Implications of an exogenous shock (COVID-19) on wine tourism business: A Portuguese winery perspective

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Abstract
This study investigates the impact of an exogenous and unexpected shock (COVID-19) on the wine tourism business from the winery's perspective. A sample of 146 Portuguese wineries was surveyed. The econometric results show that the share of wine tourism sales, the amount of dependence on exports and the assertiveness of brand recognition have a structural effect on direct-to-consumer tasting room wine sales, even when the winery's business is disrupted by a shock that degrades the dynamics and flows of international trade. The research establishes a starting point that allows to understand the implications of an exogenous shock on the structure of the winery's business, calling for further research on the firm's economic performance as well as on the consumer's behaviour in a post-pandemic context.

Keywords
wine tourism, winery, firm structure, probit model, COVID-19

Introduction

Wine tourism is an expanding phenomenon among numerous destinations across the globe (Lewis et al., 2021). Due to the growing attention given to premium wines[1], premium wine regions have also become increasingly popular tourist destinations. As a result, wine tourism has developed into a core factor shaping the business model of wine producers by allowing an increase in direct-to-consumer (DTC) sales and brand recognition (Torres et al., 2021). Tourism, and specifically international tourism, in European wine tourism destinations[2] is a significant driver of direct and indirect sales and revenue (Karlsson and Karlsson, 2017), accountable for increasing business viability by adding value (Stavrinoudis et al., 2010) and a higher premium to wines through brand reputation (Winfree et al., 2018). In particular, the growing importance of DTC wine sales for small-to-medium size wineries has been shown to positively impact their gross profit margins and growth rates (Newton et al., 2015). This trend has resulted in wine tourism's niche market gradually evolving into a

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more competitive phenomenon, involving greater and more ambitious investments (López and Szolnoki, 2021).

The wine business has progressed into a more complex operation, more dependent on tourism and, in the case of Portugal, notably through collective recognition mechanisms (e.g. UNESCO World Heritage classification) responsible for accelerating wineries' globalization. In recent years, the Douro and the Alentejo wine regions in particular have achieved international renown through wine tourism (Hogg and Rebelo, 2018). Wine tourism and wineries have acquired an influential role within the Portuguese tourism economy, benefiting from public support specific to private investment and promotion to increase international tourism as well as wine exports (Turismo De Portugal, 2019). Moreover, Portugal is an illustrative example of an economy whose exports are mainly underpinned by tourism (OECD, 2019), which has strongly coupled with the wine sector. Thus, the business that has been pursued by Portuguese wineries prior to the COVID-19 pandemic has been strongly oriented towards tourism, favouring DTC wine sales.

The COVID-19 outbreak in late 2019 had a previously unknown and globally disruptive effect, bringing the world economy to a halt and with it the entire value chain representing the tourism industry, which entered 'a state of suspended animation' (World Bank Group, 2020, p. 4) during the first quarter of 2020. Highly tourism-dependent countries, such as Portugal, were among the worst affected (OECD, 2020). Containment measures and travel restrictions put in place to prevent the spread of the pandemic resulted in a worldwide disruption of wine distribution channels sustained by the tourism industry. Shut down and mandatory restriction measures imposed on bars, hotels and restaurants, as well as the obstacles to exports, led to a severe fall in tourism-related sales and local wine consumption in various wine-growing destinations (López and Szolnoki, 2021).

In this context, it is relevant to investigate how this unprecedented exogenous shock impacted wineries, and specifically DTC tasting room sales, to determine potential changes in the wine tourism business. As witnessed in other wine-producing countries, Portuguese wineries were exposed to the constraints of the pandemic, and it can be assumed that DTC wine sales, especially related to the tasting room, have been affected to a greater or lesser extent depending on the business and its features. Therefore, it is important to analyse which variables related to the business and its strategy (e.g. firm size, experience and reliance on wine tourism sales) influenced sales of DTC wine in Portuguese wineries' tasting rooms during the COVID-19 pandemic.

The implications of an exogenous shock on the wine tourism business raises several significant challenges for winery managers facing an almost total erosion of tourism demand and, consequently, wine tourism-derived sales. Likewise, this research note aims to provide useful insights to improve management decision-making in a post-pandemic and recovery phase, as well as on potential future outbreaks.

Data and methodology

An online survey (Google forms platform) was conducted during October 2020, reflecting a time window that examines the winery's experience during the first wave of COVID-19. This wave had the most acute impact between March and May of 2020, with the Portuguese government imposing a lockdown on the country followed by conditional measures during the remainder of the year. The online survey provides data that allow us to analyse the impact of COVID-19 on wine tourism measured by the percentage decrease in Portuguese winery tasting room DTC sales compared to 2019. Further, it allows us to determine how variables related to the business and its structure determine the firm's decision of whether to offer DTC wine sales.

The survey was devised to not only study the effect of COVID-19 on wine tourism but also the effects of the pandemic on winery business in general. It was, therefore, divided into four main sections: (1) Characteristics/structure of the wineries, namely turnover as a proxy for size (Hammervoll et al., 2014), Return-on-Assets (ROA) as a proxy for economic performance (Sellers and Alampi-Sottini, 2016), and the number of years in the wine business as a proxy for experience, which has been applied in previous studies to analyse the relationship of resources to firm performance (Brush and Chaganti, 1999); (2) Perceptions regarding the COVID-19 impact on the wine industry/business in detail; (3) Reactions to the crisis (investments/cost reductions in vineyards, cellars, and in management, marketing and sales) and (4) Tourism related impacts, which includes tasting room sales. Demand for wine tourism products has emerged, in combination with an expansion in agritourism services, along with the development of sales points and wine tasting rooms at the wineries (Boatto et al., 2013). Therefore, a change in demand will have an impact on tasting room sales. Items from sections (1) and (4) were used for the current study, based on the literature and discussions with several wineries with tourist facilities both before and after an initial pilot study.

A total of 146 observations were deemed valid for data analysis after removing respondents with missing data, representing approximately one-third of Portuguese wineries. The observations that were considered exhibit a high dispersion in both turnover, ROA and size, with relative standard deviations of 49%, 48% and 51%, respectively. The sample is comprised of mostly young,

small and relatively capital-efficient companies. Of these, 61% have been in business for less than 25 years, 69% have an annual turnover below EUR 1 million and 73% of companies have asset returns above 5%, which is considered a good asset performance in capital intensive businesses such as wineries. From the sample, 97 (66%) wineries include wine tourism services with 72% of these having witnessed a reduction in wine tourism sales above 10% relative to the previous year due to COVID-19 lockdown measures. In 75% of wineries, DTC wine sales in the tasting room account for less than 10% of their total sales. Approximately 76% of wineries' clients spent less than 50 EUR on average, 73% of bottles sold were priced above 13 EUR and 60% of wineries indicated that brand recognition was the first purchase choice factor.

Table 1 includes the data summary of the variables used in the econometric model estimation.

Given that the purpose of this paper is to examine the factors/variables that influence the decrease in winery DTC tasting room wine sales during the first wave of the COVID-19 pandemic (dependent variable) by studying a subsample of wineries that offer such sales, this may produce bias resulting from using non-randomly selected samples to estimate behavioural relations. Therefore, to overcome the occurrence of specification error resulting in the estimator's bias from the sample selection, the Heckman (1979) recommendation is assumed, and a two-step estimation process undertaken (Wooldridge, 2002): a full-sample Probit selection computation followed by a censored

Table 1. Variables and data summary.

Variable name	Variable type	Variable coding	Theoretical meaning	Data summary		Observations
Outcome variable:						146
Wine tourism	Binary	1 = Yes, 0 = No	(1)	Yes	66%	
Independent variables:						
Turnover (2019)	Ordinal (x 1.000 €)	1: <50; 2: [51, 200]; 3: [200, 1.000]; 4: [1.000, 5.000]; 5: [5.000, 10.000]; 6: [10.000, 20.000]; 7: >20.000	(3) (a)	< 1.000.000 €	69%	
ROA (2019)	Ordinal (%)	1: <5%; 2: [5%, 15%]; 3: [16%, 25%]; 4: [26%, 35%]; 5: [36%, 45%]; 6: >45%	(3) (b)	≥ 5%	73%	
Years of operation	Ordinal	1: <5; 2: [6, 15]; 3: [16, 25]; 4: [26, 33]; 5: [34, 45]; 6: >45	(3) (c)	≤ 25 years	61%	
Outcome variable:						97
Decrease DTC wine sales in the tasting room	Binary	1: >10%; 0: <10%	(2)	> 10%	72%	
Independent variables:						
Turnover (2019)	Ordinal	1: <50.0000 €, 7: >20.000.000 €	(3) (a)	<1.000.000 €	68%	
Years of operation	Ordinal	1: <5; 2: [6, 15]; 3: [16, 25]; 4: [26, 33]; 5: [34, 45]; 6: >45	(3) (c)	≤ 25 years	58%	
Share of wine tourism sales in the wine business (2019)	Continuous	Numeric (%)	(4) (d)	≤ 10%	75%	
Consumer average spending (2019)	Continuous	Numeric (EUR)	(4) (d)	≤ 50 €	76%	
Average price per bottle sold (2019)	Ordinal	1: [1, 6]; 2: [7, 13]; 3: >13	(4) (e)	≥ 13 €	73%	
Individual brand recognition	Binary	1 = Yes, 0 = No	(4) (e)	Yes	60%	
Exports (2019)	Ordinal	1: <5%; 2: [5%, 10%]; 3: [11%, 15%]; 4: [16%, 25%]; 5: [26%, 35%]; 6: [36%, 45%]; 7: >45%	(4) (e)	≥ 26%	52%	

(1)Selection variable; (2) COVID-19 effect; (3) Firm structure indicator; (4) Business structure indicator, (a) Proxy for size; (b) Proxy for performance; (c) Proxy for experience; (d) Wine tourism; (e) Wine.

calculation in the selected subsample (97 observations which include wine tourism sales). The first selection equation estimates the probability of complying with a positive outcome, that is, wineries that feature wine tourism dependent on the firm's structure, measured by the turnover, ROA and years of operation. The main equation allows us to estimate the impact of an exogenous shock (COVID-19) on the winery's DTC tasting room wine sales (outcome variable) conditional on firm structure indicators (Table 1).

Initially, the impact of the first COVID-19 pandemic wave on DTC wine sales was measured through a continuous variable (percentage; left side graph in Figure 1). However, a preliminary statistical distribution analysis recommended conversion of the outcome variable into a binary variable with a cut-off point set at a 10% decrease, dividing the test results into two different categories representing a more than or less than 10% decline (right side graph in Figure 1), with 72% of observations falling above it. None of the wineries saw an increase in sales.

Therefore, the main equation is specified as a Probit model where the dependent variable assumes only two values, that is, '0' if the impact of COVID-19 on DTC wine sales is less than 10% or '1' if the impact is higher than 10%. The estimated Probit model (Greene, 2003) is defined by the following three equations

$$y_i^* = x_i'\beta + u_i \qquad (1)$$

$$z_i = 1\left(w_i'\gamma + \varepsilon_i > 0\right) \qquad (2)$$

$$y_i = z_i y_i^* \qquad (3)$$

where x_i' denotes a vector of independent observed variables (Table 1) – influencing the latent binary outcome y_i^* (Table 1), and u_i defines the error term in

the regression equation (1). z_i is the selection equation, in our case an observed binary variable indicating whether the winery features wine tourism services ($z_i = 1$) or not ($z_i = 0$), with explanatory variables given by the vector w_i' (Table 1), while ε_i is the error term of the selection equation (2). Therefore, y_i is observed when $z_i + \varepsilon_i > 0$, as in equation (3). In this model, both u_i and ε_i capture the aggregated effects of the unobserved terms and are assumed to follow a conditional bivariate normal distribution, expressed by

$$\begin{pmatrix} u_i \\ \varepsilon_i \end{pmatrix} \Big| x_i, w_i \sim N\left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_u^2 & \rho \\ \rho & 1 \end{pmatrix} \right) \qquad (4)$$

where ρ is the correlation coefficient between u_i and ε_i. Thus, when ρ 0, the estimation might suffer from sample selection bias.

To interpret the results of the estimated model, we observed both the sign and significance of the parameters and, specifically, the marginal effects measures (Greene, 2003).

Findings and discussion

Table 2 presents the results of the Probit model referred to in equations (1) to (4) and correcting the potential bias due to sample selection. Concerning the selection equation, the parameters indicate that the probability of a winery featuring a wine tourism service is positively and significantly influenced by the winery's ROA, rather than the company's turnover. Furthermore, results show that age did not affect the probability of a winery including a wine tourism service, which conforms with previous findings where differential effects of company's resources by age were not established
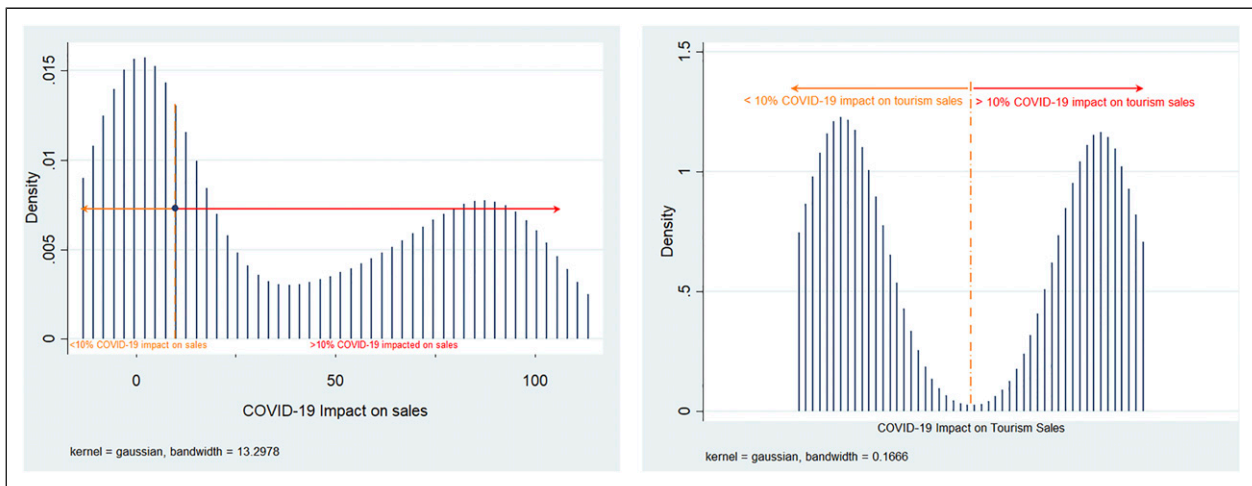

Figure 1. 'Impact on wine tourism sales' kernel density estimates – ordinal and binary scales.

Table 2. Results of Heckman Probit econometric model.

Number of observations = 146
Censored observations = 49
Uncensored observations = 97
Wald chi^2 (8) = 15.02
Prob > chi^2 = 0.0357
Log likelihood = −138.6886

		Coef.	St.Err	Sig	Marginal effects dy/dx	Sig.
Main equation	Decrease DTC wine sales in the tasting room (>10%)					
	Turnover	−0.107	0.123	—	−0.035	—
	Years of operation	0.174	0.141	—	0.056	—
	Share of wine tourism sales in the wine business	0.046	0.019	***	0.015	***
	Consumer average spending	−0.001	0.003	—	0.000	—
	Average price per bottle sold	0.005	0.212	—	0.002	—
	Individual brand recognition	−0.704	0.371	*	−0.228	**
	Exports	0.162	0.075	**	0.052	**
	Constant	0.400	1.404	—	—	—
Selection equation	Wine tourism (yes/no)					
	ROA	0.156	0.077	**	—	—
	Turnover	−0.033	0.091	—	—	—
	Years of operation	0.065	0.096	—	—	—
	Constant	−0.147	0.344	—	—	—
	/athrho	0.161	1.503	—	—	—
	Rho	0.160	1.464	—	—	—

Wald test of indep. eqns. (rho = 0): chi^2 (1) = 0.01 Prob > chi^2 = 0.9145. ***significance level below 0.01, ** significance level below 0.05, and * significance level below 0.1.

(Brush and Chaganti, 1999). Most of the sample is comprised of small firms, which confirms that wineries that generate higher ROA are more likely to be family-run, validating the positive impact of family culture on promoting strategic flexibility of the company that encourages innovation and market competitiveness (Soler et al., 2017).

The Wald test is not significant (χ^2 = 0.01; *p*-value = 0.9145), suggesting that we cannot reject the null hypothesis (rho = 0) that both equations are independent. This means that there is no evident sample selection issue in the estimation of the main equation. Moreover, the value and significance of Wald statistic of the main equation regressors (χ^2 = 15.02; *p*-value = 0.0357) indicates that the partial coefficients of these regressions are globally significant at a 5% significance level, notwithstanding the individual non-significance of the parameters associated with the variables 'Consumer average spending', 'Average price per bottle sold', 'Turnover' and 'Years of operation'. However, the 'Share of wine tourism sales in the wine business', the level of dependence on 'Exports' and 'Individual brand reputation' were found to exert a statistically significant effect on the 'DTC tasting room wine sales', with

different parameters signs. The significance and sign of these coefficients indicate that an increase in the 'Share of wine tourism sales in the wine business', as well as the company's reliance on 'Exports', increased the likelihood of a greater negative impact on wine sales, highlighting a business structure that is more susceptible and exposed reductions in wine sales greater than 10% during the pandemic. Also, results indicate that an increase in the 'Individual brand reputation' moderated the likelihood of wine sales dropping more than 10%.

As would be expected, the marginal effects (Table 2) associated with 'Consumer average spending', 'Average price per bottle sold', 'Turnover' and 'Years of operation' did not exert a significant effect on wine tourism sales. Furthermore, results indicate that the expected probability of a negative impact of COVID-19 on wine tourism sales increases by 1.5% with a marginal change in the 'Share of wine tourism sales in the wine business'.

Also, the expected probability of the impact of the pandemic on wine tourism sales increases by 5% with a marginal change in 'Exports', which establishes a clear dependence of wine tourism sales on wine exports. This echoes the importance of international recognition to

export products (Defrancesco, et al., 2012), which can, in turn, have a downside effect by negatively impacting wine tourism sales in the event of an unexpected disruption. This suggests that although wine tourism was envisaged to diversify direct sales, this business model eventually made wineries more vulnerable and dependent on international markets and therefore on exports.

Furthermore, reputation has also been identified as a vital contributing factor for wine tourism's competitiveness (Boatto et al., 2013), which our results confirm even during a pandemic. Findings indicate a significant and relevant influence of 'Individual brand reputation' on the impact of COVID-19 on wine tourism sales. The expected probability of a negative impact of COVID-19 on wine tourism sales decreased by 23% with a marginal change in the 'Individual brand reputation', which stresses its critical value as a strategic asset to assert the firm's competitiveness (Winfree et al., 2018), particularly within an international environment. These results suggest the lasting effect of brand recognition on wine tourism direct sales, even in the event of an almost incapacitating global crisis.

Conclusions

This study adds knowledge and extends the role of wine tourism within the winery's business strategy by assessing the impact of an exogenous and unprecedented disruptive shock from a winery perspective. It shows that the first wave of the COVID-19 pandemic had a deep impact on DTC wine sales in the tasting room. The results show that the impact is independent of size and experience, as well as from average consumer spending on tasting room wines in the past and the typology of wine sold, defined by the average price per bottle sold. Conversely, the level of wine tourism sales in the winery's business, the amount of dependence on exports and brand recognition have a significant effect on DTC wine sales in the tasting room even when the business is disrupted by an environment that degrades global dynamics and touristic flows.

The results indicate private (at the firm level) and public measures that can be put in place to foster resilience in such events which are independent of the firm structure, conveying a message that, given a global and exogenous impact, it affects everyone and that short-term mitigation solutions are required, as well as medium- and long-term compromises that allow a deep transformation in the way society operates.

Within the short-term measures, new digital initiatives are a priority to bypass and moderate the dependence on DTC wine tasting room namely by including virtual wine tastings with participants that can pre-order wines and announce new services and products to relieve the effect

of a possible closure of business premises due to lockdown measures. Also, wineries will benefit from adopting new distribution channels and digital marketing initiatives, such as Online-Merge-Offline (OMO), that enables offline retailers to tap into existing e-commerce platforms, and social media marketing, to provide value to customers and new opportunities to build brand awareness by allowing an opportunity to engage with prospective tourists. Furthermore, given that wineries with lower brand recognition were the most to suffer deeper wine sales reductions, it is recommended that wineries invest in brand recognition, which involves the previously underlined digital strategies and cooperation with the governance system and specifically public agencies to engage in national and international marketing initiatives. Moreover, strategic alliances between wineries, and between wineries and distributors, will be vital to reducing transaction costs and to overcoming technical and legal barriers, in a symbiosis of individual and collective recognition reinforcement and wine-tourism interconnection.

Despite the urgency in adopting digital transformation to accelerate the growth and resilience of wine tourism businesses, which are predominantly located in rural areas, this measure is not entirely dependent on the winery's decision and needs more structural and medium and long-run public policy measures. For instance, the lack of physical and digital infrastructures required to sustain wine tourism operations in these areas calls for the participation of public governance systems to guarantee that technical conditions are put in place to allow this transformation to happen.

This research is not without limitations and the interpretation of the results and their managerial and policy implications should be taken with caution. This is due to the sampling method, which was subject to data collection obstacles as a result of the health crisis itself, which resulted in a high number of missing data. Furthermore, this study's results are illustrative of the impact of the first wave of COVID-19 in Portugal, not acknowledging the full-scale effect of the pandemic. Despite these limitations, the fact that, to the best of the authors' knowledge, there has been no study that investigates the impact of the COVID-19 pandemic on wine tourism in Portugal, this research presents a valuable insight that calls for further research.

Additional research is warranted to explore post-COVID-19 winery business adjustments, considering the expansion of wine tourism experiences beyond wine tasting and the cellar door (Cohen and Ben-Nun, 2009) that 'embed the physical, cultural and natural resources of wine destinations and wineries' (Sigala and Robinson 2019, p. 2) and consider the increased importance of sustainable development and environmental preservation in consumers' minds. Therefore, this study calls for

future research on new business strategies that capture both the impact of factors such as social changes and digitalization, as well as the consumer decision-making process.

Author contributions

Contribution of each co-author: Alexandre Guedes: Conceptualization; Writing original draft; Review & editing; João Rebelo: Conceptualization, Methodology; Writing original draft; Review Britta Niklas: Survey; Review & editing Robin Back: Survey; Review & editing.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Note

1. 'There is an ongoing shift towards premiumisation in wine, with younger drinkers driving this trend. (…) The share of premium, super premium and ultra-premium wine is projected to grow to 2023 (…)' (Wine Intelligence, 2020, p. 39)
2. As an illustration, foreign wine tourism represents 42% of the total wine tourism market in France (Potevin, 2020) and 46% of the total wine tourism market in Portugal (Turismo De Portugal, 2014).

References

Boatto V, Galletto L, Barisann L, et al (2013) The development of wine tourism in the Conegliano Valdobbiadene area. *Wine Economics and Policy* 2: 93–101. DOI: 10.1016/j.wep.2013.11.003

Brush CG and Chaganti R (1999) Businesses without glamour? An analysis of resources on performance by size and age in small service and retail firms. *Journal of Business Venturing* 14(3): 233–257. DOI: 10.1016/S0883-9026(97)00103-1

Cohen E and Ben-Nun L (2009) The important dimensions of wine tourism experience from potential visitors' perception. *Tourism and Hospitality Research* 9(1): 20–31. DOI: 10.1057/thr.2008.42

Defrancesco E, Orregoa J and Gennari A (2012) Would 'New World' wines benefit from protected geographical indications in international markets? The case of Argentinean Malbec. *Wine Economics and Policy* 1: 63–72. DOI: 10.1016/j.wep.2012.08.001

Green W (2003) *Econometric Analysis*. New Jersey: Prentice Hall.

Hammervoll T, Mora P and Toften K (2014) The financial crisis and the wine industry: the performance of niche firms versus mass-market firms. *Wine Economics and Policy* 3(2): 108–114. DOI: 10.1016/j.wep.2014.11.001.

Heckman JJ (1979) Sample selection bias as a specification error. *Econometrica* 47(1): 153–161. DOI: 10.2307/1912352

Hogg T and Rebelo J (2018) *Rumo Estratégico para os Vinhos do Douro e Porto*. Vila Real: Universidade de Trás-os-Montes e Alto Douro.

Karlsson P and Karlsson B (July 21, 2017). *The Four Successful Types of Wine Tourism*. Forbes: Online edition. https://www.forbes.com/sites/karlsson/2017/07/21/the-four-successful-types-of-wine-tourism/?sh=60a549f36fa2

Lewis G, Hardy A, Wells M, et al (2021) Using mobile technology to track wine tourists. *Annals of Tourism Research Empirical Insights* 2(2): 100022. DOI: 10.1016/j.annale.2021.100022

López R and Szolnoki G (2021). *Sustainable and innovative wine tourism. Success models from all around the world*. Almería: Cajamar Caja Rural

Newton S, Gilinsky Jr A and Jordan D (2015) Differentiation strategies and winery financial performance: an empirical investigation, *Wine Economics and Policy* 4: 88–97. DOI: 10.1016/j.wep.2015.10.001

OECD (2019, February) *OECD Economic Surveys Portugal*. OECD: Online edition. www.oecd.org/eco/surveys/portugal-economic-snapshot

OECD (2020, December 14) *Rebuilding tourism for the future: COVID-19 policy responses and recovery*. OECD: Online edition. https://www.oecd.org/coronavirus/policy-responses/rebuilding-tourism-for-the-future-covid-19-policy-responses-and-recovery-bced9859/

Potevin F (2020, December 14) *The dynamics of wine tourism in the world*. Vins du Monde: Online edition. https://vinsdumonde.blog/en/the-dynamics-of-world-wine-tourism

Sellers R and Alampi-Sottini V (2016) The influence of size on winery performance: evidence from Italy. *Wine Economics and Policy* 5: 33–41. DOI: 10.1016/j.wep.2016.03.001

Sigala M and Robinson R (2019) Introduction: The Evolution of Wine Tourism Business Management. In M. Sigala & R. Robinson (Eds.). *Management and Marketing of Wine Tourism Business - Theory, Practice, and Cases* (pp. 1–21). Cham: Springer Nature.

Soler I, Gemar G and Guerrero-Murillo R (2017) Family and non-family business behaviour in the wine sector: a comparative study. *European Journal of Family Business* 7(1–2): 65–73.

Stavrinoudis T, Tstartas P and Chatzidakis G (2010) Study of the major supply factors and business choices affecting the growth rate of wine tourism in Greece. *Current Issues in Tourism* 15(7): 627–647. DOI: 10.1080/13683500.2011.630457

Torres J, Barrera J, Kunc M, et al (2021) The dynamics of wine tourism adoption in Chile. *Journal of Business Research* 127: 474–485. DOI: 10.1016/j.jbusres.2020.06.043

Turismo de Portugal (2014) *O Enoturismo em Portugal – caracterização da oferta e da procura*. Lisbon: Turismo de Portugal. https://www.rederural.gov.pt/component/jdownloads/?task=download.send&id=490&catid=5&m=0&Itemid=101

Turismo de Portugal (2019) *Programa de Ação para o Enoturismo em. Portugal 2019-2021*. Lisbon: Turismo de Portugal. http://business.turismodeportugal.pt/pt/Conhecer/estrategia-turismo/programas-iniciativas/Paginas/programa-acao-enoturismo.aspx

Wine Intelligence (2020, March 25) *Global Trends in Wine 2020*. http://www.wineintelligence.com/wp-content/uploads/2020/06/Wine-Intelligence-Global-Trends-in-Wine-2020_Updated-v2.0.pdf

Winfree J, McIntosh C and Nadreau T (2018) An economic model of wineries and enotourism. *Wine Economics and Policy* 7: 88–93. DOI: 10.1016/j.wep.2018.06.001

Wooldridge J (2002) *Econometric Analysis of Cross-Section and Panel Data*. Massachusetts: The MIT Press.

World Bank Group (July 2020) *Rebuilding tourism competitiveness – Tourism response, recovery and resilience to the COVID-199 crisis*. Washington: World Bank. https://openknowledge.worldbank.org/handle/10986/34348

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