Exploring Enotourism's Impact on Winery Competitiveness through Online Data

Jose Baixauli[1] , Ana María Debon[2] , Roberto Cervelló-Royo[1] , Josep Domenech[1]

[1]Department of Economics and Social Sciences, Universitat Politècnica de València, Spain [2]Centro de Gestión de la Calidad y del Cambio, Universitat Politècnica de València, Spain.

Abstract

Enotourism has become an increasingly popular form of tourism in the wine industry, offering visitors the opportunity to discover the wine culture, history, and production process while enjoying the natural and cultural heritage of the region. Enotourism can improve the wine brand image, heritage, cellar reputation, and the Denomination of Origin (DO) recognition. This paper explores how enoturism offers, including visits, tastings, restaurants, and accommodation services, relate to the competitiveness of wineries in Spain. To this end, financial variables obtained from the Sistema de Análisis de Balances Ibéricos (SABI) are combined with indicators extracted from the wineries' websites. PCA is applied to financial variables and the first three components are used to measure the different dimensions of winery competitiveness. Results show that each dimension is associated with a different set of concepts related to enoturism offer.

Keywords: Digital footprint; web scraping; competitiveness; supervised learning; wineries; hospitality.

1. Introduction

Nowadays, enotourism is a popular form of tourism in the wine industry, offering visitors the opportunity to discover the wine culture, history, and production process while enjoying the natural and cultural heritage of the region increasingly popular. In addition, enotourism can improve the wine brand image, heritage, and cellar reputation; well-known Spanish tourist destinations use wine as an essential attractor since the hospitality industry and wine are closely intertwined (Martínez-Falcó, 2023). Despite these findings, little literature exists on tourism, hospitality, and wine (Bonn, 2018). As Bianchi (2015) states, trust in a wine brand stems from wine experience and influences satisfaction with the brand. Wine tourism within the experiential economy encompasses a distinct lifestyle (Min, 2013), with the thematic focus of activities

being the most memorable factor in the overall experience (Saayman and Van Der Merwe, 2015). Moreover, the variety of cellars and the availability of complementary services within their surroundings play a significant role in determining the spectrum of activities to be developed (Bruwer and Alant, 2009). The types of services provided directly impact the wine experience (Carlsen, 2007). Thus, this paper explores how hospitality services, including visits, tastings, restaurants, and accommodation services on the websites, are related to the competitiveness of wineries at both individual and DO levels in Spain.

Our theoretical framework explores the multifaceted experiential model of enotourism. Thus, our model is multidimensional in nature whose fundamental pillars are the following; 1) Enotourism and visit itself (Wu and Liang, 2020; Priilaid, 2020), 2) Restauration and Hospiltality offer (Liu et al., 2017; Agyeiwaah et al., 2019), 3) Environment (Rachao et al., 2019; Madeira et al., 2019a, 2019b), 4) History and Heritage (Mason and O'Mahony, 2007; Fernandez and Cruz, 2016), 5) Protected and region designation of origin and/or protected geographically indication (Bianchi, 2015), 6) Cellars, vineyards, infrastructure and architecture (Cohen and Ben Nun, 2009), and 7) Sensorial Experience and wine tasting (Martins et al. 2017; Chen et al. 2016; Carlsen 2004, 2007).

The study uses a quantitative approach, combining data from different sources. A sample of 561 wineries located in Spain and their competitiveness variables are gathered from the SABI1 database, which contains the balance sheets of companies operating in the wine industry. The website contents were automatically explored to identify the enoturism services and classify the dimensions of the offer by each cellar. Multivariate statistical and machine learning techniques (Hastie et al., 2009) are used to conduct a no-supervised analysis to discover patterns of competitiveness and subsequently supervised analysis to confirm the relation of these patterns with web content.

The results suggest that the increased level of enotourism positively influences the competitiveness of wineries. To extract the level of enotourism we chose and pulled the number of appearances of related keywords in the web. The competitiveness analysis reveals that companies that promote more enoturism services show better financial performance. Moreover, the content analysis of websites indicates that several wineries offer a range of services, including tours, tastings, restaurants, and accommodation.

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[1] SABI stands for Sistema de Análisis de Balances Ibéricos (Iberian Balance Sheets Analysis System). It is a database published by Bureau van Dijk Electronic Publishing (BvDP), a Moody's Analytics company.

2. Material and Methods

2.1. Data

The study employs a data repository comprised of 4139 observations representing individual wineries in Spain. Each observation is uniquely identified by the winery's name and BvD number (SABI identifier). The database encompasses 16 variables categorized into two distinct groups: 10 economic variables and 6 digital footprint enoturism measures.

Economic variables were extracted from the SABI database, adhering to the specific variables employed by Castro et al. (2023). From 2019 to 2022 we extracted the: revenue, employees, assets, return on assets (ROA), return on equity (ROE), market share, value added, profit, value added per employee and revenue per employee. Only 1260 wineries were left after eliminating companies with missing values. With the remaining the mean was calculated.

To measure the dimensions of enotourism offer, we employed a methodology centered around analyzing data from company websites. Irrelevant content was filtered out, such as domains that had been hijacked or pages that were not possible to do web scrapping. Our focus remained on identifying websites specifically related to wines. From the 1260 wineries only 561 wineries offered some type of enoturism in their websites. Following this refinement, websites offering enotourism experiences were identified by employing a set of predetermined keywords derived from our theoretical model. These keywords were stemmed and used to search through the website contents, and the keywords were quantified within different categories of enotourism. This allowed for the calculation of the percentage representation of these keywords across the enotourism categories.

2.2. Multivariate analysis

Statistical analyses were conducted using the R environment for statistical computing (R Core Team, 2023). Principal component analysis (PCA) was used to identify outliers (Ferrer-Lorenzo et al. 2018) and to obtain measures of business competitiveness (Dess and Davis, 1984; Ibrahim et al., 2001; Ortega, 2010; Ferrer-Lorenzo et al. 2018). Subsequently, digital footprint indicators were used to create a regression model to explain the different components of the winery competitiveness.

3. Results

After removing outliers, PCA was applied to the competitive variables extracted from SABI. From the PCA results the first 3 components were selected as they all had an eigenvalue greater than 1 and explained a total of nearly 80% of the variance (Figure1).
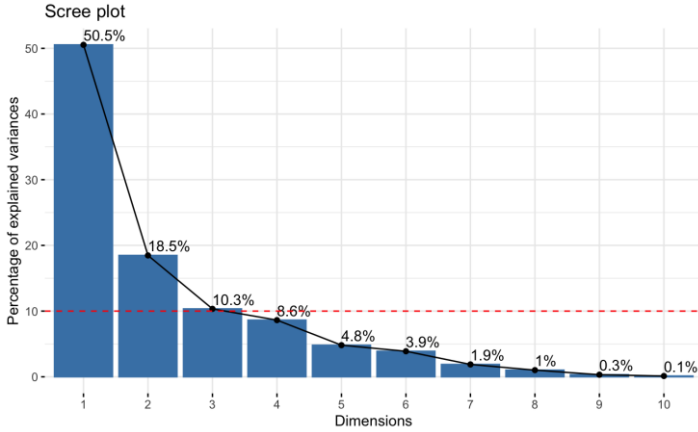
Figure 1. Percentage of explained variance of each component

After analyzing the contributions of variables to of the first two components (Figure 2), we designated the first component as the "Size" because it was positively correlated with variables such as revenue (Rev), number of employees (Empl), value added (VA), market share (MS), and total assets (Assets). In contrast, the second component predominantly featured relative variables like return on assets (ROA), value added per employee (VA_Empl), and revenue per employee (Rev_Empl), leading us to identify it as reflective of the company's "Productivity." Lastly, the third component was notably linked to return on equity (ROE), prompting us to label it as "Profitability."
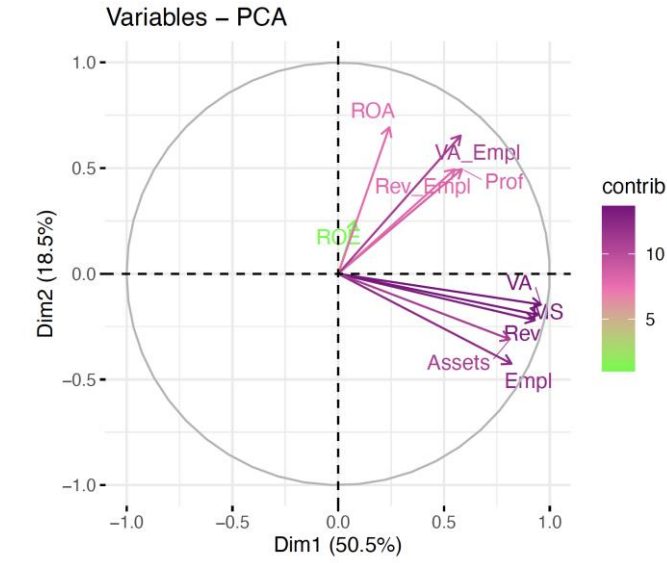

Figure 2. Variables contribution to first and second component

We employed a regression linear model to discover the impact of various types of enotourism contents on company websites on their competitiveness (Table1). Our analysis revealed that marketing initiatives focused on visits and the historical aspects of enotourism are positively associated with company size. These may occur because marketing initiatives that highlight visits and historical aspects of enotourism can attract a larger audience interested in wine and cultural heritage. Therefore, larger wineries tend to emphasize different enotourism activities and the visit itself.

Infrastructure exhibited a negative association with productivity. When a winery invests heavily in infrastructure, it often means they provide a wide array of services such as boutiques, terrace gardens, and more. While these services may enhance the customer experience, they could also divert resources and attention away from the primary goal of wine production. As a result, the winery may become less efficient in its core operations. This inefficiency can manifest as lower productivity, hence the negative association of excessive infrastructure.

Similarly, the emphasis of infrastructure is negatively associated with profitability. However, we also saw that enhancing the sensorial experience for visitors yielded a significant positive effect on overall profitability. This is likely because a superior sensorial experience can create a more memorable and engaging customer visit. Customers with a unique and enjoyable experience are more likely to purchase products, return for future visits, and recommend the winery to others. This positive association can increase sales, customer retention, and word-of-mouth marketing, contributing to higher profitability.

4. Conclusions

Enotourism is an established trend that significantly impacts wineries. This study has examined the characteristics associated with enotourism presented on their websites and its correlation with the competitiveness of the wineries.

Various aspects of competitiveness are intrinsically linked with distinct characteristics of enotourism. A clear association was observed between the enoturism promoted and the competitivity of the wineries. Larger wineries tend to emphasize the promotion of historical facets and touristic visits. Conversely, wineries with lower productivity often exhibit a diverse range of infrastructure. Most notably, the most profitable wineries strategically focus on delivering a sensory experience to their customers.

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Table 1. Effect of Enoturism on Competitiveness. Standard errors in parentheses. Dependent variables in logarithmic form. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

	Size	Productivity	Profitability
visit	0.461***	0.054	0.054
	(0.137)	(0.071)	(0.071)
hospitality	-0.088	-0.031	-0.032
	(0.162)	(0.084)	(0.084)
history	0.256*	0.030	0.029
	(0.123)	(0.064)	(0.064)
DO	0.208	-0.052	-0.052
	(0.147)	(0.076)	(0.076)
infrastructure	0.176	-0.244*	–0.157**
	(0.192)	(0.100)	(0.050)
sensorial exper	-0.232	0.016	0.107**
	(0.126)	(0.066)	(0.033)
(Constant)	0.930 ***	2.016***	2.690 ***
	(0.068)	(0.035)	(0.018)
N	561	561	561
R^2	0.124	0.033	0.034

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