website that has been defined in the previous pages. However, it is also a fully functioning shop (Hölle *et al.*, 2020), and therefore it must obey the laws of product arrangement. This is the reason behind the studies conducted by academics that focus on spatial arrangement and on the responsiveness of a website. What should not be forgotten is the idea that an e-commerce follows both the rule that apply to websites, as to be effective, and all the principles that govern regular businesses (Yannopoulos, 2011).

Focusing on the functioning of an e-commerce, it is interesting to list the three manners in which businesses propose their products on the internet through the use of a website that allows consumers to buy directly from their houses (Neilson *et al.*, 2010). The most efficient wine e-commerce is the one that is well constructed and fully functioning, encompassing all the features of a well thought general website, but that also allows to buy products directly from the same website that provides information about the winery. The second kind of e-commerce is the one that serves as a shop window, but that allows consumers to complete the purchase off-site, in a website specialized in e-commerce. The third use is the one in which businesses are less involved, entrusting third party websites to manage the selling of wine. This is noticeable, because the idea that e-commerce should be able to eliminate the presence of intermediaries (Saba *et al.*, 2017) proves itself wrong. On the contrary, in the recent years it was possible to assist to the birth of several online intermediaries, and a rapid growth in interest in selling wine online.

Online selling of wine is managed for the 78% by general e-commerce shops and by online specialized shop, among the most famous and the most used are Amazon (23%), Tannico (22%), Alibaba (10%), Vivino (8%) and Vino75 (6%) (Maxfone Srl, 2020). Other online channels for the selling of wine are wine shops, wine cellars and other shops that occupy the market for the 14% and large-scale distribution online shops for the 8% (Maxfone Srl, 2020).

### 3. EMPIRICAL RESEARCH

In order to understand how Italian organic wine producers approach the use of digital tools in production and marketing, which is the main objective of this dissertation, the method of analysis chosen is a survey, submitted from October, 18<sup>th</sup> 2021 to January 3<sup>rd</sup>, 2022. The survey has been created and submitted to 297 firms, all based in Italy, covering every region of the peninsula. The database of firms has been personally created by researching names and contact information of wine producers in different websites such as [quattrocalici.it](http://quattrocalici.it), [sorgentedelvino.it](http://sorgentedelvino.it), and [vino-bio.com](http://vino-bio.com). All firms have been reached by email and through phone call, asking to complete a survey for academic purposes and granting anonymity to all the respondents.

In spite of the high number of firms contacted, 20,5% of the firms began to respond to the survey, of which 67% replied to every question asked. The rest of the answers were not completed, however, 3% of the firms answered to more than 50% of questions, and 30% answered for less than 50% of questions asked. Nevertheless, all relevant answers were taken into account as to draw conclusions on the study.

The survey, created and submitted through the use of the Qualtrics platform, is composed of 54 questions, divided into 9 modules:

1. General information on the company (13 questions)
2. Human capital (7 questions)
3. Strategic focus of the firm (4 questions)
4. Marketing activities (4 questions)
5. Marketing channels (5 questions)
6. Company website (5 questions)
7. Use of Facebook (5 questions)
8. Use of e-commerce (5 questions)
9. Covid-19 implications for the company (6 questions)

The types of questions asked were of different nature and composition. Some of them were open, and wine producers were asked to type short answers connected to the general information of the firms. Other questions were single answer, multiple answer, matrix table questions. The matrix table questions allowed answers from 1 to 5, where 1 stood for “not important” and 5 for “extremely important”.

## 3.1 Results

### 3.1.1 General information of the company

Through 13 questions that provided information on the generalities of the company, it was firstly possible to understand the localisation, the longevity, the structure, the dimension, and the net worth of the companies.

With the first question it was possible to understand where in Italy the companies were located (Figure 39).

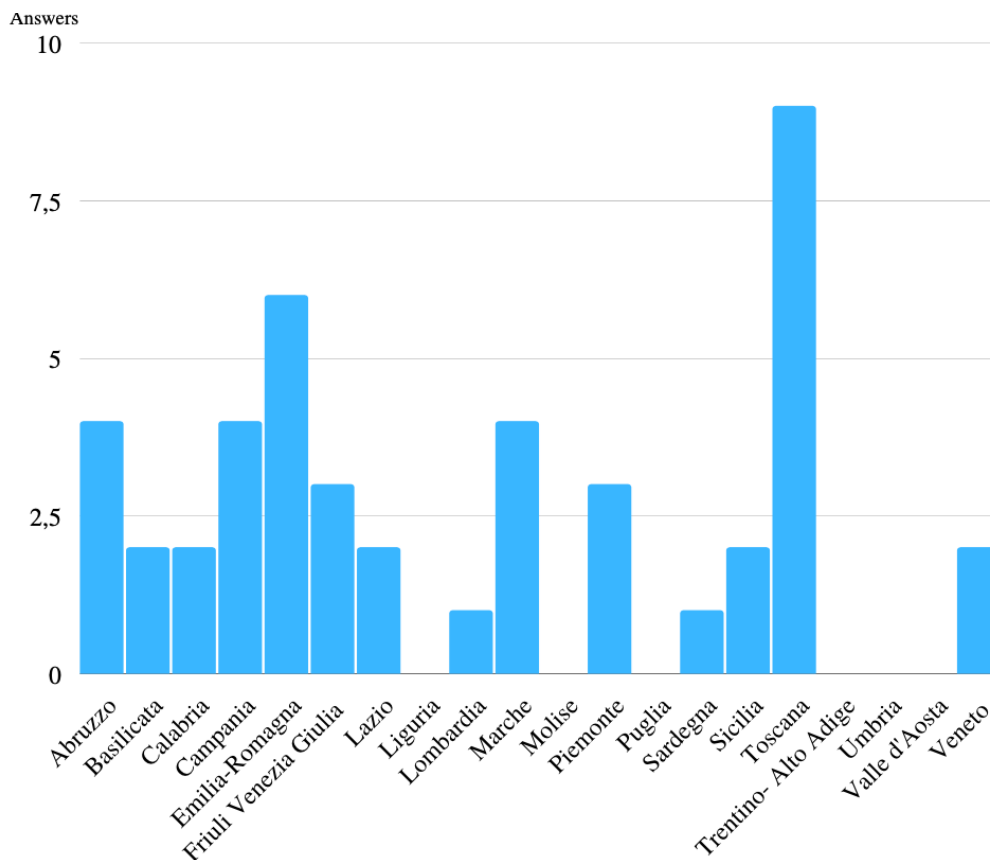


FIGURE 39: LOCALISATION OF THE RESPONDENTS PER REGION

Knowing where the companies are located allows us to understand the coverage of the survey, which in this case covers more than 70% of the Italian regions. 45 companies answered to this question, most of them located in Tuscany.



As it is possible to see from the graph above (Figure 39), only few answers were collected from Sicily and Apulia, which as discussed in the first chapter, are the first two major producers of organic wine in Italy.

The following question was aimed at understanding the longevity of surveyed companies. Through an open-ended question, respondents were asked to state in which year the company has been founded. Answers have been elaborated and different year ranges have been identified (Figure 40).

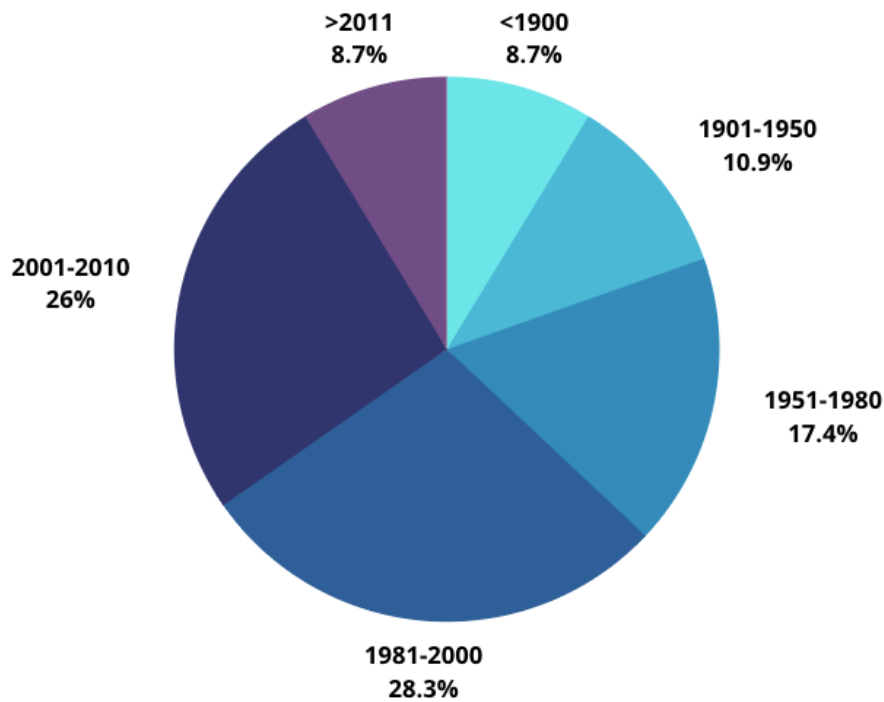


FIGURE 40: COMPANY'S YEAR OF FOUNDATION

Collected data show that the studied sample is constituted by both ancient and young companies, where the majority of them (65,3%) have been founded in the last millennium. This figure can be connected to data analysed in the previous chapters, underlining the fact that wine companies are usually old family businesses that have been handed down for one generation to the other.

The following question enters more into the production of organic wine by sample companies. In particular, the formulated question was “Do you produce organic wine?”, and respondents could choose between three possible options: Yes, only organic wine; Yes, both organic and conventional wine; No, only conventional wine.

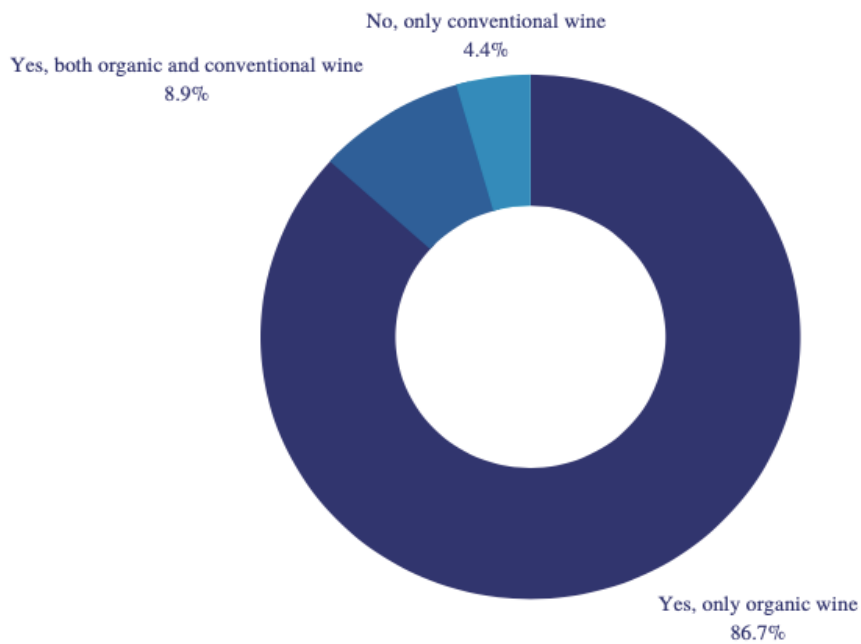


FIGURE 41: KINDS OF WINE PRODUCED

The majority of the respondents gave a predictable answer (Figure 41), due to the nature of the survey. In fact, the database was constructed of companies producing organic wine. Nevertheless, the companies that responded negatively are supposedly not yet certified for the production of organic wine. This is suggested by one of the answers to the following question in analysis, that was an open question in which companies had to type the year in which they started producing organic wine (Figure 42).

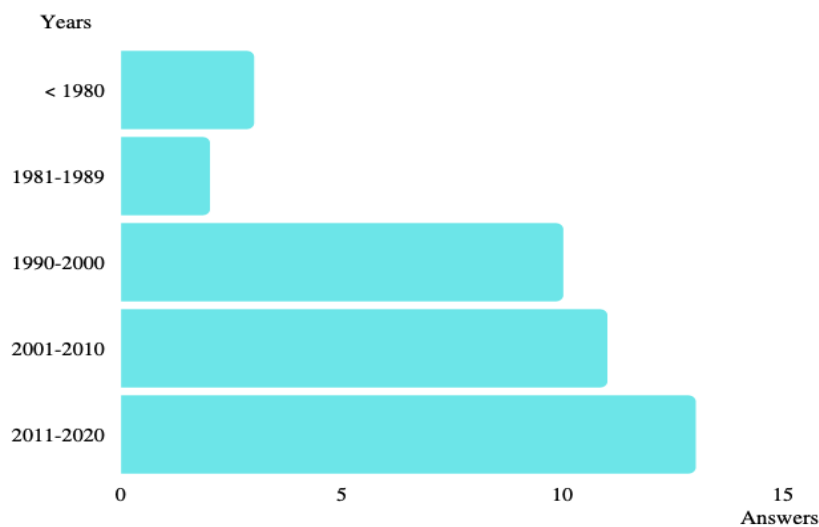


FIGURE 42: DEBUT YEAR OF ORGANIC WINE

One of the respondents typed “officially from 2015”, thus suggesting that although they did produce wine according to the principles of the organic, they were not as yet certified as organic producers.

The answers were elaborated, and it was possible to divide the years in 5 different ranges. It should be noticed that only producers that to the previous question answered that they actually produced organic wine, were able to see this question.

Considering that the first European regulation officially recognising the term “organic wine” dates back to 2012, all the respondents that declared that they started producing organic wine before 2012 probably produced wine from certified organic grapes, although not yet certified organic wine, as debated in the previous chapters.

Furthermore, the fact that the majority of producers assessed the initial year of production of organic wine in the year-range that goes from 2011 to 2020, is probably due to the fact that their wine obtained an official certification as organic wine after the 2012 regulation. It is interesting the fact that most of literature used to define the organic wine sector in the first chapter portrays data from 2010 onward, ignoring the production of organic grapes that was regulated in the previous years.

Another interesting response is related to the reason behind the production of organic wine. Most firms admitted that they began to produce organic wine for ethical reasons (Figure 43). This is connected to the growing interest in sustainable cultivation and production of wine, which is spreading in the last few years.

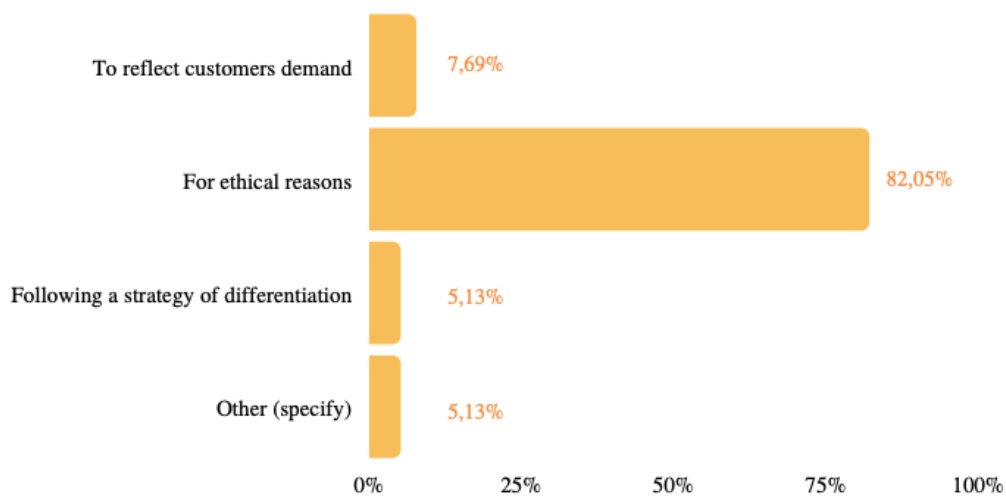


FIGURE 43: REASONS BEHIND THE PRODUCTION OF ORGANIC WINE

This urge to conduct a sustainable lifestyle is a consequence of a new way of thinking of consumers, on the side of the demand, that is necessarily reflected on production, on the side of the offer.

Two other possible choices were contemplated in the survey, but no respondent selected “Due to difficulties in selling traditional wine” and “To obtain financial help from institutions”. Those who selected “Other”, specified that they chose the organic option for “sustainability and quality reasons”. This reinforces the supposition that producers choose the organic option as a response to a moral dilemma about sustainability.

To complete the general overview on the interviewed firms, it is interesting to indulge on data on the dimension, turnover, distribution channels, and internal structure of the firms.

Beginning with average annual turnover of the last three years, more than half of the companies position themselves in the range that goes from 100.000 to 300.000 euros. The highest range, that signals a turnover higher than 10.000.001 euros has been selected only by 2,08% of firms (Figure 44).

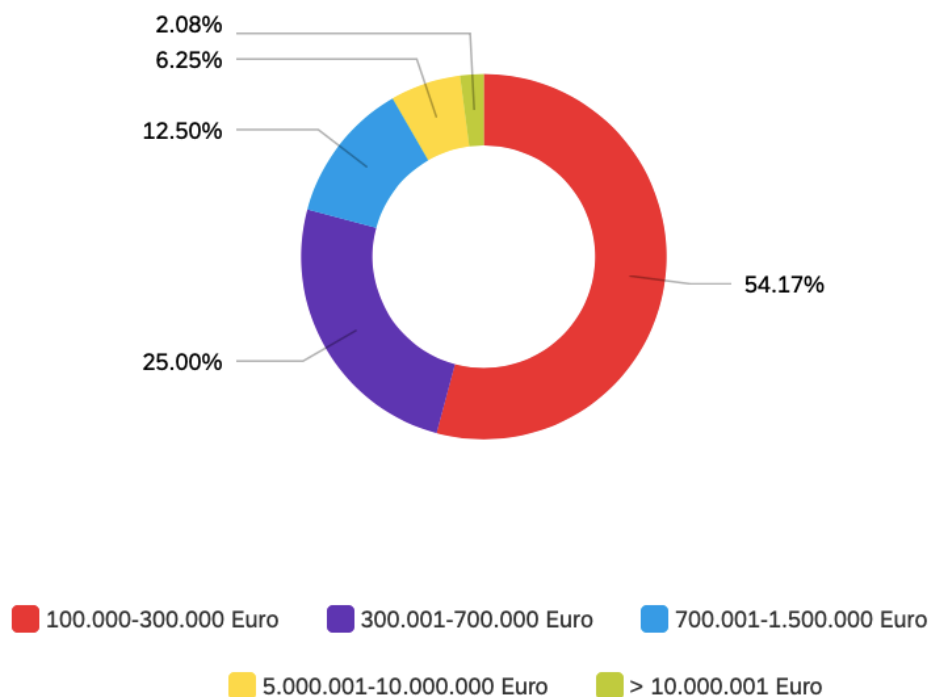


FIGURE 44: AVERAGE ANNUAL TURNOVER IN THE LAST THREE YEARS

This underlines the fact that most companies producing organic wine do not have very large incomes, and this is connected to the fact that those same firms do not have large rates of production either (Figure 45). In fact, more than 50% of firms affirm that they produce 50.000 bottles ca per year.

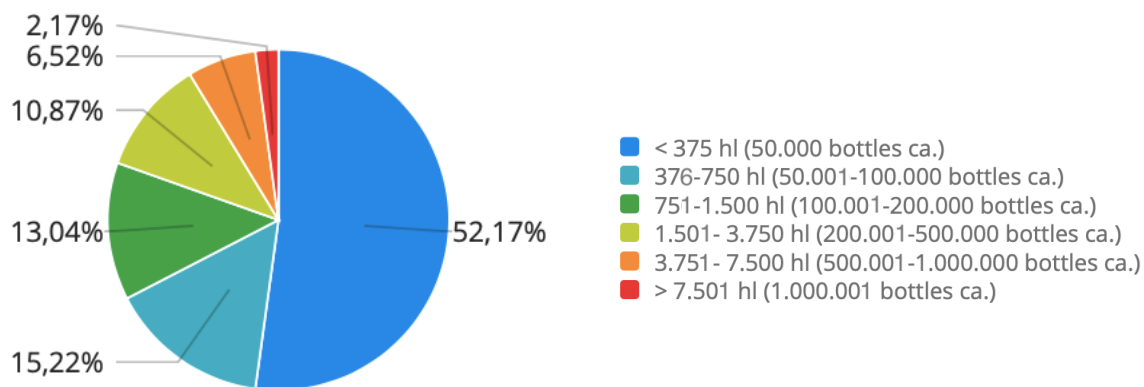


FIGURE 45: AVERAGE ANNUAL PRODUCTION (HL)

As far as distribution channels are concerned (Figure 46), the top three channels chosen by wine companies are Ho.Re.Ca (25,62%), direct sales in winery (22,50%) and specialized wine shops (21,88%). Those who responded “other”, specified that they distribute wine though exportations, importations, and by selling their wine to other cellars.

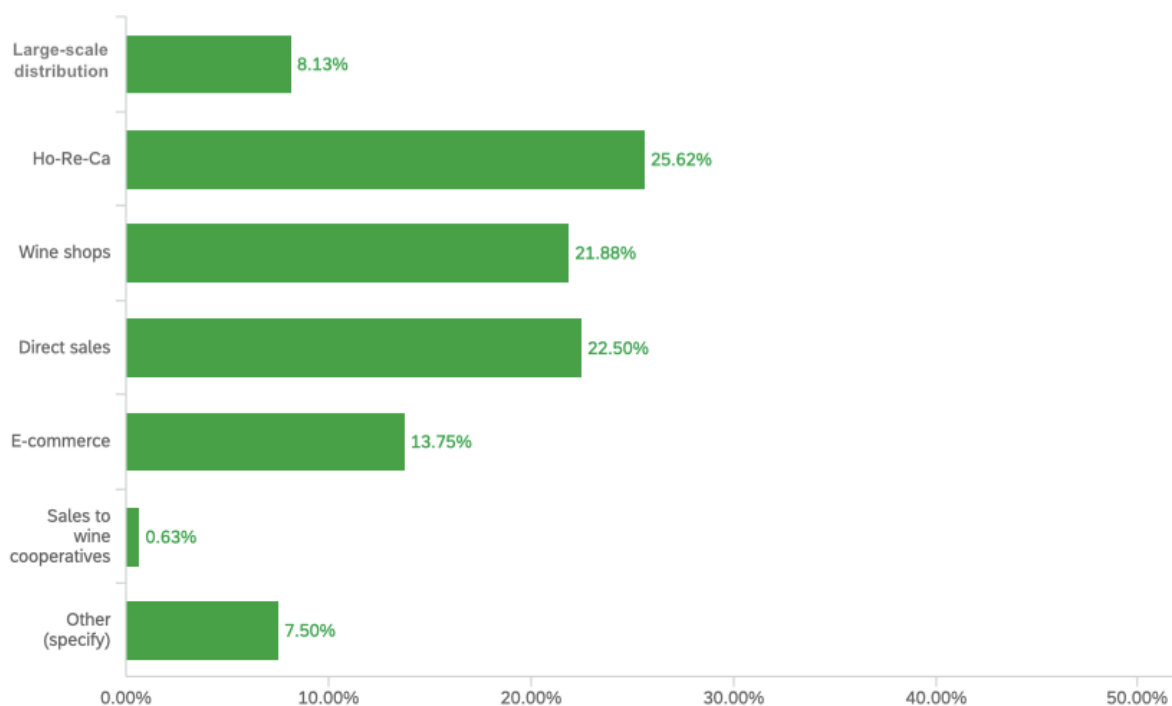


FIGURE 46: DISTRIBUTION CHANNELS

It was asked if companies sell their organic wine abroad, and 86,96% of respondents confirmed it (Figure 47). To those who responded positively, was submitted another question to observe which cut of the produced wine is sold abroad (Figure 47). The answer is quite fragmented, and yet more than half of respondents collocate their export rate between 51 and 80%.

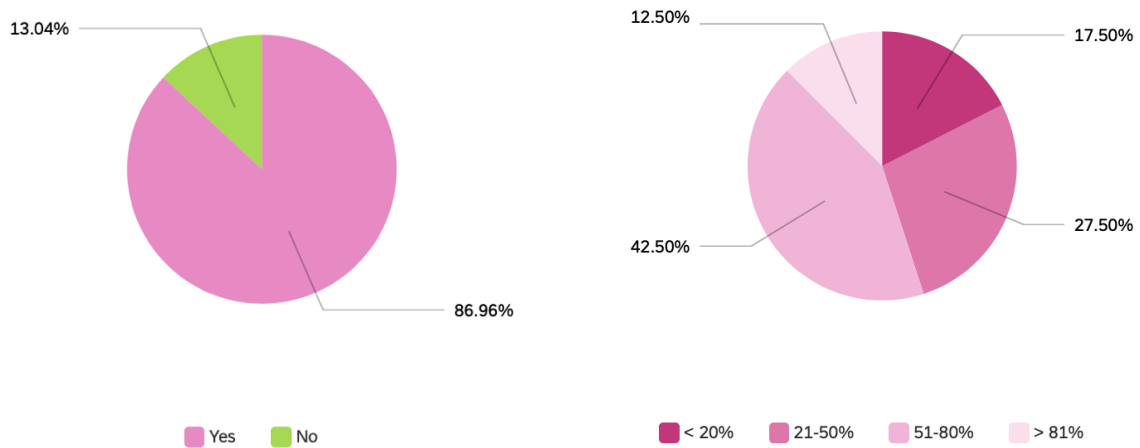


FIGURE 47: ORGANIC WINE EXPORT

The last information on generalities of the sample is about companies' internal structure. The question was "Which is the company's form of conduction?" (Figure 48).

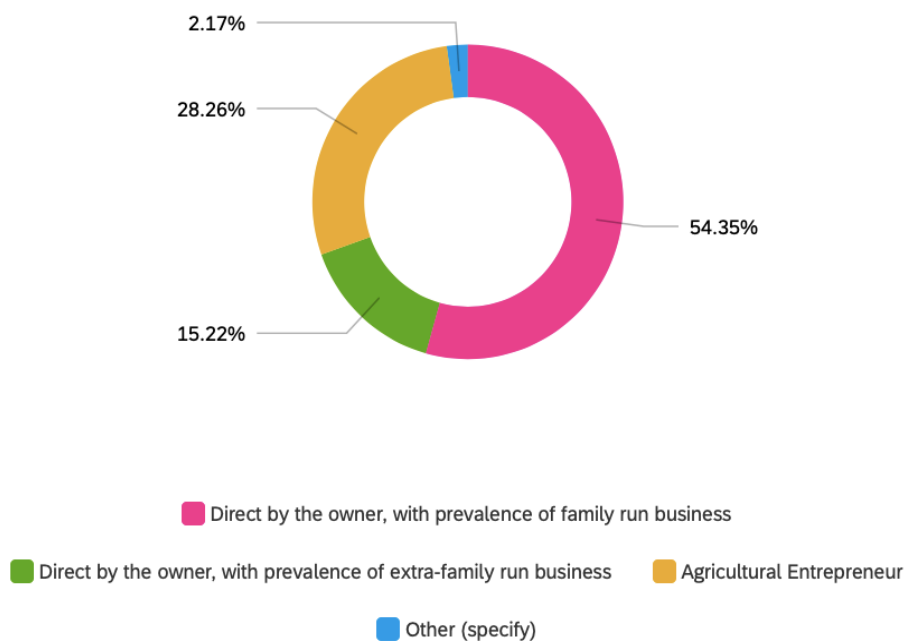


FIGURE 48: INTERNAL STRUCTURE OF FIRMS

Results are self-explaining, with the exception of “other” option, to which one firm specified that the internal structure is that of a firm, with four business partners, one CEO and two employees.

In conclusion, as seen in previously analysed literature on the matter, results show that the majority of companies are quite old SMEs and family-run businesses. In the previous chapters in fact, scholars stressed that this kind of companies can be considered the epitome of wine producers, but also of all kinds of firms that are approaching digitalisation in the last few years. In fact, it should not be forgotten that the main objective of this dissertation is to understand in which way organic wine producing firms are evolving and approaching the use of digital tools in production and marketing to promote their enterprises.

### *3.1.2 Human capital*

In this part of the survey, the research focused on gathering information that could be useful to further discuss the previously analysed connections between the management of the company and the level of digitalisation adopted. In fact, collected data are especially on age range, gender, and educational level of the employees and of the owners of the companies.

In the first question of this section companies were asked to indicate the number of workers within the firm (Figure 49).

The first data is a further confirmation of what previously stated, that is the fact that most of the companies fall into the definition of SMEs. Most respondents stated that their company is composed of maximum 10 people, between employees and owner.

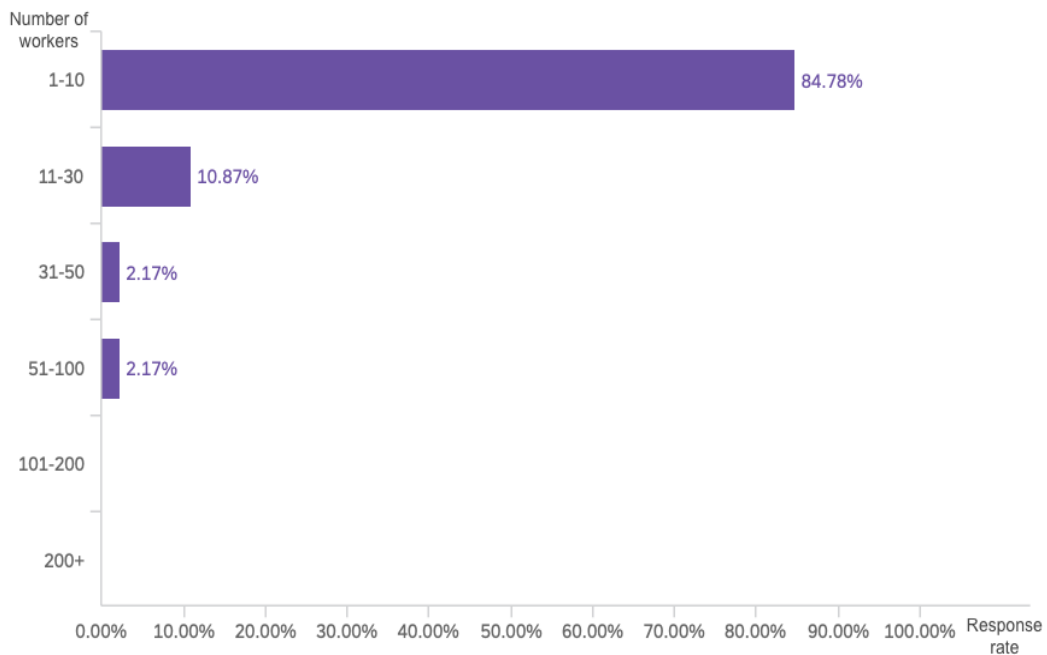


FIGURE 49: NUMBER OF WORKERS IN THE COMPANY

Regarding gender, the majority of owners are men (33 on 46 owners), while women are the minority (13 on 46 owners) (Figure 50A). This is a clear reflection of an old-fashioned way of thinking in all areas, but that might be more rooted in the wine sector given the fact that the wine industry in Italy is deeply entrenched in traditionalism. The other relevant data when discussing the connection with traditions in industry, including the industry of wine, is the average age of the owner of the company (Figure 50B).

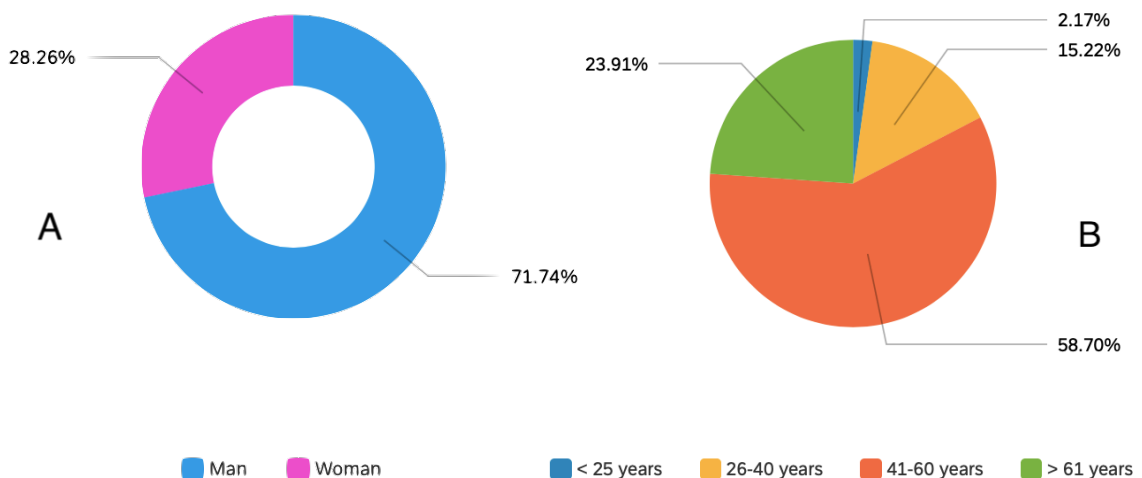


FIGURE 50: GENDER (A) AND AGE (B) OF THE OWNER



Given the fact that most interviewed companies are family-run, it is not surprising that the owner is above the age of 41, and even above the age of 61. This is most likely due to the fact that the oldest generation is currently the one leading companies, that are handed down from one generation to the next (figure 50B).

A data that was interesting to investigate is the gender and age range of the marketing director of the firm too. It was discovered that most marketing managers are men (Figure 51A) aged between 41 and 60 years (Figure 51B).

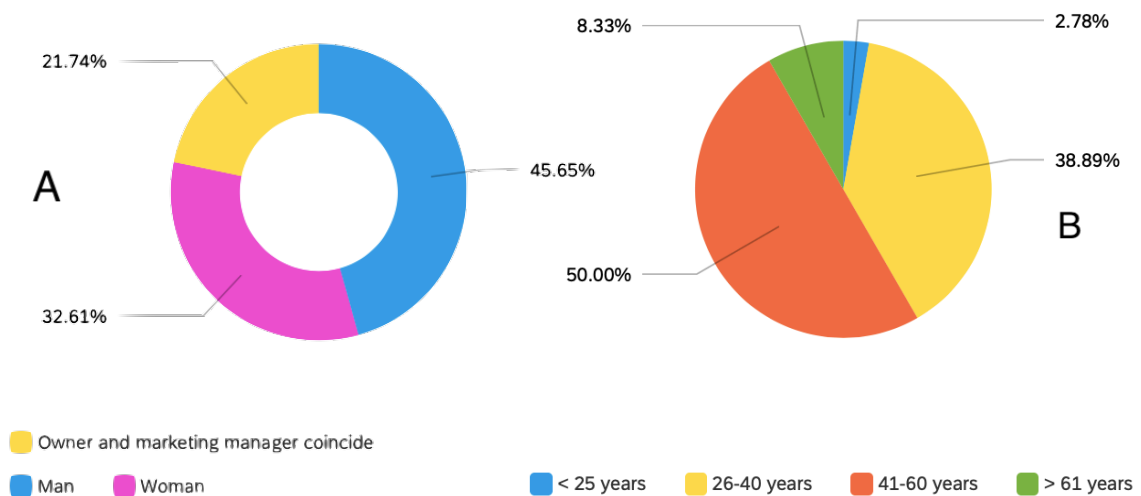


FIGURE 51: GENDER (A) AND AGE (B) OF THE MARKETING DIRECTOR

It should be noticed that the survey investigated another face of the coin, that is the fact that the marketing director can coincide with the owner of the company (Figure 51A). This might be considered as a clear signal of the fact that often the marketing department does not receive a lot of attention in SMEs, but this issue will obtain further attention later in this chapter.

With regards to the level of education of both the owner of the company, and the marketing director, it was interesting to see the answers that respondents gave to this questions (Figure 52 and 53).

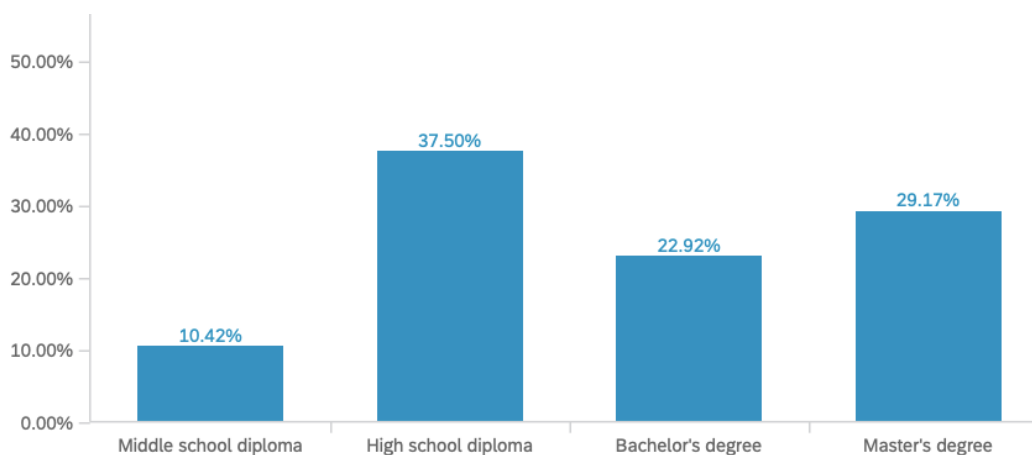


FIGURE 52: LEVEL OF EDUCATION OF OWNERS

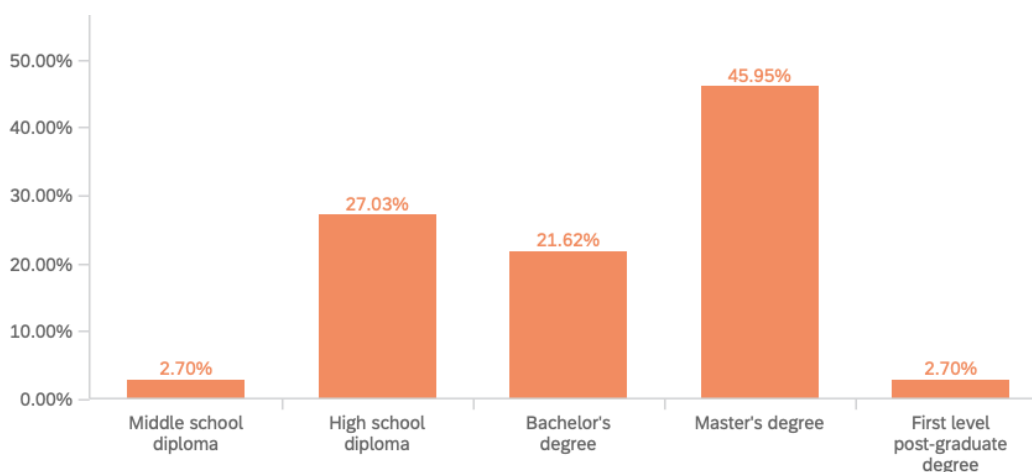


FIGURE 53: LEVEL OF EDUCATION OF MARKETING DIRECTORS

Evidently, in both cases the majority of owners and marketing directors have university titles. Owners with both a bachelor and a master's degree are 52,09% of the total of respondents, however a large percentage did not receive academic education, and declared to have a high school diploma as the highest title (37,50%). Conversely to the popular perception that the agricultural sector is one of uneducated people, data about the educational level of wine entrepreneurs subvert this myth. Of the 52,09% that declared to have a university title, it is surprising to notice that the 16% are aged 26-40, 60% are aged 41-60, 24% are above the age of 61, and none of the owners younger than 25 years old is graduated. This data is surprising if compared to data on the average level of education of the Italian population. In fact, ISTAT declares that in 2020 only 9,2% of the Italian population above the age of 60 have a university title (ISTAT, 2022).

The situation is not very different with regards to marketing directors covering only that role inside the company, that is to say those who are not company owners as well. In fact, 70,27% have a university degree of any level, and less than 30% have a lower educational level (Figure 53). Among marketing directors that are graduated, 46% is aged 26-40, 46% is aged 41-60, and the 8% is older than 60. This data is interesting in the measure that allows us to reflect on the fact that marketing directors are averagely higher educated and younger than company owners.

### 3.1.3 Strategic focus of the firm

The main purpose of this section of the survey was to understand which are the main objectives of the firms, and to introduce questions related to digitalisation and the perception that firms have of it.

In the first question respondents were asked to indicate the level of importance of investments destined to several areas of the companies in the last 5 years (Figure 54).

Though a matrix question, they could choose to assign a score going from 1 to 5 to the level of importance that they give to investments in each specific business sector of the company. In order to better analyse collected data, answers have been elaborated and a table reflecting average scores has been created, so that to produce a ranking of the provided answers (Figure 54).

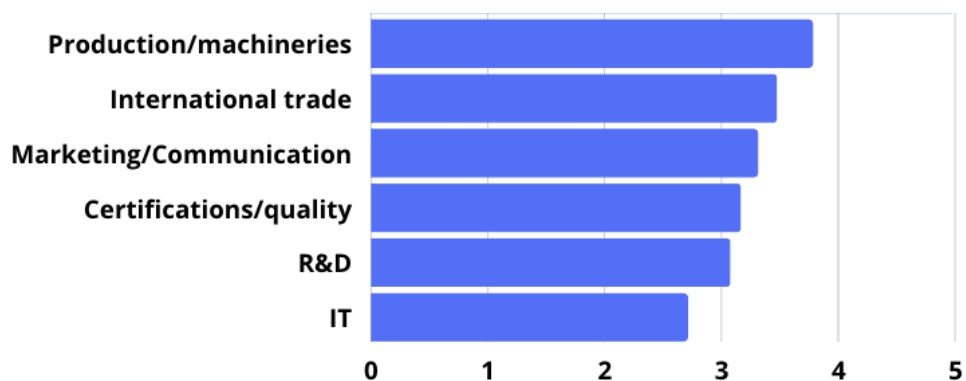


FIGURE 54: AVERAGE INVESTMENT IMPORTANCE

As presented in the graph here above, the sector that respondents deem the most important to invest on is that of production, with an average score of 3,78 (Figure 54). It is followed by international trade, marketing and communication and certifications and quality. Less importance is given to research and development, and information and technology.

The following question was a multiple-choice question that asked to indicate which are the most important objectives for the companies (Figure 55).



FIGURE 55: MAIN OBJECTIVES OF THE FIRMS

The three most chosen answers clarify that the main objectives of firms are related to their economic success. No evident interest is directed to digitalisation in all its forms, while marketing might be implied in the answers that reads “strengthen brand image”. The interest in international trade is supported by the answers to the previous question (Figure 54), which underlines the fact that companies are very prone to invest in that sector. The investment that drew more attention in the previous question, the devotion to production and machineries, might be read in terms of increase of turnover, as the more companies invest on production, the more they can cut costs and therefore increase their income.

As to focus more and more on digitalisation and the use of digital tools, a multiple-choice question was created in order to give the possibility of assigning a score of 1 to 5,

where 1 is the lower and 5 is the highest, in terms of importance that companies give to digitalisation (Figure 56).

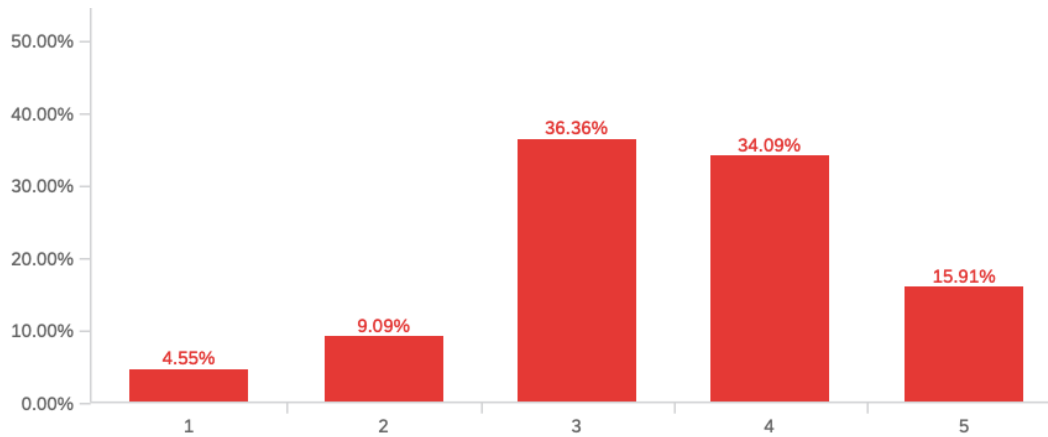


FIGURE 56: IMPORTANCE GIVEN TO DIGITALISATION

The majority of respondents position themselves in a neutral position, assigning 3 to the level of importance (36,36%). This means that relevance to digitalisation is given in moderate terms, since usually the neutral position signals mild interest and mild disinterest in equal measure.

It is interesting to shed some light on the kinds of digital tools used by companies, that were asked to choose from multiple options (Figure 57).

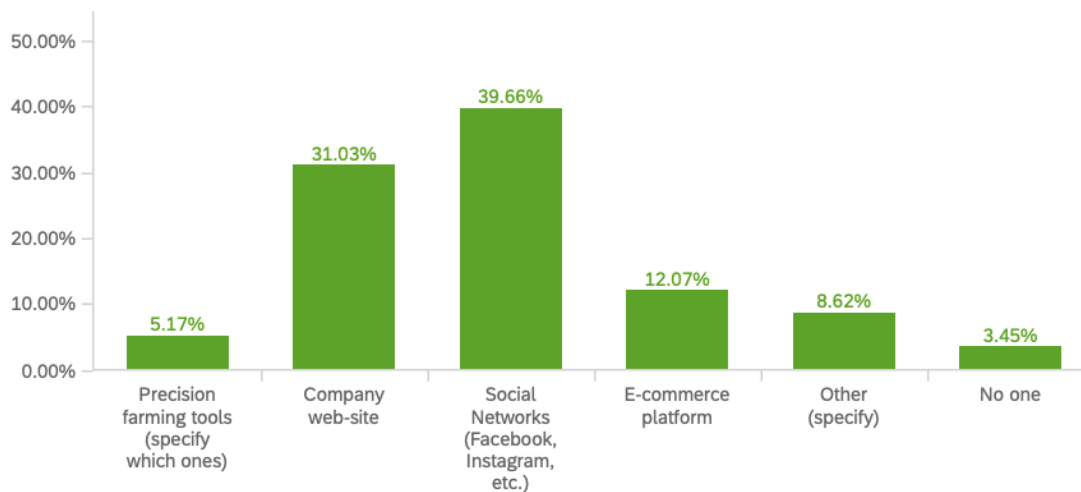


FIGURE 57: MOST USED DIGITAL TOOLS

The “other” option allowed respondents to specify which other digital tools not listed they deemed important and use in their companies. However, the only relevant

specifications were “management software to organize inventory and monitor market trends” and “machineries 4.0”. The latter answer might be listed under “precision farming tools”, another choice that asked for specifications of some kind. Those who declared to use precision farming tools, also stated that they use “cellar analysis tools” and “control units for the monitoring of production data”. Literature taught us that precision farming tools are not very popular (Matese and Di Gennaro, 2015; Di Santi, 2020), as much as social media are the most interesting tools used for promotion of the company. As in literature, between all existing precision farming tools, those for the monitoring of the vine and of the cellars are the most popular (Matese and Di Gennaro, 2015). This question of the survey confirms what concluded by scholars, as precision farming tools have been poorly chosen (5,17%), while social networks (39,66%) and company websites (31,03%) are the most selected answers. Someone selected the “none” answer, a percentage that is not significantly minor than the percentage that selected “precision farming tools”, underlining once again the unpopularity of employment of digital tools in production.

### *3.1.4 Marketing activities*

This is the introductory part to the marketing section of the survey. From this point onwards, all the questions will aim at discovering more about the marketing strategies. The first question tries to understand if the marketing activities of the companies are predominantly carried on internally or externally, with the help of a third party, as for example a marketing agency.

As previously mentioned, the marketing department receives very little attention in the wine sector, as confirmed by literature, which translates this both in lack of devoted funds to this sector and in the employment of unspecialised personnel (Finotto and Mauracher, 2020).

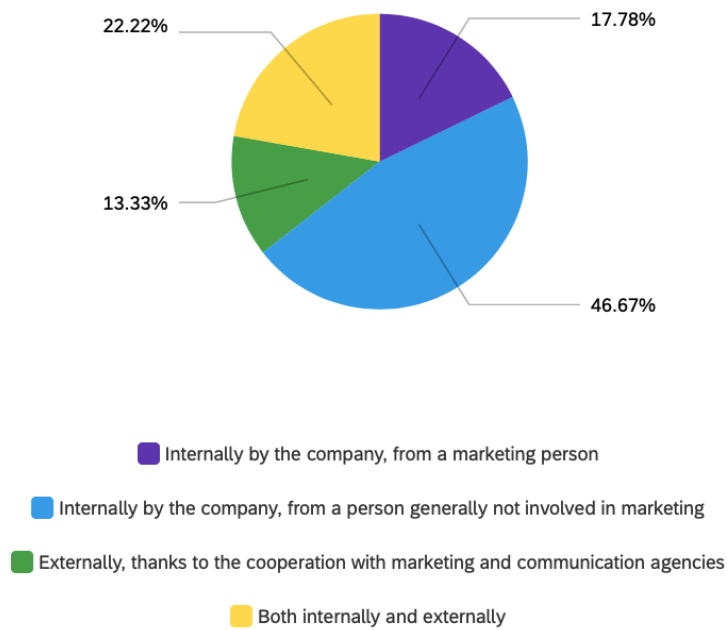


FIGURE 58: DEVELOPMENT OF MARKETING ACTIVITIES

This can be validated by the results of the survey in analysis, since almost half of the responding companies declared that they manage marketing activities internally with the help of an employee that does not usually work in marketing (46,67%) (Figure 58).

The two following questions were shown exclusively to those who answered that the management of marketing was both internal and external.

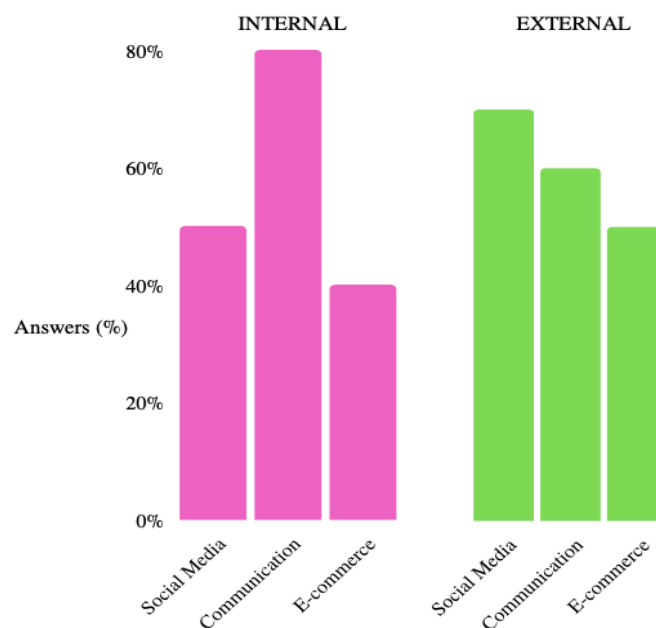


FIGURE 59: INTERNALLY AND EXTERNALLY MANAGED MARKETING ACTIVITIES

This allowed to distinct in which measure these activities are managed internally and in which measure they are left to the management and expertise of a third party (Figure 59).

Respondents could choose among the same list of activities (social media, communication, and e-commerce), but the answers underlined in which measure they feel confident enough to directly manage certain activities, and which are the most complicated ones that are left to external agencies. As it possible to see, social media and e-commerce are less frequently administered internally, while general “communication” is handled more frequently by the company itself.

For the companies that handle marketing completely on the inside of the company, it is interesting to see how many employees are devoted to the job, which is the aim of the following question (Figure 60).

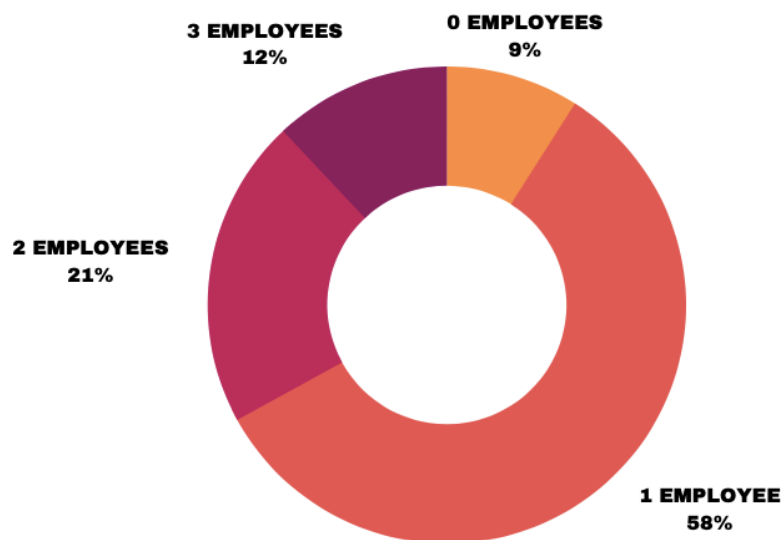


FIGURE 60: NUMBER OF EMPLOYEES IN MARKETING

The average number of employees whose position in the company revolves around marketing is 1,39. In fact, most of the companies have only one employee that follows the marketing activities (58%), while only 21% have two employees, 12% have three employees and, most interestingly, 9% of respondents do not have any employee whose job is that of marketing. The 9% that declares that no employees work exclusively in marketing allows us once again to deduct that no real attention is given to the marketing sector, even if almost 50% of companies previously declared that they are very interested in investing in marketing and communication for their firms (Figure 54).



### 3.1.5 Marketing channels

This section analyses instruments and channels used for offline and digital marketing. With these questions the aim was to understand the digital maturity of enterprises, especially on the marketing side. The focus is both on the traditional offline marketing channels, such as television and traditional advertising, and on online digital marketing tools, such as the use of social media and evolved digital tools for the use of marketing.

In order to decode the use of marketing tools, the survey began with a question regarding which tools companies are used to employ in their marketing strategies (Figure 61).

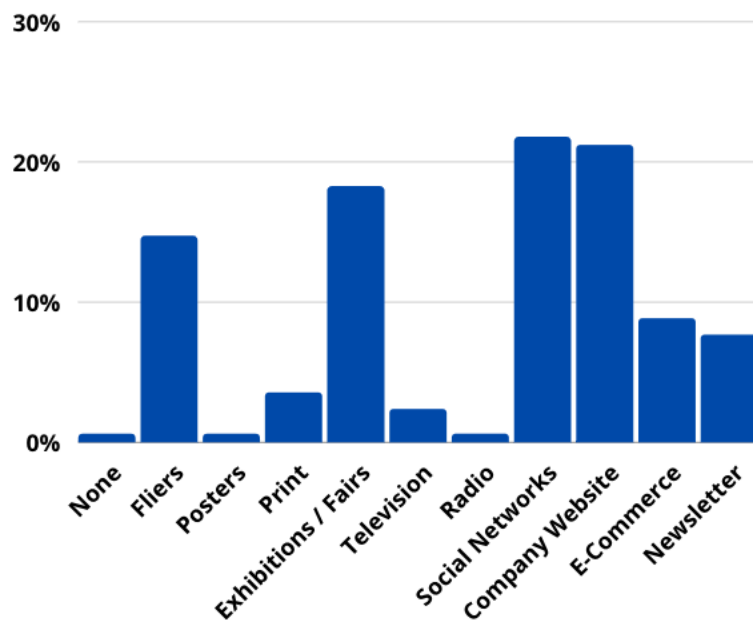


FIGURE 61: MARKETING CHANNELS USED

From the answers collected, it is possible to notice that the offline digital tools are not in fashion anymore. In fact, tv, radio, posters and prints have been chosen by the 7,06% of respondents only. The two traditional marketing channels that are still a custom to promote companies are the use of fliers and the participation to exhibitions and fairs. Together, they account for the 32,95% of answers. On the other hand, we can see that the majority of answers (59,41%) has been collected on options focusing on innovative digital tools. From the above graph, it is possible to see at glance that digital tools are the most used, and they are chosen as the primary channel to promote organic wine

companies. This is confirmed by the last question of this section of the survey, where respondents were asked to choose from 1 to 5 how important they deem the use of digital marketing tools such as company website, social networks and e-commerce. As we can see from the following graph (Figure 62) most companies gave a value of importance between 4 and 5 (65,11%), underlining how organic wine producers associate a high level of importance to the use of digital tools.

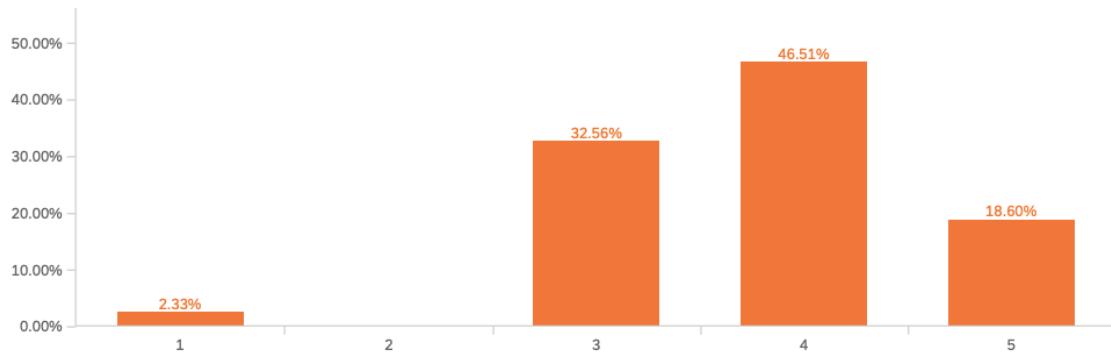


FIGURE 62: LEVEL OF IMPORTANCE GIVEN TO DIGITAL MARKETING TOOLS

The next question focused on the type of content that companies choose to advertise through offline and online marketing channels (Figure 63).

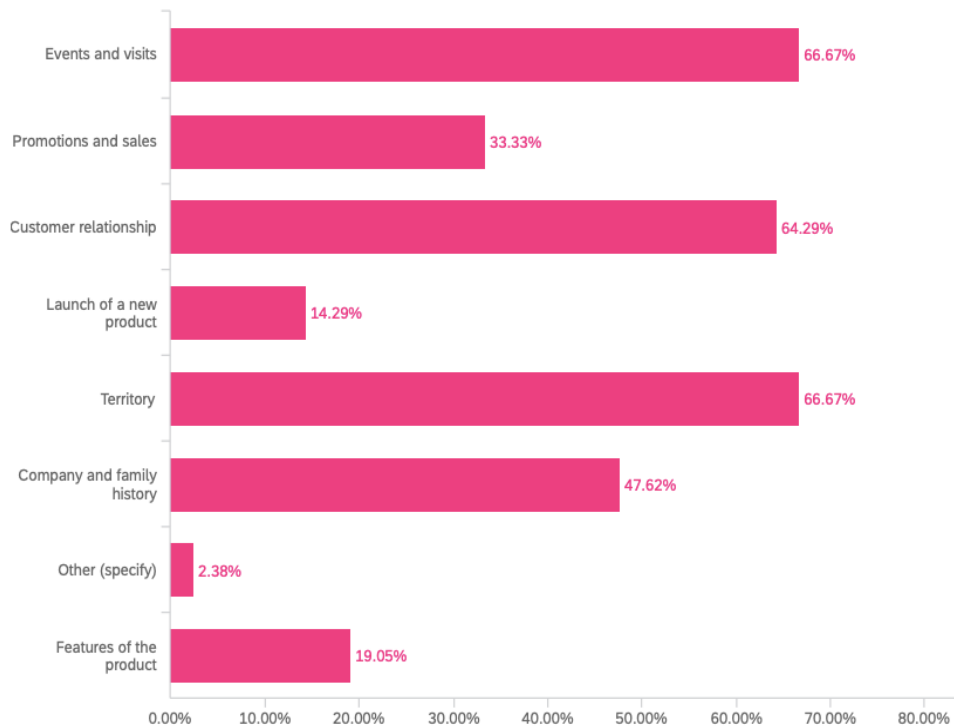


FIGURE 63: CONTENT SHARED BY COMPANIES

The most popular contents shared are the promotion of the territory and the connection to the company and the familiar history, together with the foregrounding of customer relationships and the promotion of events and visits that take place in wine cellars. The first two options named open a line of connection with something already stated in the second chapter. In fact, as literature teaches us, Italy is a country of the Old World and as such is both deeply grounded in tradition and seeking innovative strategies of competitiveness (Wongprawmas and Spadoni, 2018). Not much attention is given to the product itself, nor to its promotion in order to increase sales. This might be due to the fact that producers might not be interested in making advertising campaigns about the quality and the price of the products, entrusting the efficiency of the Word of Mouth, the traditional method used to spread words about wine (Neilson *et al.*, 2010).

At this point the attention moved closely to the use of digital tools. Respondents were asked to state whether they used or not certain digital marketing tools (Figure 64).

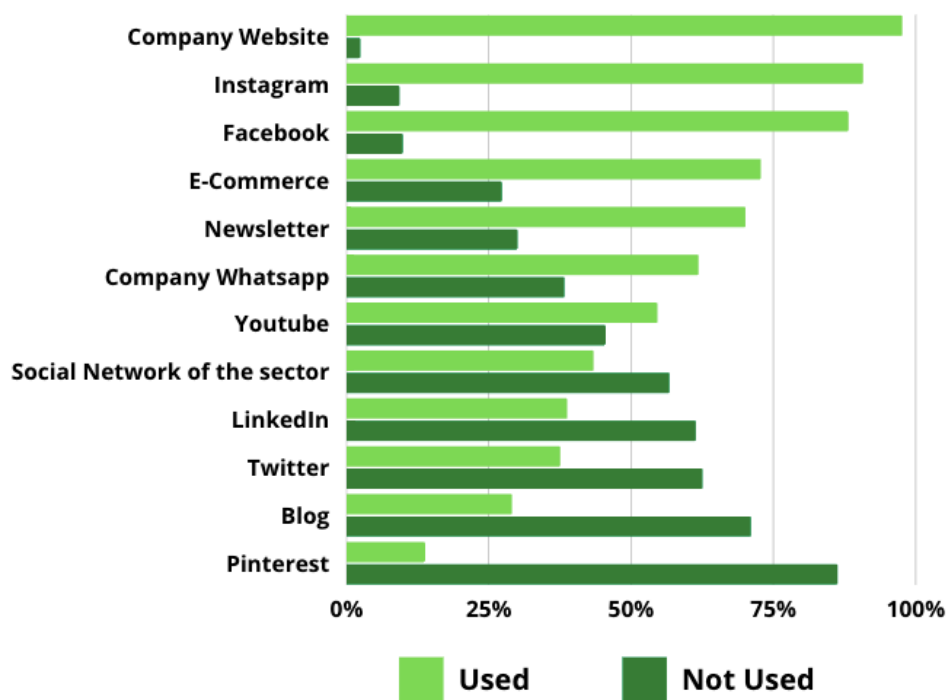


FIGURE 64: LEVEL OF USE OF DIGITAL MARKETING TOOLS

From the answers emerges the fact that the most used digital tool is the company website, which is not only the most selected as “used”, but also the least selected as “not used” widening the gap between those who are invested in the use of this digital tool, and those who are not. This answer reflects what underlined by scholars in literature (Finotto

and Mauracher, 2020) after conducting another analysis of this sort. Other notable choices are Facebook and Instagram as social networks, where curiously enough the use of Instagram surpasses, though by little, the use of Facebook, that until not long ago was the most used social network in the wine sector (Szolnoki *et al.*, 2018). It is not surprising to find E-commerce and newsletters featured among the most used marketing tools.

The last focus on marketing channels analysed the reason behind the adoption of digital marketing tools, as to find a connection with what stated in literature and reported in chapter two, that is the idea that new marketing tools are chosen because of their ease of use, their low cost, and the positive effects that they can bring in terms of increasing incomes in a short period of time (Bernoff and Li, 2008; Galati *et al.*, 2016; Ablyazov *et al.*, 2018; Watson *et al.*, 2018).

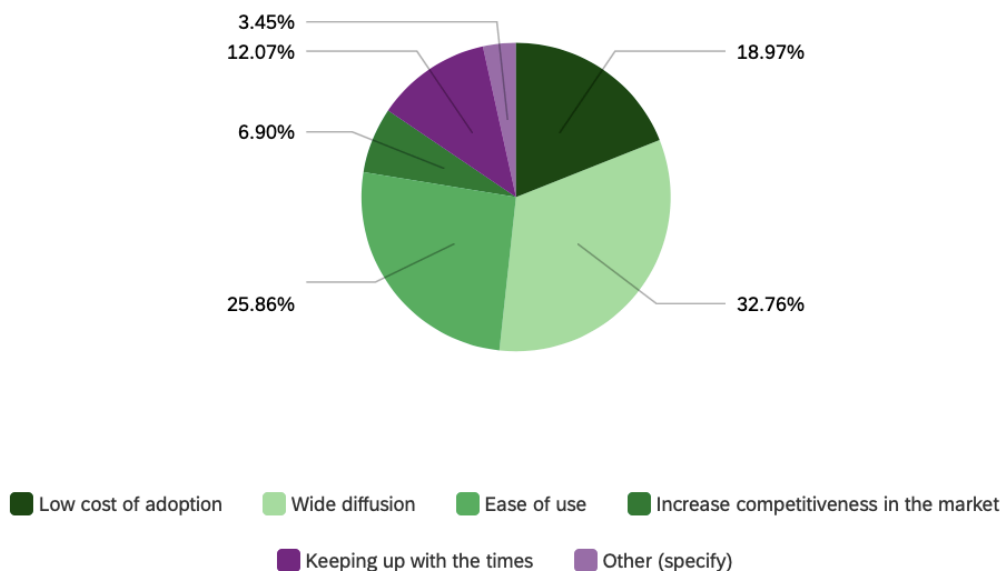


FIGURE 65: REASONS BEHIND THE ADOPTION OF DIGITAL MARKETING TOOLS

From the answers collected (Figure 65), the ease of use finds confirmation, while the low cost of adoption was chosen by a lower number of respondents than expected. However, the wide diffusion of social networks, e-commerce and websites pushes companies to adopt them, just because they have a high chance of reaching a wide public as they might be used by a large number of consumers. This might also be confirmed by the fact that quite a lot of respondents (12,07%) stated that they use marketing digital tools just to keep up with the times. These results might suggest that companies choose to adopt these tools as a way to conform to the current trends of the market and they are

not truly invested in their use. However, their adoption might appear as the most practical way of keeping their share in the market and remaining competitive.

### 3.1.6 Company website

This, and the following two sections of the survey, focused on the analysis of three specific digital tools used by companies, which are company websites, Facebook and e-commerce. These tools were selected because, according to literature, the first two are among the most used digital instruments adopted by wine companies, and the latter deserves attention especially in the light of what has been previously observed in the analysis conducted on wine companies, where it has been underlined the exponential growth in the use of e-commerce platforms during the time of the Covid-19 pandemic. The aim was to understand why and how companies use these digital tools.

Company websites, which is the most used digital tool, used by 97,56% of companies (Figure 64), was investigated firstly in terms of contents (Figure 66).

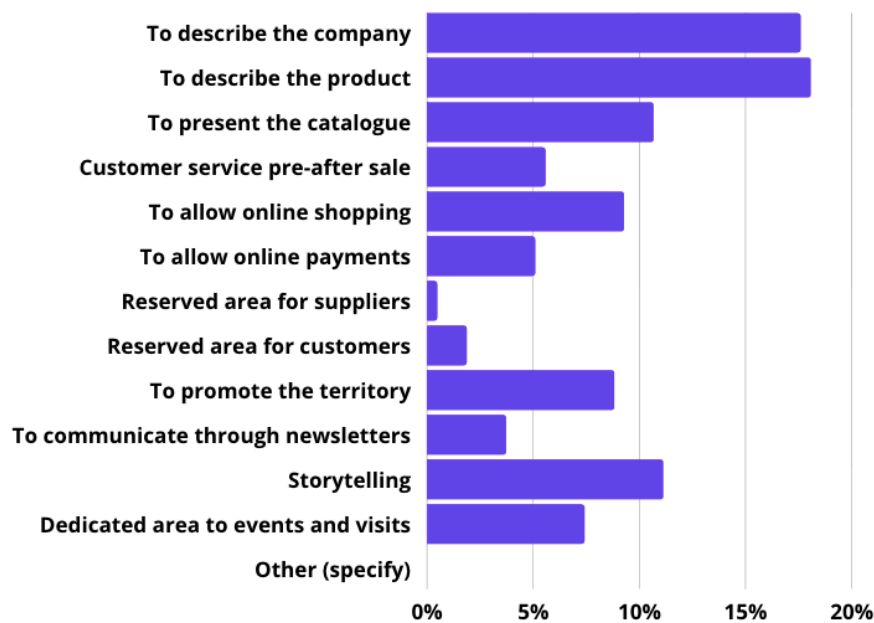


FIGURE 66: CONTENT OF COMPANY WEBSITES

Differently from what emerged in the previous section of this chapter, the main aim of the website is to share content about the characteristics of the products, suggesting that all of the respondents that stated that digital tools are used to give information about the quality of their products (Figure 63) usually do so through their company's website. Websites therefore might be considered as a reference point for consumers seeking information about the products that they are willing to purchase. Therefore, company websites should be updated every time there is a change in the fundamental information about the company, or about the products, as to be an efficient source of information for customers. In fact, the next question of the survey was devoted to retrieving this data.

As it is possible to see visually (Figure 67), the frequency of update is not very high, as more than half of respondents declared to revise the information contained in their website quarterly.

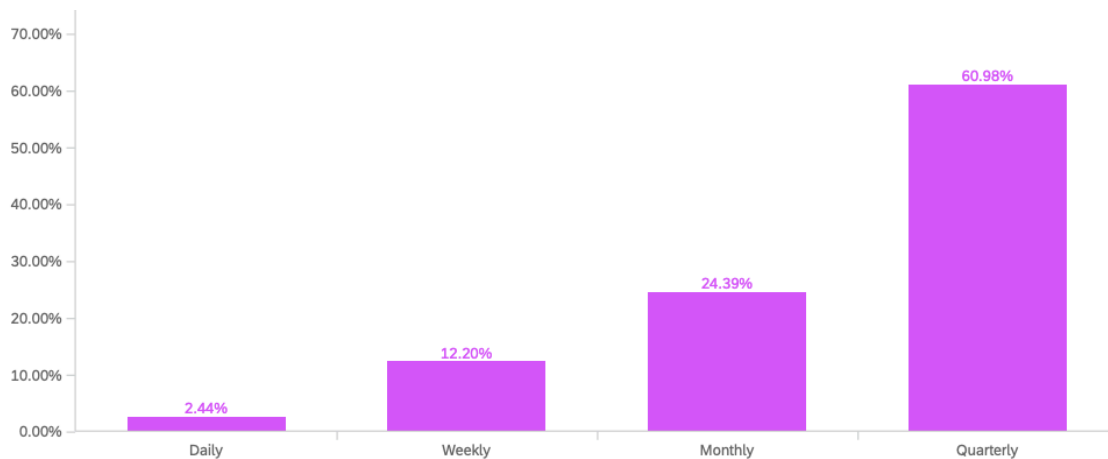


FIGURE 67: FREQUENCY OF UPDATE OF COMPANY WEBSITES

Another interesting aspect to investigate was the possibility of buying products directly from the company's website, which was the topic of the following question (Figure 68).

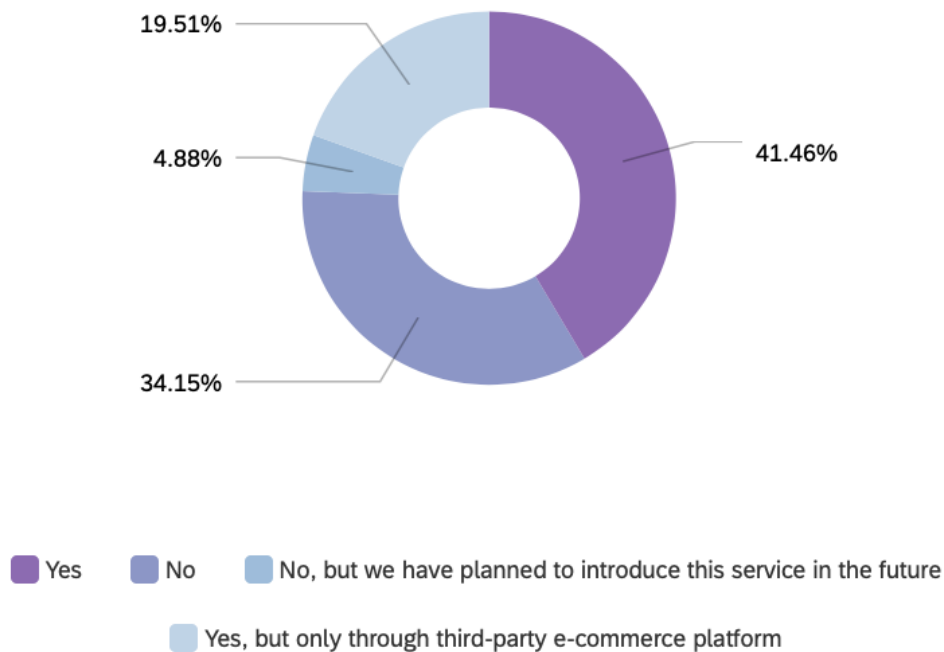


FIGURE 68: POSSIBILITY OF BUYING PRODUCTS FROM THE COMPANY'S WEBSITE

In the previously analysed literature, it has been discussed the fact that the online sale mechanism is still not very developed in wineries websites (Galati *et al.*, 2016). However, collected data seem to revert this observation, since the majority of respondents declared to currently have a website through which it is possible to directly buy the company's products, while the 19,51% let a third party manage an external platform devoted to the purchase of wine. This means that, possibly, in the company's website there is a section that sends clients to an external website where they can complete the purchase of the products. The other interesting aspect is the fact that among those who do not currently have an online shop within their website, only a small percentage (4,88%) declared that they are willing to introduce this service in the future, while the others (34,15%) appear to be completely uninterested in it.

### 3.1.7 Use of Facebook

This section was aimed at collecting data on the use of one of the most important social networks in the wine sector, i.e., Facebook. As observed, the 88,10% of surveyed companies declared to use Facebook (Figure 64).

Also for this digital tool an analysis of contents has been performed and respondents were asked to choose among a list of different options which are the main topics that they usually publish in their company's profiles (Figure 69).

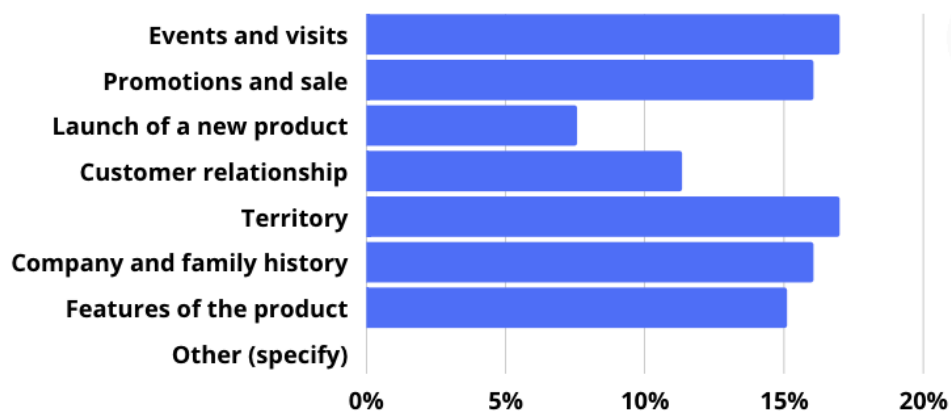


FIGURE 69: FACEBOOK CONTENTS

The most selected themes by respondents are the description of the territory, where presumably the company is located and production takes place (16,98%), together with Facebook posts aimed at promoting events and visits organized in the wineries (16,98%). These are followed by contents focusing on narrating the firm's and family's history (16,04%) and on presenting promotion campaigns (16,04%). It can be observed therefore that the main objective of Facebook's contents is to promote companies in their structure, history and activities, rather than depicting the features of the products, which, as already explained, are mainly described through company's websites.



The following question was aimed at understanding how often companies update their Facebook profile by publishing new and fresh contents about wine (Figure 70).

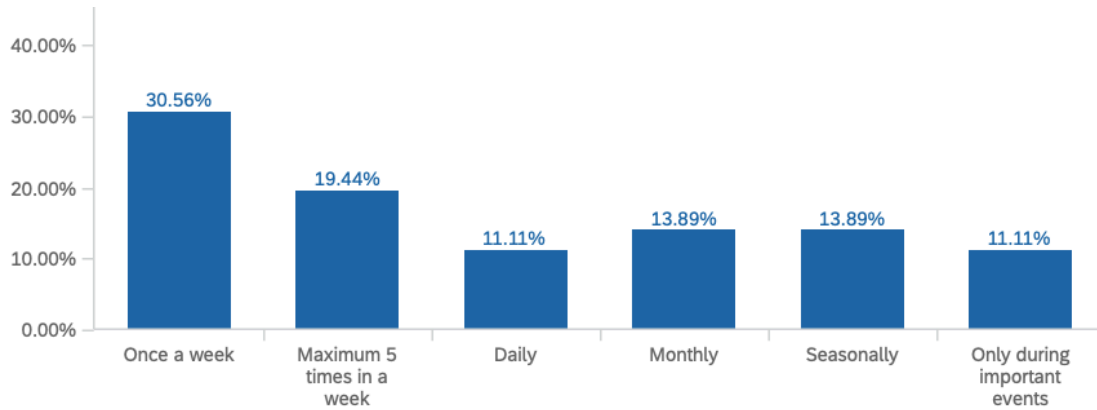


FIGURE 70: FREQUENCY OF POSTING OF NEW CONTENTS ON FACEBOOK

Contrarily to what has been observed in the previous section about company websites, where new data are published only quarterly, the frequency of posting of new contents in Facebook is quite high. The majority of respondents declared to publish new posts once a week (30,56%), followed by a large percentage of companies stating that they post new contents up to five times in a week (19,44%). This stresses the fact that in order to be able to catch the attention of customers and of potential new clients, it is important to increase the visibility of the company, and social networks can be an effective tool to reach this aim, if properly used. In fact, an excessively low frequency of posting can bring people to discard the profile or page and even to abandon it. On the other hand, a too high frequency of posting, such as more than once a day, can annoy the public and decrease their attention and interest.

The last two questions of this section were shown respectively to those who previously declared that they actually use Facebook and to those who stated that they do not employ it (Figure 64).

In the first one, respondents were in fact asked to point out among a list of possible choices, which are the three main reasons that pushed them to use this specific social network (Figure 71).

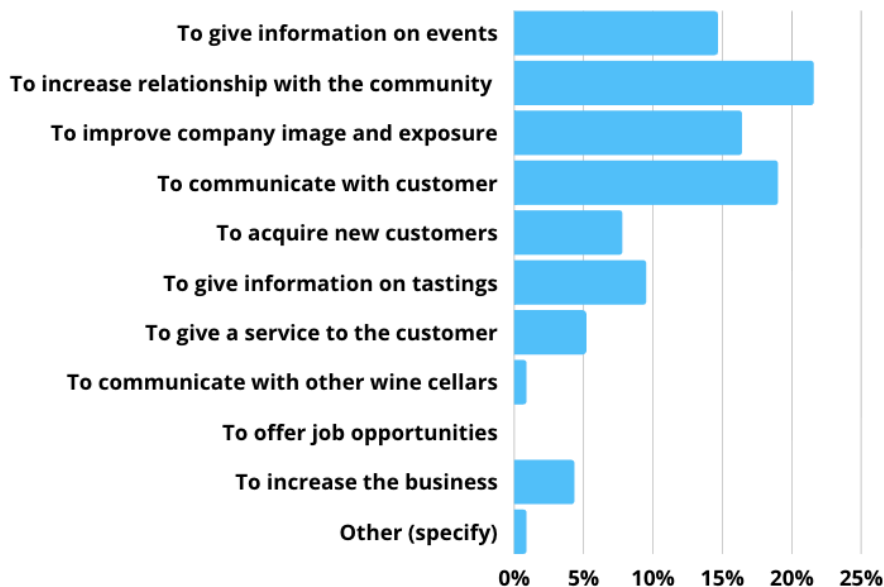


FIGURE 71: REASONS BEHIND THE USE OF FACEBOOK

Collected data clearly show that the main selected options are connected to the idea of increasing the relationship with the external community and customers, which together account for the 40,52% of total given answers, followed by the desire to strengthen the company image and exposure (16,38%) and by the need of giving information about organized events (14,66%). These results seem to be consistent with the analysis of contents that has previously been exposed and they show that companies perceive in the use of Facebook the potential of increasing the relationship and interaction with customers, thanks to the spread of contents that in turn allows them to improve their corporate’s image. Again, it is stressed the importance of this tool as a way to increase visibility of the company and to improve communication and relationship with customers.

On the other side no one selected the option of offering job opportunities and only few declared to use Facebook to communicate with other cellars (0.86%), underlying the fact that it is perceived essentially as a mean to engage with customers, rather than with other firms.

The last question, presented only to the 11,90% of respondents who declared not to use Facebook (Figure 64), was aimed at understanding why they discarded the employment of such social network (Figure 72).

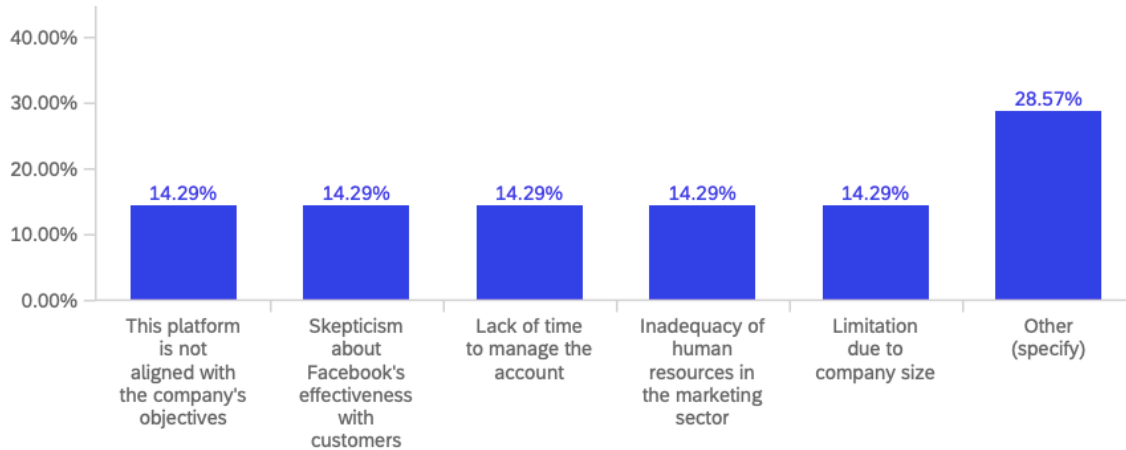


FIGURE 72: REASONS BEHIND THE NON-USE OF FACEBOOK

As we can see from the figure above (Figure 72), results are quite nonuniform, since answers given by the 5 companies that were allowed to see this question are all different. One company declared not to use Facebook for lack of time and inadequacy of company structure and marketing management, another stated that they do not use Facebook since it is not aligned with the firm's objectives. A third company declared to be skeptical about Facebook effectiveness in catching customers' attention and the remaining two respondents chose the option "other", specifying that they do not use Facebook because they are not interested in it or because they do not like Facebook policy. The presence of this fragmentation in the given answers does not allow us to draw precise conclusions about the main reasons behind the non-use of Facebook by organic wine-producing companies.

### 3.1.8 Use of E-commerce

The third digital tool which has been taken into analysis through the developed survey is the E-commerce. This section was aimed at grasping information about the use of this instrument, in order to detect any existing similarities or differences between

collected data and previously presented information about this specific tool through both the analysis of the general wine scenario and the review of literature.

The first question of this section was meant at understanding the percentage of surveyed companies that owns an E-commerce platform and in which way they manage it or generally in which way they sell their products online. It should be underlined that this question is similar to what has already been asked in the company website part of the survey, nevertheless, in this case presented possible answers to respondents were more precise than those displayed in the previous one (Figure 68), since here the aim was to create a completed overview about the online selling, trying to catch all the existing shades in its use. For this reason, respondents were asked to state whether they own an E-commerce platform, by choosing their answer between a list of possible choices (Figure 73).

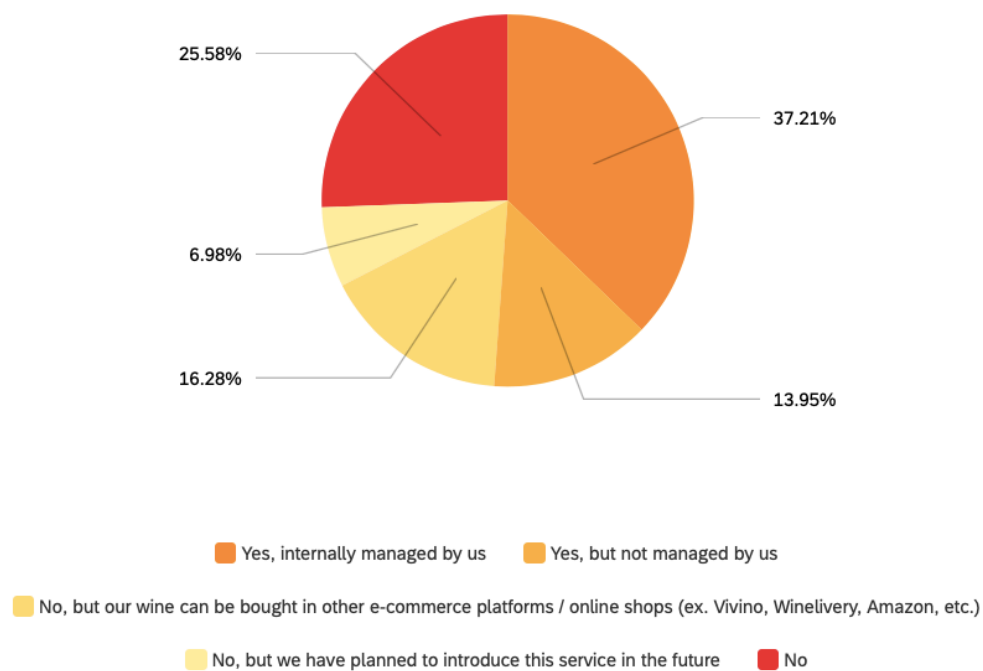


FIGURE 73: COMPANIES OWNING OR NOT AN E-COMMERCE PLATFORM

As we can observe from the above figure (Figure 73), collected data show that more than half of respondents declared to own an E-commerce platform (51,16%). Of these 37,21% directly manages it, while 13,95% leaves the management of this tool to the capability and expertise of a third party. Another interesting result is the fact that

16,28% declared to not personally own an E-commerce platform, but that their products can still be purchased online through other existing websites specialized in wine e-commerce, such as Vivino, Tannico, Winelivery and others. This result seems to be consistent with information previously collected from literature, stating that online selling of wine is managed for a large percentage by external general e-commerce shops and by online specialized shops (Maxfone Srl, 2020).

On the other side of the coin, it can be observed that the remaining 32,56% declared not to own an E-commerce platform and even not to sell their products in other specialized sales sites. Of these, only the 6.98% chose the option which stated that they have planned to introduce this kind of service in the future, therefore the others (25,58%) seem to be completely uninterested in it, which is something totally consistent with the previously collected data about online wine selling, where we already observed that a large percentage of respondents declared not to sell their products through their company websites and not to be willing to start it in the future (Figure 68).

These results lead to observe that if on one side organic wine producers are trying to follow the customs of nowadays society, where the online selling is becoming part of the everyday life, in almost all sectors (Grandon and Pearson, 2004), on the other side, there are still some companies which are reluctant to this approach and prefer to preserve traditional sales channels, not considering the possibility of introducing this kind of service even in the next years.

The following questions have been submitted only to those respondents who previously declared to own an E-commerce platform, managed both internally and externally (51,16% of Figure 73).

The first question was aimed at understanding in which year they introduced this kind of service. The respondents have been left free to type the year, and after the collection and elaboration of data, 4 main year-ranges have been identified (Figure 74).

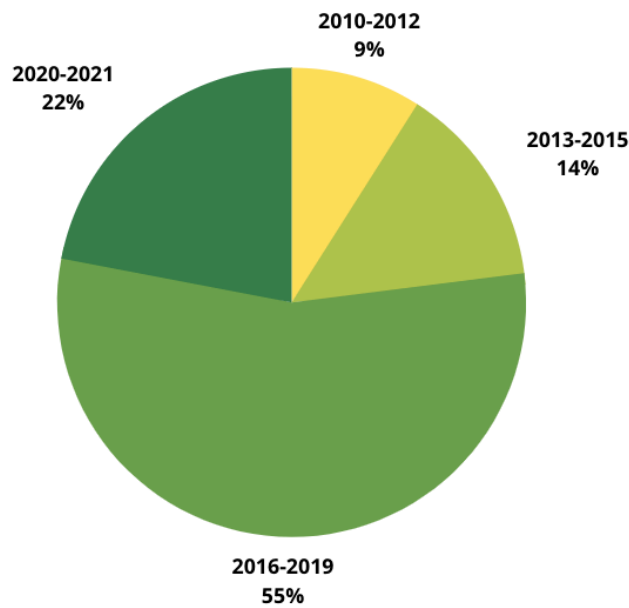


FIGURE 74: YEAR IN WHICH COMPANIES STARTED TO USE THE E-COMMERCE

Collected data show that more than half of respondents started using the E-commerce platform in the year range 2016-2019, which means quite recently. Only one company began to introduce this service in 2010, which also by literature is considered almost the beginning period of the use of wine E-commerce globally, since previously analysed information stated that in 2009 only the 1% of wine companies worldwide sold wine online (NOMISMA, 2021a). It is interesting to observe that a large percentage declared that they introduced the use of E-commerce in the year range 2020-2021, which is actually the period associated to the spread of the Covid-19 pandemic. Also with this result a connection with previously reported data can be found, since scholars and analysts observed that in Italy in 2020 the use of E-commerce platforms by wine producing companies grew exponentially, especially due to the fact that the main used sales channels had been closed during the period of the lockdown, such as the Ho.re.ca (Barbaresco *et al.*, 2021), and companies have been forced to move towards new channels, in order to be able to keep selling their products. This assumption is confirmed by the fact those who declared that they started using the E-commerce platform within this year-range (22% in Figure 74), also previously declared that the main used distribution channel is precisely the Ho.re.ca.

The next question was meant at gathering information about the reasons that pushed organic wine producers to employ this type of digital tool. Also in this case, different possible answers have been presented, among which respondents were asked to select the most significant one for them (Figure 75).

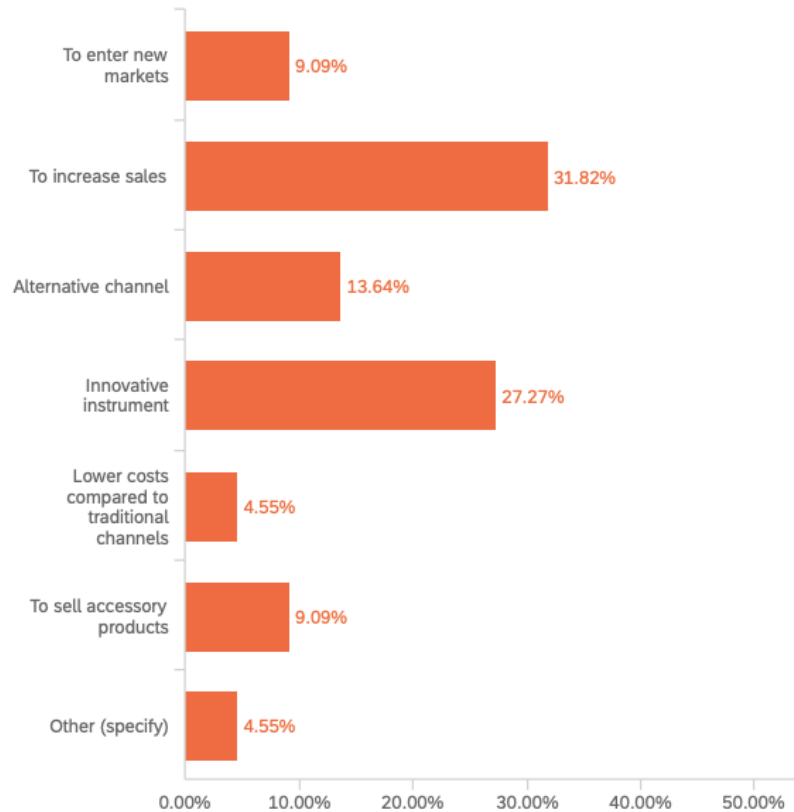


FIGURE 75: REASONS BEHIND THE USE OF THE E-COMMERCE

From the figure here above, it can be observed that the two main selected reasons were the desire to increase sales (31,82%) and the perception of this instrument as something innovative (27,27%). The latter underlines the fact that these sample companies are quite opened to innovation and therefore prone to digitalisation, assertion which is confirmed by the fact that these same firms gave an evaluation of 4 or 5 to both the previous questions where they have been asked to assess the importance that they give first to digitalisation (Figure 56) and then to digital marketing tools (Figure 62).

Interesting to be observed, is the fact that only few respondents chose as main reason the fact that wine E-commerce has lower costs compared to other traditional channels (4,55%), which is something that in a way reverses what we observed from analysed literature in the previous chapter, where between the main identified advantages

for wine firms to have and use an E-commerce platform there was the fact that costs for selling products is drastically cut down with the adoption of such channel (Jorge *et al.*, 2020). The same situation of inconsistency may be identified by the fact that only a small percentage of firms chose the reason of entering in new markets (9,09%), which instead had been previously mentioned by scholars between the main advantages of the use of E-commerce, since this tool gives the idea of being able to eliminate geographical boundaries and to be able to sell products all over the world (Saba *et al.*, 2017).

Connected to this last observation, we can analyse the next question of this section, which was aimed at understanding if the E-commerce platform is used to sell wine abroad (Figure 76).

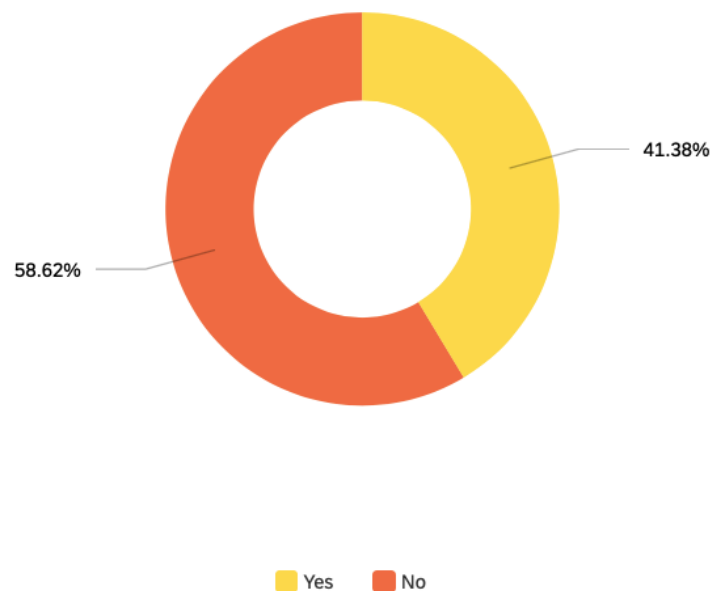


FIGURE 76: PERCENTAGE OF FIRMS SELLING WINE ABROAD THROUGH THE E-COMMERCE PLATFORM

Quite a large percentage of respondents between those owning an E-commerce platform declared to use this tool to sell their wine abroad (41,38%), which means that even if it has been observed that interacting and engaging with external markets is not considered as the main reason why companies choose to adopt this digital instrument, wine E-commerce is perceived in any case as an effective tool to reach customers all over the world.



In the last question of this part of the survey, respondents were asked to indicate which percentage of their average annual turnover corresponds to online sales (Figure 77).

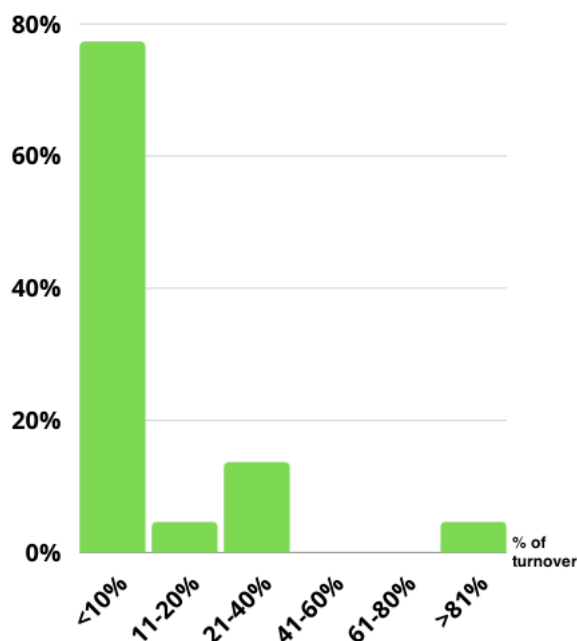


FIGURE 77: PERCENTAGE OF AVERAGE ANNUAL TURNOVER FROM ONLINE SALES

Collected data show that the majority of respondents declared that less than 10% of their average annual turnover derives from online sales (77,27%). This result is probably connected to the fact that among this 77,27% more than half of companies previously stated that they introduced the use of an e-commerce platform between 2019 and 2021 (53%) (Figure 74). This means that online sales are a service which has only been used for a short time and possibly is still not perceived by customers as a primary sales channel, in which they can feel comfortable enough buying.

### 3.1.9 Covid-19 implications for companies

This last section of the survey aims at discovering some of the effects that the pandemic had on the surveyed companies of the wine sector. The analysis is focused on turnover, sales channels, and marketing.

The first question demanded about the turnover of the interviewed companies, asking if there has been any decrease in it after the period of the pandemic, as supposed by scholars (Figure 78).

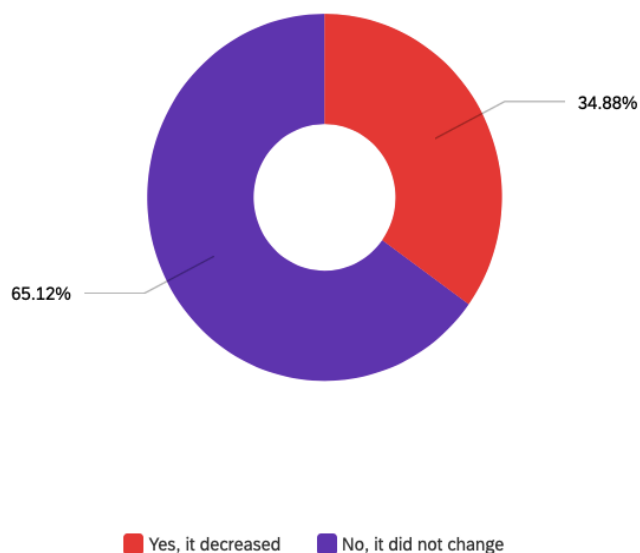


FIGURE 78: 2020 RECORDED DECREASE IN THE AVERAGE TURNOVER DUE TO THE COVID-19 PANDEMIC.

Surprisingly, more than half of respondents stated that their companies' average turnover in 2020 did not change compared to the one registered in the year range 2018-2019. This result differentiates itself from what previously analysed in the first chapter of this dissertation, in which information about companies' turnovers suggested that Italian wine producing companies in 2020 recorded a general decrease of turnover of the 6,3% (Figure 32).

The second question, presented only to those who stated that their companies' turnover actually decreased in 2020, enters more and more in detail, demanding in which percentage the turnover decreased (Figure 79). A great percentage indicated that the reduction was around 10%, compared to the two previous years. This indicates the fact that although there was a decrease, it did not impact greatly the finances of the sample of organic wine-producing companies. As it is possible to see from the following graph (Figure 79), this is confirmed by the fact that no one stated that their turnover decreased for more than 50%. This is probably connected to the fact that, as literature confirmed,

differently from the general wine market, the organic wine sector registered an increase of consumption even during the period of the pandemic (MillésimeBIO, 2021).

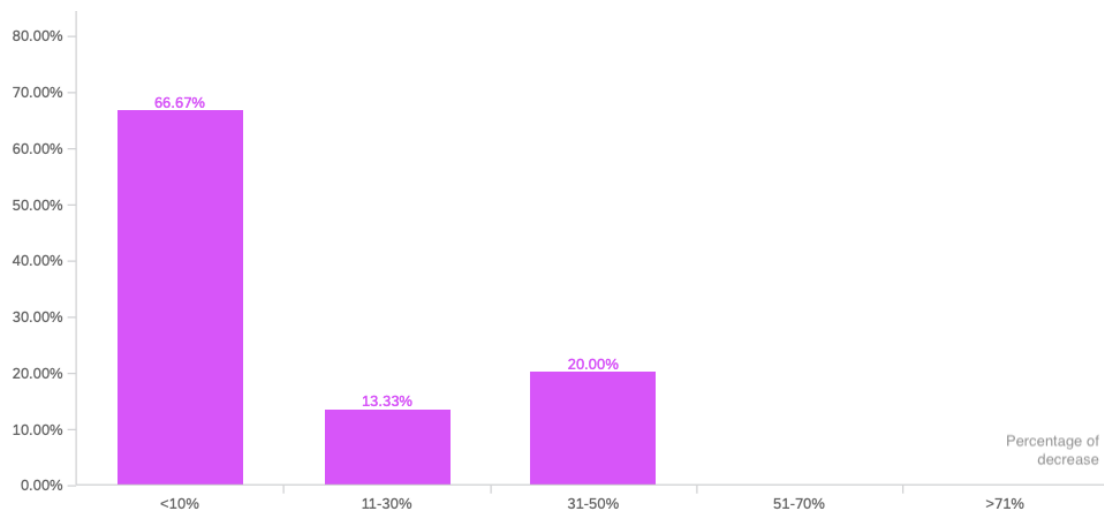


FIGURE 79: PERCENTAGE OF DECREASE OF AVERAGE TURNOVER IN 2020

Furthermore, the survey intended to discover how transactions changed in specific sales channels, which was the focus of the following question, where respondents were asked to state if sales increased, decreased, or remained unchanged in 2020 in each specific sales channel, compared to 2019 (Figure 80).

Sales Channels	Increased	Decreased	Unchanged
Large-scale Distribution	39,39%	6,06%	54,55%
Hotellerie – Restaurant – Café (Ho-Re-Ca)	15,00%	62,50%	22,50%
Export	44,19%	23,26%	32,56%
Wine shops	15,38%	43,59%	41,03%
Direct sale in winery	50,00%	26,19%	23,81%
E-commerce	57,89%	5,26%	36,84%

FIGURE 80: CHANGES IN SALES THROUGH DIFFERENT CHANNELS IN 2020

Apparently, from the analysis of answers, large-scale distribution sales remained mostly unchanged (54,55%), contrarily to what stated by scholars in literature, who declared that sales through large-scale distribution greatly increased during the pandemic

period (Barbaresco *et al.*, 2021). In fact, contrarily to what expected, as it is possible to see from the above graph (Figure 80), only 39,39% declared that they registered a boom of sales through this sales channel. However, this might be due to the fact that when asked through which distribution channels companies usually sell their products, only the 8,13% of respondents declared that they use large-scale distribution (Figure 46). Another similar situation, where collected results differentiate themselves from what exposed by scholars, is the fact that data collected through the survey about export underline how there has been an increase of sales through exportation, while official reports reported a general decrease in terms of volume and value in international sales in 2020 for the Italian wine sector (Figure 33).

All other data collected about the changes in sales through different distribution channels reflect general market tendencies emerged after the Covid-19 pandemic previously explored, that is the fact that sales through Ho.Re.Ca and wine shops suffered a great decrease, while direct sales in wineries and the use of e-commerce noticeably increased. The fact that the alarming data about decreased sales has been registered in Ho.Re.Ca and also in wine shops, is due to the fact that these are also two of the most used sales channels adopted by respondents (47,5%) (Figure 46).

The next question was aimed at understanding if during the pandemic period respondents engaged in brand new marketing strategies never used before (Figure 81).

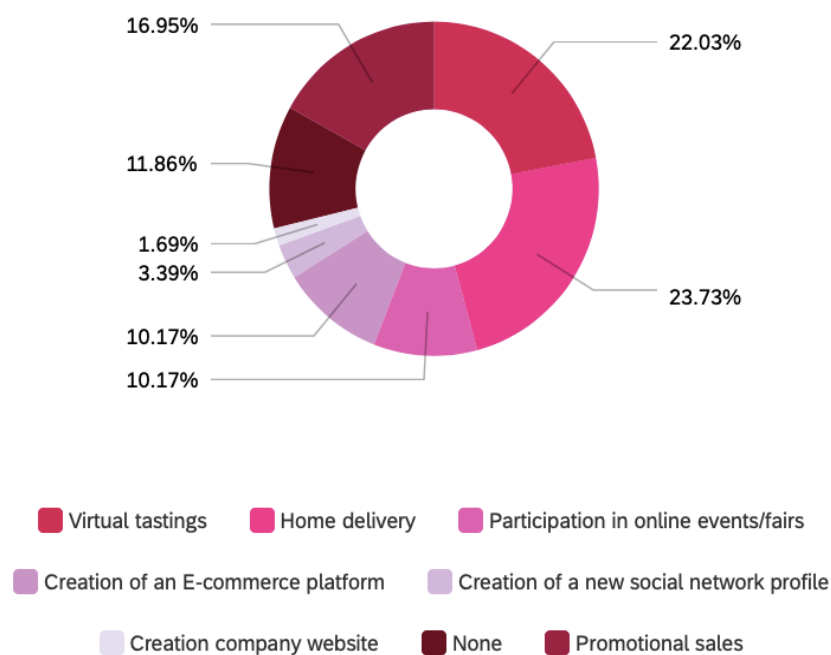


FIGURE 81: BRAND NEW MARKETING STRATEGIES ADOPTED

They could choose among a list of answers indicating both traditional and digital marketing channels. As it is possible to see, the two most adopted marketing activities are home delivery of organic wine (23,73%), and virtual tastings (22,03%). This is completely in line with what stated in literature and with data collected and analysed by scholars (NOMISMA, 2020). Although the home delivery service is not a digital tool, it has been deemed an interesting method to limit the decline of sales, as much as virtual wine tastings have been deemed a valid method to spend some time with customers and maintain high their interest towards the company.

Another interesting thing that emerges in the graph (Figure 81) is that very few declared that they engaged in the use of social networks and company websites for the first time, probably because many respondents already managed the use of such digital tools before. On the other hand, concerning the use of e-commerce, it is interesting to notice that only 10,17% declared that they began to sell through e-commerce platforms during the pandemic period. This result might appear discordant with what declared by scholars, that is the fact that the pandemic boosted an increase in the use of online-sales platforms. However, this result is compromised by the fact that most companies already used e-commerce platforms to sell their wine before the arrival of the pandemic (Figure 74). Therefore, it can be concluded that this data only demonstrates a further increase in the use of this digital sales channel, although it might not appear as such in the graph.

A more specific focus on digital marketing tools was required and emerges from the answers to the following question (Figure 82).

Digital tools	Increased	Decreased	Unchanged
Facebook	61,54%	2,56%	35,90%
Instagram	67,50%	2,50%	30,00%
Twitter	25,93%	3,70%	70,37%
LinkedIn	28,00%	8,00%	64,00%
Company Website	57,89%	2,63%	39,47%
E-commerce	61,76%	2,94%	35,29%
Specialized sales sites (ex. Vivino)	23,08%	3,85%	73,08%
Blog	15,38%	3,85%	80,77%
Youtube	25,93%	3,70%	70,37%
Newsletter/Mailing list	58,62%	3,45%	37,93%

FIGURE 82: CHANGES IN THE USE OF DIGITAL MARKETING TOOLS

Wine companies were asked to indicate if their use of the main digital marketing tools increased, diminished, or remained unchanged.

The first thing that is evident from the graph above is that only very small percentages indicated that their use of these tools decreased during the Covid-19 pandemic, foregrounding the idea that the pandemic itself pushed producers towards an increased level of digitalisation. Secondly, once again what previously concluded about the use of social networks is confirmed by the answers collected hereby, confirming Facebook and Instagram as the most used social networks in this sector. With regards to the use of the company website, the e-commerce platform, and the newsletters/ mailing lists, they can be deemed tools used to strengthen the relationship with the consumer, which proved itself very difficult during the time of the pandemic, in which face to face contacts were reduced to the bare minimum. Ultimately, the digital tools which use remained unchanged are also those that were not widely used before the outburst of the pandemic.

The survey ends with a question about the communicative strategies of organic wine companies. It was deemed interesting to ask producers if the content of their marketing strategies changed with the advent of Covid-19 (Figure 83).

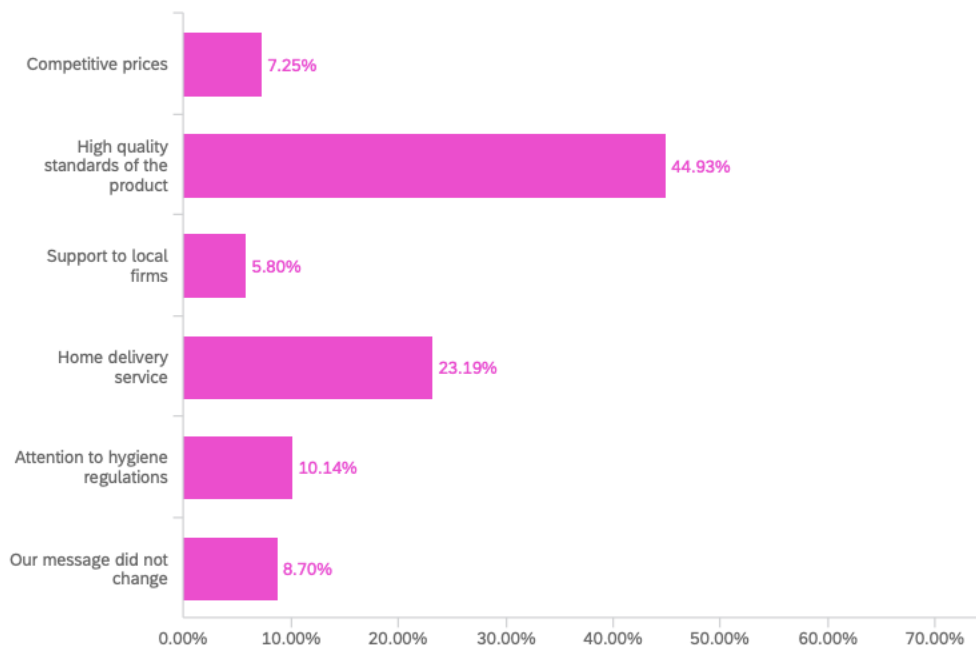


FIGURE 83: CONTENT OF COMMUNICATIVE STRATEGIES DURING THE PANDEMIC

They were asked to choose which contents better represented the communicative message they wanted to spread, among a list of possible choices.

The most glaring thing that can be observed from the graph is the fact that the highest push was intended to enhance the high quality of the wine produced (44,93%). If generally before the pandemic the focus of marketing campaigns was on the company itself, its traditions and territory and the events organised in wine cellars (Figure 63), during the pandemic the most communicated aspects shifted towards the importance given to the quality of organic wine. That might be due to the fact that people could not, and did not want to, engage neither in direct contact with other people nor in travels, and therefore, the smartest thing to do was trying to build customer loyalty by letting the products speak for the entire company. Furthermore, the other important thing to do during a difficult time such as that of the pandemic, was to try to safeguard the rates of sales of the company, and this might be considered the reason why home delivery services saw quite a significant raise of interest too (23,19%). Not much interest has been given to messages centred to the augmented hygiene protocols (10,14%), even if generally during the pandemic period much attention has been dedicated to assure that hygiene was paramount to companies, both in production terms and in the protection of workers.

### 3.2 Companies' features and digitalisation: a comparison

The last part of the analysis based on the survey conducted, focuses on the research of a relationship between the characteristics of the interviewed wine companies and their use of digital instruments. To do so, a bivariate analysis has been conducted through the use of the statistical method called Chi-square, which aims at identifying the existence of a possible relation between two independent variables taken into consideration. The main benefit of using this approach is to obtain easily readable results out of the analysis of qualitative variables.

In order to calculate the Chi-square index, it was necessary to file out tables displaying observed frequencies, theoretical frequencies, and contingency tables. Therefore, it was necessary to compute different data in order to be able to apply the Chi-square method to the results of the previously explored empirical analysis.

The formula employed to calculate the theoretical frequencies of independence is the following:

$$f_{i,j} = \frac{f_{i,0} \times f_{0,j}}{n}$$

Hereby,  $f_{i,0}$  is the sum total of the lines,  $f_{0,j}$  is the sum total of the columns, and  $n$  is the sample size.

The following step was calculating contingencies ( $C$ ), which are the differences between observed and theoretical frequencies. The formula used to determine them is:

$$C(x_i; y_j) = f_{(x_i, y_j)} - f'_{(x_i, y_j)}$$

In this case,  $f_{(x_i, y_j)}$  represents the observed frequencies,  $f'_{(x_i, y_j)}$  represents the theoretical frequencies. If the resulting ( $C$ ) are equal to 0, variables are independent. Contrarily, as the resulting ( $C$ ) augments, the rate of dependence of the two variables increases.

Finally, it becomes possible to compute the Chi-square index, using the following formula:

$$\chi^2 = \sum_{i=1}^k \sum_{j=1}^h \frac{C(x_i; y_j)^2}{f'_{(x_i, y_j)}}$$

The above formula represents the computation of the sum for each row and each column of the squared contingency divided by the expected frequency. However, the result of this formula does not give a clear image of the dependence of the two variables, and that is the reason why it was deemed necessary to normalise the data through a process of Chi-square normalisation ( $C.C.$ ). With the following formula, the result becomes readable and becomes a value comprised between 0 and 1, where the closer the value is to 1, the higher is the dependence between the two variables.



$$C.C. = \frac{\chi^2}{n \times \min \{(h - 1), (k - 1)\}}$$

Hereby,  $h$  and  $k$  are the statistical modes of the sample, that is the number of both lines and columns.

Through this process, it was possible to carry out an analysis of dependence of those that were deemed the most interesting variables that could create a link between the studied literature and the empirical analysis conducted for this dissertation. In fact, through the review of the literature on the rate of digitalisation of the wine sector three main interesting aspects emerged, that are the relationship between company's turnover and its approach towards the use of digital tools, the connection between the company's size and its activity on social media platforms, and the correlation between the age of the company's owner and firm's digital maturity. The data collected through the conducted survey made it possible to explore them with the help of the above-mentioned statistical process. For the analysis that follows, it was possible to consider the answers of 48 companies, as those were the only complete answers that could represent a valid sample for the purpose of this study.

### *3.2.1 Company's turnover and use of digital tools*

The first part of this bivariate analysis considers on one side the last-three-years average turnover of surveyed organic wine companies, and on the other side, the use of firstly Facebook and secondly E-commerce platforms.

The first part considered the turnover of the company as connected to the use of Facebook, as to understand if there is a relationship of dependence between these variables. Observed data of the survey were inserted in a double entrance table as following:

<b>Levels of Turnover</b>	<b>USE of Facebook</b>	<b>NO use of Facebook</b>	<b>Total</b>	<b>% of Use</b>
100.000-300.000 Euro	16	10	26	62%
300.001-700.000 Euro	11	1	12	92%
700.001-1.500.000 Euro	6	0	6	100%
5.000.001-10.000.000 Euro	3	0	3	100%
> 10.000.001 Euro	1	0	1	100%
<b>Total</b>	<b>37</b>	<b>11</b>	<b>48</b>	

TABLE 1: OBSERVED FREQUENCIES - AVERAGE TURNOVER AND USE OF FACEBOOK

The Facebook variable has been divided between “use” and “no use”, and the number of answers to one or the other option has been counted and inserted in the table, according to the level of turnover of the companies divided by range. On the last column on the right, the percentage of incidence of use on the sum total of answers for each line has been calculated.

Through the statistical analysis explained in the previous section of this chapter, the normalised Chi-square index has been calculated. In this case, the Chi-square index is 7,98 and the normalised is 16,62%.

The same process was carried out to consider the relationship between the average turnover of surveyed organic wine companies and their use of e-commerce platforms.

<b>Levels of Turnover</b>	<b>USE of E-commerce</b>	<b>NO use of E-commerce</b>	<b>Total</b>	<b>% of Use</b>
100.000-300.000 Euro	11	15	26	42%
300.001-700.000 Euro	6	6	12	50%
700.001-1.500.000 Euro	3	3	6	50%
5.000.001-10.000.000 Euro	2	1	3	67%
> 10.000.001 Euro	0	1	1	0%
<b>Total</b>	<b>22</b>	<b>26</b>	<b>48</b>	

TABLE 2: OBSERVED FREQUENCIES - AVERAGE TURNOVER AND THE USE OF E-COMMERCE

As it has been done for Facebook, the Chi-square index has been calculated and it resulted 1,63, while the normalised data is 3,40%.

Comparing the two calculated indexes underlines how there is a dependence between the average turnover of the company and their use of both Facebook and e-

commerce platforms. That can be started as the Chi-squared indexes are different from 0. Nevertheless, in both cases the percentage of the normalised Chi-square indexes resulted quite low, meaning that the dependence between the analysed variables is not very high. However, these data must be considered representative of the studied sample only, which has limitations, therefore results cannot be generalised and compared to those presented by literature.

In terms of sign of identified dependence, in the column called “% of use” of each table, it can be observed that in both cases, the dependence between the two variable is positive, which means that as one variable increases, the other does the same. Therefore, the use of both Facebook and e-commerce platform is more notable in companies that scored higher average yearly incomes. However, in the case of e-commerce, growth is less exponential.

### 3.2.2 Company’s size and activity on social media

The analysis has been carried out as to determine the relation between the company’s size in terms of production levels, and its activity on social media.

<b>Production levels</b>	<b>USE of Facebook</b>	<b>NO use of Facebook</b>	<b>Total</b>	<b>% of Use</b>
< 375 hl	14	10	24	58%
376-750 hl	7	1	8	88%
751-1.500 hl	7	0	7	100%
1.501-3.750 hl	5	0	5	100%
3.751-7.500 hl	3	0	3	100%
> 7.501 hl	1	0	1	100%
<b>Total</b>	37	11	48	

TABLE 3: OBSERVED FREQUENCIES - PRODUCTION LEVELS AND USE OF FACEBOOK

The observed frequency has been inserted in this table following the same process and structure of the tables in the previous section. The Chi-square index identifying a dependence between the variables is 10,03 and the normalised data is 20,89%.

On the other hand, comparing the size of the company with the use of e-commerce platforms generated another table:

<b>Production levels</b>	<b>USE of E-commerce</b>	<b>NO use of E-commerce</b>	<b>Total</b>	<b>% of Use</b>
< 375 hl	9	15	24	38%
376-750 hl	6	2	8	75%
751-1.500 hl	3	4	7	43%
1.501-3.750 hl	1	4	5	20%
3.751-7.500 hl	2	1	3	67%
> 7.501 hl	1	0	1	100%
<b>Total</b>	<b>22</b>	<b>26</b>	<b>48</b>	

TABLE 4: OBSERVED FREQUENCIES - PRODUCTION LEVELS AND USE OF E-COMMERCE

In this case, the Chi-square index resulted 6,47, and the normalised data is 13,47%. Similarly to the previous results, the Chi-square indexes are different from 0 in this scenario as well, determining a dependence between the variable representative of the company's characteristics, and the rate of digitalisation. The percentages of dependence here are respectively higher for both Facebook and e-commerce as compared to those obtained in the previous section of this chapter. Nevertheless, the rates are still quite low, highlighting the fact that for the considered sample of answers the relationship of dependence of the variables is not very strong.

The percentage of use of Facebook represented in each line appears linearly increasing as the productive levels of the companies grow. On the other hand, on the side of e-commerce, the percentage of use does not grow linearly but is fluctuating. This result is coherent with the Chi-square index result, which appears quite notably lower than the one computed for the Facebook-company's size analysis.

### 3.2.3 Owners age and digital maturity

The last relation that deserves space and interest is the one between the age of the company's owner and the firm's approach to the use of digital tools. One last time, the process of computation of the Chi-square indexes has been performed.

The first table reflects the observed frequencies of the use of Facebook in relation with the age ranges of the company's owners.

<b>Owners' age ranges</b>	<b>USE of Facebook</b>	<b>NO use of Facebook</b>	<b>Total</b>	<b>% of Use</b>
< 25 years	1	0	1	100%
26-40 years	6	1	7	88%
41-60 years	20	9	29	69%
> 61 years	9	2	11	82%
<b>Total</b>	<b>36</b>	<b>12</b>	<b>48</b>	

TABLE 5: OBSERVED FREQUENCIES - AGE RANGES AND USE OF FACEBOOK

The Chi-square index calculated here is 1,60 and the normalised index is 3,33% from these data alone, it can already be stated that although there is dependence between the variables, it is very low.

The same thing can be observed in the relation between age ranges and use of e-commerce.

<b>Owners' age ranges</b>	<b>USE of E-commerce</b>	<b>NO use of E-commerce</b>	<b>Total</b>	<b>% of Use</b>
< 25 years	1	0	1	100%
26-40 years	5	2	7	71%
41-60 years	9	20	29	31%
> 61 years	7	4	11	64%
<b>Total</b>	<b>22</b>	<b>26</b>	<b>48</b>	

TABLE 6: OBSERVED FREQUENCIES - AGE RANGES AND USE OF E-COMMERCE

Hereby, the Chi-square index is 6,98 and the normalised data is 14,54%. Even if these data are higher than the previous, the normalised Chi-squared index is still quite low, meaning that in this case as well, dependence between the age range of the company's owner and their firm's engagement in the use of digital platforms to sell their products is not very strong.

Interesting to be observed is the trend of percentage of use of both digital tools, that seem to diminish as the age of the owner grows, but eventually raises again by the highest acknowledged age range (>61 years). Therefore, there is no identified proportional growth.

### 3.2.4 Discussing findings

By using the analysed data on the relation between surveyed organic wine companies' features and digital maturity, comparisons with previously reported literature findings can be carried out. The discussion of interesting elements that emerged in the literary review brought this analysis on verting on only three aspects of companies' characteristics, which are those that were just discussed.

Scholars stressed the existence of a positive relationship between turnover and general use of digital tools (Galati *et al.*, 2016), which is confirmed by our findings. The same thing happens when comparing the use of digital tools and companies' size (Szolnoki *et al.*, 2018). Contrarily, when considering the age of the companies' owners and their companies' investment in the use of digital tools, literature observed an inversely proportional relationship where the growing age reflects a lower involvement in digitalisation (Galati *et al.*, 2017; Galati, Sakka, *et al.*, 2019; Galati, Tinervia, *et al.*, 2019) while in our presented findings, the relationship is not evaluable as results are fluctuating.

This combination of findings provides some support for the conceptual premises stated in literature, however, they cannot be considered as exemplifying of the whole of the organic wine producers in Italy, as the sample is both limited and not homogenous. Therefore, hereby presented results should only be considered in reference to the answers collected through the conducted analysis, and not as the epitome of the whole sector.

#### 4. CONCLUDING REMARKS

To conclude, it may be useful to summarise the general trajectory that was followed in this dissertation.

The present study was designed to determine the level of digital maturity in the wine sector, both worldwide and in Italy. Beginning with the distinction of an Old World and a New World of wine, some general facts about the wine sector have been explored, as to lead the discussion towards more specific facts and data. In fact, it was useful to create a framework of analysis of the worldwide wine sector, with a focus on Italy, that allowed a holistic view of nowadays wine sector. The data taken into consideration revolved around figures on cultivated surface, production, consumption, and international trade. Furthermore, a discussion about the nature and use of modern digital tools in both production and marketing has been explored through a review of literature. What emerged is the existence of a difference of approach towards digitalisation between the countries of the Old World of wine, and the countries of the New World that only just entered the market. The first revealed itself as a reality deeply rooted in traditions and disinclined to the use of digital tools, while the latter appeared more prone to the adoption of new and upfront technologies. As the focus of this dissertation was the digitalisation level in marketing, another aspect worth exploring is the idea that marketing is still not deemed as a fundamental part in the reality of firms, especially in the wine sector, in which competition is high, and products are so variegated. Therefore, neither big firms nor small realities cannot underestimate the power of marketing, and the adoption of digital tools for the benefits of firms. It is for this reason that, in order to explore and understand the state of the market in Italy, a survey was created and submitted to a sample of Italian organic wine producers. The choice to focus on the Italian reality of producers of organic wine was not casual, but intentional. In fact, such sample of subjects has been deemed both representative of the longstanding Italian tradition of wine producers, but also pioneering in a field that represents a valid, economically, and environmentally sustainable choice for the future of the wine sector.

The use of qualitative case studies is a well-established approach in this field of analysis, and that is the reason behind the creation of the 55-question survey that was conducted in order to find an answer to the leading question of this dissertation, which is

understating the approach of Italian wine producing companies towards the use of digital tools. The sample was composed for the vast majority of small and medium firms that approached the production of organic wine in the last 30 years, and through the analysis of their answers it was possible to draw some interesting conclusions. It was discovered that the interviewed companies demonstrated that in this sector there seems to be a marginal use of digital tools for marketing, but it also emerged a propensity to adoption of such tools in the future. However, neither now nor in the short term, companies are prioritizing the development of a marketing department within firms, relegating it to a marginal position, one that is often overlooked and underestimated in its importance. In fact, sampled companies seem to be attracted to the use of digitalisation largely connecting its employment to an alignment to the market, directed and shaped by big companies, that are conversely betting more and more on the use of marketing as a strategic tool to maximise sales and enhance the image of the company itself. As SMEs do not have large financial resources devoted to digital tools, the most frequently used instruments adopted are social media and the use of a website to spread information about companies and their products. Such tools are both convenient and economically advantageous and represent the most effective way to create a communicative channel between firms and consumers, that were invested as well as companies by the wave of digitalisation and now seek to retrieve information quickly and easily through the use of the Internet. Therefore, it is possible to say that social media such as Facebook and Instagram, websites, and e-commerce platforms are getting a foothold in the panorama of wine producing companies, even if there is still a long way to run to reach a full digital maturity.

Although this work contributes to existing knowledge of digitalisation by providing interesting insights on the reality of small and medium organic wine producing companies in Italy, generalisability of these results is subject to certain limitations. In fact, the sample of interviewed companies cannot be entirely representative of the whole of the organic wine sector in this country, as it is composed only of a limited number of respondents. Further investigation, using a broader sample of interviewed companies could shed more light on this topic, allowing a more holistic and exemplifying reading of the state of the organic wine sector with regards to its digital maturity.



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