
Competitiveness of Portuguese Wine Companies in the European Market:
Economic impact on GDP and challenges in the post-pandemic period.

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Dissertation

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Oriented by
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Abstract

The present study investigates the relationship between competitive strategies and the economic performance of Portuguese wine companies in the post-pandemic European market. The research is anchored in Michael Porter's theoretical framework of generic strategies, exploring how cost leadership, differentiation, and hybrid approaches influenced the sector's resilience and recovery following the disruptions caused by the global pandemic of Coronavirus.

Utilizing a quantitative methodology, the analysis employs financial data from the SABI database to evaluate the impact of strategic orientation on key performance indicators. The study introduces a novel Strategic Intensity Index (IE) to classify firms according to their strategic focus, while controlling for critical financial variables.

The findings emphasize the adaptive advantages of hybrid strategies in balancing operational efficiency with market differentiation, particularly in times of economic uncertainty. The analysis further emphasizes the mediating role of financial health, demonstrating how liquidity and capital structure influenced firms' capacity to navigate the crisis.

This study offers insights into post-crisis recovery patterns by integrating strategic management theory with empirical evidence from a traditional yet globally competitive industry. The conclusions of the study provide actionable recommendations for wine industry practitioners and policymakers aiming to strengthen competitiveness in volatile markets, while identifying avenues for future research on strategic flexibility in agro-industrial sectors.

Códigos JEL: L21, L25, M10, M21

Keywords: wine industry, competitive strategies, post-pandemic recovery, firm performance

Resumo

O presente estudo investiga a relação entre estratégias competitivas e o desempenho económico das empresas vinícolas portuguesas no mercado europeu pós-pandemia. A investigação está ancorada no quadro teórico de Michael Porter sobre estratégias genéricas, explorando como as abordagens de liderança em custos, diferenciação e estratégias híbridas influenciaram a resiliência e recuperação do setor após as disrupções causadas pela pandemia global de COVID-19.

Utilizando uma metodologia quantitativa, a análise emprega dados financeiros da base de dados SABI para avaliar o impacto da orientação estratégica em indicadores-chave de desempenho. O estudo introduz um Índice de Intensidade Estratégica (IE) inovador para classificar as empresas segundo o seu foco estratégico, controlando variáveis financeiras críticas.

Os resultados destacam as vantagens adaptativas das estratégias híbridas no equilíbrio entre eficiência operacional e diferenciação de mercado, particularmente em períodos de incerteza económica. A análise reforça ainda o papel mediador da saúde financeira, demonstrando como a liquidez e a estrutura de capital influenciaram a capacidade das empresas para navegar a crise.

Este estudo oferece perspetivas sobre os padrões de recuperação pós-crise, integrando a teoria da gestão estratégica com evidência empírica de um setor tradicional, mas globalmente competitivo. As conclusões fornecem recomendações práticas para profissionais do setor vitivinícola e decisores políticos que visam fortalecer a competitividade em mercados voláteis, identificando ainda caminhos para futuras investigações sobre flexibilidade estratégica em setores agroindustriais.

Códigos JEL: L21, L25, M10, M21

Palavras-Chave: Indústria Vinícola, Estratégias Competitivas, Recuperação pós-pandemia, Desempenho Empresarial

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Abbreviations and Acronyms

DOC – Denominação de Origem Controlada (Protected Designation of Origin)

EBITDA – Earnings Before Interest, Taxes, Depreciation, and Amortization

EI – Strategic Intensity Index

EU – European Union

GDP – Gross Domestic Product

GVA – Gross Value Added

IGP – Indicação Geográfica Protegida (Protected Geographical Indication)

IVV – Instituto da Vinha e do Vinho (Portuguese Vine and Wine Institute)

OECD – Organisation for Economic Co-operation and Development

ROA – Return on Assets

ROE – Return on Equity

SABI – Sistema de Análise de Balanços Ibéricos

SMEs – Small and Medium Enterprises

VRIN – Valuable, Rare, Inimitable, and Non-substitutable

1. Introduction

The wine industry is one of the most important and traditional sectors of the Portuguese economy. It combines centuries of cultural heritage with modern business challenges, playing a key role in exports, rural employment, and the country's international image. Producing and selling wine in Portugal is more than just a business—it's a way of preserving history, local identity, and national pride. But in today's fast-changing world, wine producers also face increasing global competition, shifting consumer habits, and unexpected events that can disrupt the entire industry.

The COVID-19 pandemic was a strong reminder of how vulnerable even the most established industries can be. For the wine sector, it brought serious disruptions: supply chains were broken, restaurants and wine tourism activities were shut down, and sales dropped sharply. Companies had to react quickly and make tough decisions to survive. They changed their business models, found new ways to reach customers, and adjusted their operations. In this context, a key question arises: did the strategies that companies followed before the pandemic make a difference in how well they handled the crisis? And if so, which strategies worked best?

This dissertation aims to explore how the strategic choices made by Portuguese wine companies before COVID-19 influenced their ability to face and recover from the economic consequences of the pandemic. In other words, we want to understand how different ways of competing, such as focusing on low costs, investing in quality and branding, or balancing both, affected financial performance during this difficult period.

Managing a wine business involves specific challenges that make strategy more complex compared to other industries. First, the production process takes a long time—planting a vineyard and producing high-quality wine can take several years. Second, the concept of terroir (the unique combination of soil, climate, and local knowledge) adds emotional and cultural value to the product. And finally, wine producers must find a balance between preserving tradition and embracing innovation. This is where Michael Porter's framework of generic strategies becomes useful. According to Porter, companies can choose to compete through cost leadership (offering lower prices), differentiation (offering unique quality or branding), or a hybrid approach that mixes both.

In Portugal's wine sector, we see all these strategies in action. Some companies compete by producing large volumes at low cost, aiming for supermarket shelves. Others focus on premium wines, building a strong identity based on certifications, history, or storytelling. And there are those that try to combine efficiency with quality, using a mixed strategy. The pandemic hit these groups in different ways, which gives us a valuable opportunity to study which strategies were more resilient and flexible during a major crisis.

To do this, we use financial data from Portuguese wine companies between 2019 and 2023. This allows us to compare how companies performed before, during, and after the pandemic. Our analysis doesn't only look at profits. We also consider important financial indicators such as liquidity (cash availability) and leverage (use of debt), which are especially relevant in industries like wine production, where large investments and long-term planning are needed.

The goal is to provide clear, evidence-based insights into what worked and what didn't. What types of strategy helped companies stay stable? Which ones allowed faster recovery? Were firms that focused on cost more flexible, or did those with strong branding and quality manage better in the long run?

The importance of this research goes beyond the wine industry. As we face new global challenges, such as climate change, political instability, and potential future pandemics, traditional industries must find ways to stay competitive while staying true to their unique identity. The Portuguese wine sector is a perfect example of this balance between tradition and innovation. By studying it closely, we can learn lessons that apply to other industries as well.

2. Literature Review

Michael Porter (1980, 1985) defined the three generic strategies as alternative pathways to achieving sustainable competitive advantage. These strategies have been widely validated in the literature, particularly in industrial and service contexts. Porter argues that firms that fail to adopt one of these strategies clearly fall into a "stuck in the middle" position and, consequently, exhibit inferior performance.

Spanos and Lioukas (2001) reinforce this idea by empirically demonstrating that a welldefined strategy, aligned with a firm's resources and capabilities, is essential for achieving competitive superiority. Molina-Castillo et al. (2020), in their analysis of agri-food sectors, highlights the relevance of hybrid strategies, particularly in segments where consumers value both quality and affordability.

Kunc and Bhandari (2011), in turn, show that during periods of economic crisis, such as the 2008 financial crisis, firms with well-positioned strategies demonstrated greater adaptability and resilience, further underscoring the importance of analyzing strategic behavior in the context of the COVID-19 pandemic.

These theoretical and empirical contributions establish the importance of identifying, quantifying, and assessing the impact of competitive strategies using concrete financial indicators and appropriate econometric methods.

2.1. The Profitability of the Companies

The Portuguese wine sector is a great example of how smart financial management and operational efficiency can make a traditional industry highly competitive—even in a demanding market like the European Union. By looking at two key profitability indicators, Return on Assets (ROA) and Return on Equity (ROE), we can see how Portuguese wineries use their resources effectively to create value and stand out among their European peers.

ROA, which measures net income in relation to total assets, tells us how efficiently producers are using their vineyards, wineries, and inventory. According to the IVV (2023), the average ROA for the wine sector ranges between 6% and 8%—higher than many other traditional industries in Portugal. This strong performance is driven by several factors: the growing focus on DOC (Denominação de Origem Controlada) wines, which command higher margins; investments in modern wine-making technology, which help cut costs; and a strong export strategy—about 85% of production is sold abroad, mainly to EU countries. Wineries in

regions like Douro and Alentejo show even stronger ROA figures (8–10%), thanks to economies of scale and the added boost from wine tourism.

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}} \times 100\%$$

Image 1: ROA's Formula

ROE, on the other hand, measures the return generated for shareholders and reflects how well a business uses its equity. Industry-wide, ROE averages between 12% and 15%, but leading players like Sogrape (Green Wine) and Symington Family Estates (Port wine) have achieved 18% to 20%. Their success is built on a mix of operational excellence and smart branding. These companies are vertically integrated, meaning they control everything from grape growing to bottling. They also take advantage of Portugal's relatively low production costs (about 30% lower than in regions like Bordeaux) and run targeted EU-funded marketing campaigns in high-potential markets such as Germany and Scandinavia. Smaller producers, however, often struggle to reach even 10% ROE, limited by financing difficulties and fragmented land ownership.

$$ROE = \frac{\text{Net Income}}{\text{Shareholders' Equity}} \times 100\%$$

Imagem 2: ROE's Formula

When comparing ROA and ROE, we get a clearer picture of strategic balance. The top performing wineries maintain a ROA/ROE ratio of around 1:2, showing they use financial leverage wisely. This is very different from highly indebted sectors like construction, where high ROE can hide underlying risk. The EU's 2022 wine market report noted how resilient Portuguese producers were during the COVID-19 crisis: although revenues fell by 22% in 2020, ROA had already returned to pre-pandemic levels by 2022, faster than in Spain or Italy. This recovery was driven by a fast pivot to e-commerce (with direct-to-consumer sales rising 40%) and a shift toward premium sparkling wines, which saw a 30% rise in exports.

Despite these strengths, there are still challenges that could impact future profitability. Two main risks are: the effects of climate change, droughts cut Alentejo's 2022 yields by 15%,

affecting asset productivity; and regulatory costs—EU wine certifications can consume 5–7% of a small producer's revenue. Possible solutions include promoting cooperative production models, which allow smaller wineries to share equipment and facilities (raising ROA), and increasing access to PDR2020 grants, which can improve ROE by reducing the need for external capital.

In conclusion, the Portuguese wine sector shows how optimizing ROA and ROE can lead to long-term success in the European market. By maintaining strong asset efficiency and making smart use of capital, wineries are turning Portugal's rich wine heritage into a sustainable competitive advantage. It's a powerful example for other agro-industrial sectors looking to stay strong in a complex and integrated economic environment.

2.2. The Importance of Strategies in Competitiveness

Strategic orientation plays a central role in shaping a firm's ability to compete and thrive in dynamic markets. In the context of globalized competition, rapid technological change, and evolving consumer preferences, companies must define and pursue clear strategies to maintain or improve their market position. Porter (1980, 1985) asserts that firms that lack a clear strategic direction tend to underperform relative to those that commit to a defined approach, be it cost leadership, differentiation, or a hybrid model. These strategic paths not only guide resource allocation and investment priorities but also influence firm culture, value proposition, and customer perception.

Spanos and Lioukas (2001) emphasize that strategy matters not only as a conceptual framework but also as a practical tool for achieving superior performance. Their empirical analysis shows that firms with well-articulated strategies achieve greater returns and adapt more effectively to change. In highly competitive sectors like the wine industry, strategic clarity becomes a prerequisite for long-term survival and growth.

2.2.1 Cost Leadership Strategy

A cost leadership strategy focuses on achieving the lowest operational costs in an industry. This approach allows a firm to offer lower prices to consumers or to maintain average prices while securing higher profit margins. In the wine sector, cost leadership can be attained through efficient vineyard management, automation of production processes, economies of scale, and streamlined distribution channels.

Banker et al. (2014) argue that cost leadership, while effective in stable and price-sensitive markets, can be difficult to sustain in industries where brand image and perceived quality are key drivers of consumer choice. Nonetheless, in segments where consumers prioritize affordability over exclusivity, cost leadership can provide a significant competitive edge. The Portuguese wine sector, particularly in its economic segment, often adopts this strategy to serve mass markets both domestically and internationally.

2.2.2 Differentiation Strategy

Differentiation involves offering products or services with unique attributes that are valued by customers and perceived as superior to those of competitors. In the wine industry, this strategy is implemented through quality certification (e.g., DOC or IGP labels), storytelling about origin and terroir, packaging innovation, and exceptional customer experiences such as wine tourism.

As shown by Barney (1991), differentiation allows firms to build intangible assets like brand equity and customer loyalty, which contribute to sustained competitive advantage. In Portugal, many wineries adopt this strategy by emphasizing artisanal methods, regional identity, and heritage. The rising share of premium wines in exports reflects the success of this approach.

2.2.3 Hybrid Strategy

The hybrid strategy aims to combine the cost efficiency of cost leadership with the value creation of differentiation. Though traditionally viewed as incompatible, recent studies suggest that hybrid strategies can be both feasible and effective, particularly in sectors like agri-food where operational efficiency and product distinction are both valued (MolinaCastillo et al., 2020).

Hybrid strategies are particularly suited for firms that operate in diverse markets or serve segmented customer bases. For example, a Portuguese winery may produce entry-level wines for mass retail while offering premium selections through direct sales or enotourism. Successfully implementing a hybrid strategy requires organizational flexibility, investment in process innovation, and marketing agility.

Although these strategies have significant impact on the market performance of this sector, companies that fail to adopt one of the three strategies mentioned run the risk of being

disadvantaged in the market. Porter's argument suggests that firms which fail to commit to a clear strategic direction inevitably fall into a "stuck in the middle" position, which is the result of an inferior performance due to inconsistent resource allocation and a blurred market identity.

This fundamental theory has been extensively validated and refined. Spanos and Lioukas (2001) provided robust empirical support for the hypothesis that a well-defined strategy, consciously aligned with a firm's unique resources and capabilities, is a critical determinant of competitive superiority and financial returns.

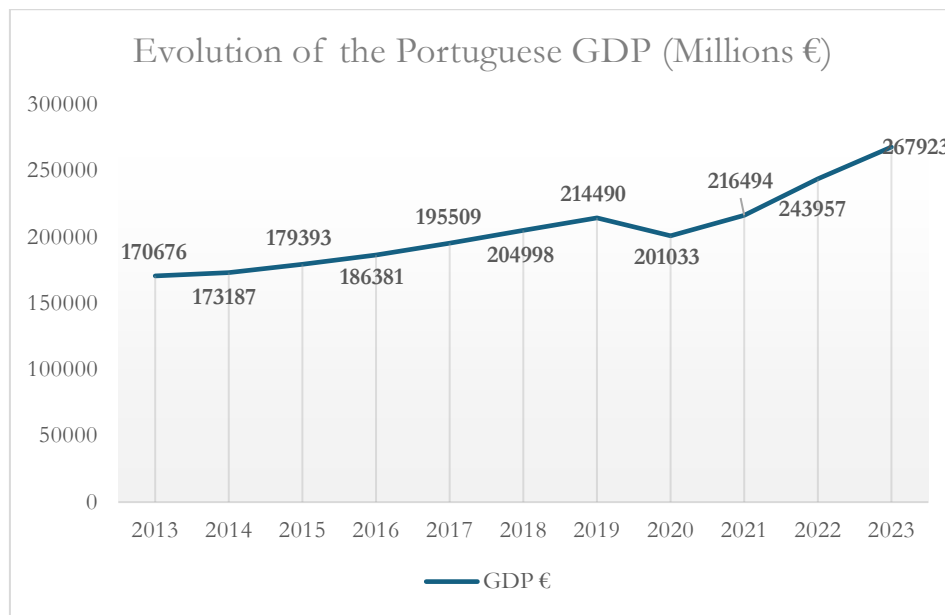
2.3. Profitability in Business Strategies

The relationship between strategy and financial performance is well documented in management literature. Hair et al. (2019) and Gujarati and Porter (2009) underscore that strategic alignment is a predictor of profitability metrics such as return on assets (ROA), return on equity (ROE), and gross margins. Firms that consistently apply strategic frameworks outperform those that pursue ad hoc or reactive decision-making.

Banker et al. (2014) show that while both cost leadership and differentiation can lead to financial success, differentiation tends to offer more sustainable profitability, especially in mature or fragmented industries. This finding is echoed in the Portuguese wine sector, where firms that invest in brand, quality, and internationalization typically report higher EBITDA margins and ROE values (Faria et al., 2020).

2.4. The Portuguese GDP

Portugal's Gross Domestic Product (GDP) reflects the cumulative value of goods and services produced within its economy. The agri-food sector, though relatively modest in weight, is vital for rural employment, export stability, and regional development. Wine production is a significant contributor, not only through its direct economic activity but also by stimulating tourism, logistics, and auxiliary industries.



Graphic 1: Portugal's GDP from the last 10 years, Pordata

In the graph extracted from Pordata, we can see that its GDP has a constant evolution until last year, detecting only a significant drop due to the pandemic in 2020. However, it managed to recover, and the surrounding sectors performed well in the face of the global situation, with Portugal ranking 14th out of the 27 member countries of the European Union.

2.5. The COVID-19 Pandemic

The COVID-19 pandemic had a profound impact on the global economy, disrupting supply chains, labor markets, and consumption patterns. The Portuguese wine sector was hit by closures of restaurants and tourism-related channels, yet it demonstrated resilience by adapting rapidly. Firms shifted to digital platforms, strengthened export ties, and leveraged governmental support mechanisms.

OECD (2021) and data from the IVV highlight a quick recovery trajectory, aided by structural shifts already underway. Kunc and Bhandari (2011) note that firms with robust strategic planning were better able to absorb shocks and even capitalize on emerging opportunities. This was evident in the growth of direct-to-consumer sales and online marketing within the Portuguese wine industry.

2.6. Hypotheses

The present research aims to objectively measure the competitive strategies pursued by Portuguese wine companies using quantifiable financial indicators and to statistically analyze their impact on corporate performance. This methodological approach is rooted in the desire to contribute to the understanding of best strategic practices within the national wine sector, particularly in a post-pandemic context marked by market uncertainty and structural change.

The strategic intensity of a firm is operationalized through a composite index (EI) that combines two normalized financial metrics: The primary focus of this study is the relationship between EBITDA margin and productivity, with the latter measured as turnover per employee. This index is the foundation of our empirical analysis, operating as a pivotal explanatory variable designed to quantify a firm's strategic positioning. The construction of the model is directly derived from Porter's theoretical framework, in which distinct strategic choices manifest in unique financial profiles. Specifically, a differentiation strategy, which seeks premium pricing through unique value, should be reflected in a high EBITDA margin. Conversely, a cost leadership strategy, which seeks advantage through operational efficiency, should be reflected in high productivity.

The EI index is a metric that captures the extent to which a company has successfully adopted and executed a coherent strategic orientation. A high EI score can be achieved through extreme differentiation, characterized by a very high margin and moderate-to-weak productivity, or through extreme cost leadership, demonstrated by very high productivity and a moderate-to-weak margin. Of particular significance is the fact that a high EI score can also be indicative of a successful hybrid strategy, which is characterized by the simultaneous achievement of both high margins and high productivity.

This presents a crucial distinction between a successful hybrid strategy and a "stuck in the middle" position. Porter's original critique delineates the latter as a strategic failure, wherein a firm exhibits a lack of a clearly defined focus, culminating in mediocre performance across both dimensions. This, in turn, gives rise to a financial profile characterized by a low EBITDA margin and low productivity, which, in turn, results in a low EI score. In contrast, a successful hybrid strategy, as supported by Molina-Castillo et al. (2020), is not about achieving average performance in both domains, but rather about attaining proficiency in both. This superior strategic position enables a firm to leverage its operational efficiency, as demonstrated by high productivity, to fund investments in quality and branding. Consequently, these investments enable the firm to command premium prices, thus

generating high margins. This process establishes a positive feedback loop of value creation, which is reflected in a notably high EI score. Consequently, the EI index provides a comprehensive measurement of not only the strategy type, but, more crucially, the efficacy of that strategy. A high score indicates a firm that has successfully implemented a coherent strategy, whether pure or hybrid, resulting in superior operational and financial outcomes. Conversely, a low score indicates strategic failure or inefficiency.

Based on the theoretical framework discussed and the empirical literature reviewed, two main hypotheses are proposed to guide the analysis:

H1: Firms with higher strategic intensity (i.e., a higher value of the strategic index combining margin and productivity) will exhibit better financial performance, measured by ROA and ROE, during the post-pandemic period.

This hypothesis is grounded in the resource-based view (Barney, 1991) and Porter's (1980, 1985) strategic positioning framework, both of which assert that a clear, well-executed strategy enhances a firm's capacity to utilize its resources efficiently and respond effectively to environmental shocks. Empirical evidence from Faria et al. (2020) and Banker et al. (2014) supports the notion that firms with high profitability metrics tend to have superior strategic alignment. In the context of the pandemic, companies that maintained or enhanced strategic clarity were likely to recover more rapidly and sustain superior financial outcomes.

H2: Firms that adopted a hybrid strategy, combining elements of cost leadership and differentiation, achieved superior performance in the aftermath of the pandemic, due to their ability to balance profitability and risk.

This hypothesis is informed by the work of Molina-Castillo et al. (2020), who argue that hybrid strategies can be effective in the agri-food sector, especially when firms are able to leverage both operational efficiency and product distinctiveness. In a post-COVID environment characterized by demand volatility and heightened cost sensitivity, hybrid strategies may confer an advantage by enabling flexibility and responsiveness across market segments.

Together, these hypotheses seek to illuminate the strategic dynamics within the Portuguese wine industry and to inform managerial practices and policy frameworks aimed at enhancing sectoral competitiveness. By applying econometric techniques to a panel dataset of wine companies from 2019 to 2023, the study intends to validate or refute these propositions,

offering evidence-based insights into the relationship between strategic orientation and financial resilience.

3. The Wine Sector

The Portuguese wine sector is not only a cornerstone of the country's agricultural economy but also a cultural emblem, deeply rooted in national identity and international perception. As one of the oldest wine-producing countries in the world, Portugal possesses a vast range of native grape varieties, diverse terroirs, and centuries-old traditions, all of which contribute to the uniqueness and complexity of its wines. From the fortified Port and Madeira wines to the elegant reds of the Douro Valley and the crisp whites of Vinho Verde, Portugal offers a heterogeneous wine profile that supports both domestic consumption and growing export potential (Domingues Martinho, 2012).

According to the Organisation for Economic Co-operation and Development (OECD, 2021), the Portuguese wine industry has shown resilience and adaptability in the face of external shocks, most recently the COVID-19 pandemic. However, like many global wineproducing regions, it faces structural challenges such as climate change, changing consumer preferences, and competitive pressures from New World producers. These issues demand a strategic understanding of how value is created and sustained in the sector, making the discussion of business strategy crucial to understanding performance variation across firms.

Porter's (1980, 1985) framework on competitive strategy remains particularly relevant in this context. His typology of cost leadership, differentiation, and hybrid strategies offers a lens through which to evaluate how Portuguese wineries navigate complex market environments. As illustrated by Spanos and Lioukas (2001), firms that clearly align with one of Porter's strategic orientations tend to exhibit superior financial performance compared to those without a defined strategic direction. In the wine industry, this alignment becomes even more critical given the sector's reliance on both quality perception and operational efficiency.

Several empirical studies have focused on the economic and strategic characteristics of the Portuguese wine sector. Fortunas, Diniz, and Katsioloudes (2007) conducted a competitive analysis that emphasized the importance of innovation, export orientation, and brand recognition. More recently, Faria et al. (2020) applied microeconomic methods to assess the financial performance of Portuguese wine firms, confirming that firm size, productivity,

and strategic focus are key determinants of profitability. These findings are in line with broader theories of firm performance, such as the resource-based view (RBV), which argues that sustained competitive advantage stems from the possession and deployment of valuable, rare, inimitable, and non-substitutable (VRIN) resources (Barney, 1991).

One of the defining characteristics of the Portuguese wine industry is its fragmentation. The sector is composed predominantly of small and medium-sized enterprises (SMEs), many of which operate in rural and peripheral regions (Serrasqueiro & Maças Nunes, 2008). While this fragmentation contributes to the sector's diversity and richness, it also presents barriers to economies of scale, investment in technology, and market penetration. Sellers and AlampiSottini (2016) found that smaller wineries often lag in productivity and internationalization, although they may benefit from more flexible operations and closer relationships with niche markets.

The challenge lies in effectively measuring and evaluating these strategies. Quantitative methods, including econometric models, offer powerful tools to assess strategic impact. Angrist and Pischke (2009), and later Cerulli (2015), provide robust frameworks for causal inference, including Difference-in-Differences (DiD) methods, which can be used to evaluate strategic effectiveness over time. By using such approaches, researchers can isolate the impact of strategic variables—such as intensity of differentiation or cost orientation—on firm outcomes like return on assets (ROA) or return on equity (ROE).

In the Portuguese wine context, recent work by Macedo, Gouveia, and Rebelo (2020) highlights how horizontal differentiation and quality perception influence export dynamics. Their findings underline the importance of brand positioning and market segmentation in an increasingly competitive global marketplace. Moreover, Camagni, Capello, and Perucca (2022) argue that regional competitiveness in wine-producing areas depends not just on productivity but on quality, pricing, and strategic resource allocation—factors closely tied to firm-level strategic choices.

The influence of exogenous shocks, such as economic crises or pandemics, further complicates the strategic landscape. Kunc and Bhandari (2011) show that firms with established strategic processes are better equipped to adapt during periods of upheaval. Thornhill, White, and Beamish (2021) reinforce this view, arguing that strategic persistence and adaptability are key to surviving industry turbulence. These insights are particularly pertinent for the Portuguese wine sector, which was significantly affected by COVID-19

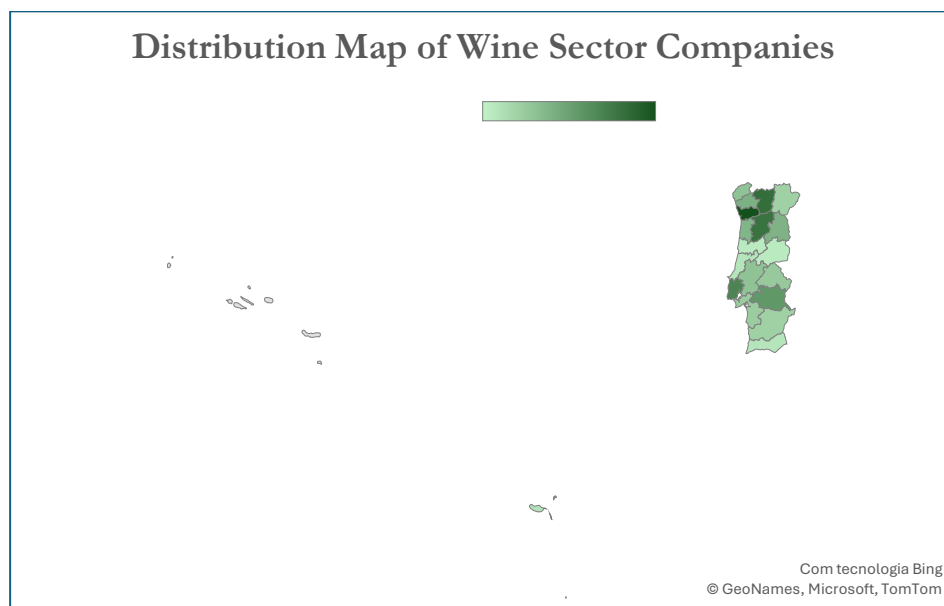
disruptions but has shown signs of recovery through digitalization, diversification of channels, and internationalization efforts (OECD, 2021).

From a methodological standpoint, evaluating strategy in this sector benefits from multivariate approaches. Hair et al. (2019) recommend the use of regression models, factor analysis, and structural equation modeling to analyze the interplay between strategic orientation and performance outcomes. In the case of this dissertation, panel data econometrics, including fixed effects models, allows for control over unobserved heterogeneity across firms and more accurate estimation of strategic effects over time (Gujarati & Porter, 2009).

A key point in understanding the performance of Portuguese wineries is the role of internal resources and capabilities. As the RBV suggests, firms that can combine tangible assets (e.g., land, technology) with intangible assets (e.g., brand equity, oenological expertise) are more likely to achieve long-term success (Barney, 1991). Strategic alignment with these resources enhances resilience and allows firms to exploit market opportunities more effectively.

3.1. Composition of the Sector

According to data from the SABI database, the Portuguese wine sector is composed of approximately 1,270 companies, of which 887 are currently active and 415 engage in export activities. This industry structure reflects a high degree of fragmentation, with many small and medium-sized enterprises (SMEs) operating alongside a limited number of large firms. The geographical distribution of these companies reveals a strong concentration in the northern regions of Portugal and in the Lisbon area, where the wine tradition, enotourism, and differentiation strategies are most developed. These regions also benefit from better infrastructure and access to international markets, enhancing their competitiveness.



Map 1: Location of the companies per district

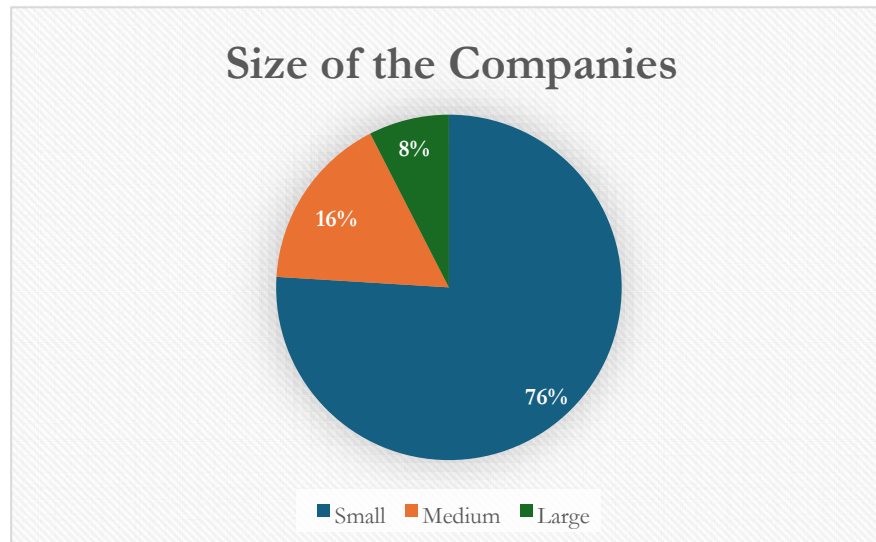
The companies are distributed across all the country, with a high concentration in the districts of Lisbon and Porto mainly. In the islands of Azores, they only have one company and in the Madeira the market has 7. In the north of the country, more than 40% of the companies are located in that region because there is the higher concentration of the tourists and wine tasting

The companies were classified according to the European Commission's typology, which distinguishes entities based on the number of employees and annual turnover. Small enterprises have fewer than 50 employees and a turnover of up to 10 million; medium-sized companies employ up to 250 people with a turnover of less than 50 million; and large companies exceed these values. The analysis of the sample revealed that 76% of the companies belong to the category of small companies, 16.5% are medium-sized and only 7.5% can be considered large companies.

The geographical distribution shows a greater concentration in the North and Lisbon regions. This predominance can be attributed to the historical and economic importance of these areas in national wine production, as well as the development of wine tourism and the proximity to export channels and logistics infrastructures.

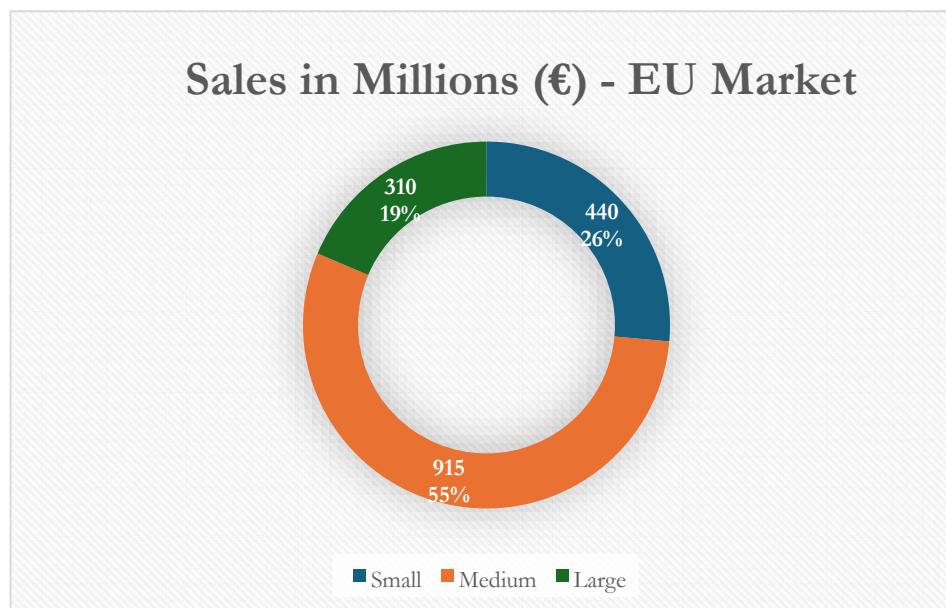
The majority of wine companies in Portugal fall under the micro and small enterprise categories, as per the classification of the European Commission. A microenterprise typically employs fewer than 10 workers and has annual revenues or total assets of up to €2 million. Small enterprises employ fewer than 50 people and have turnover or assets not exceeding

€10 million. Medium-sized firms may employ up to 250 workers and have revenue or assets between €10 million and €50 million. In the Portuguese wine sector, small firms account for about 76% of the total, medium-sized firms represent 16.5%, and large enterprises make up only 7.5% of the sector.



Graphic 2: Distribution of the size of the companies, 2023

In this distribution of companies, we also focus on selling to the European Union market, (community market), to better assess their contribution to it and which of them contributed more to the export of wine goods. In chart x, small businesses had a total of 440 million in sales in this market, which represents 26%. Medium-sized companies were the ones that contributed the most with 55% of total sales and, lastly, large companies with 19%. Focusing on SMEs, it gives a total of 81% of sales, and this set has the most weight in the export of these goods. According to the study by Custody, Hansman and Mendes (2024) shows that access to credit via State guarantees had a direct impact on the internationalization of SMEs, by allowing them to overcome the fixed costs of entering foreign markets.

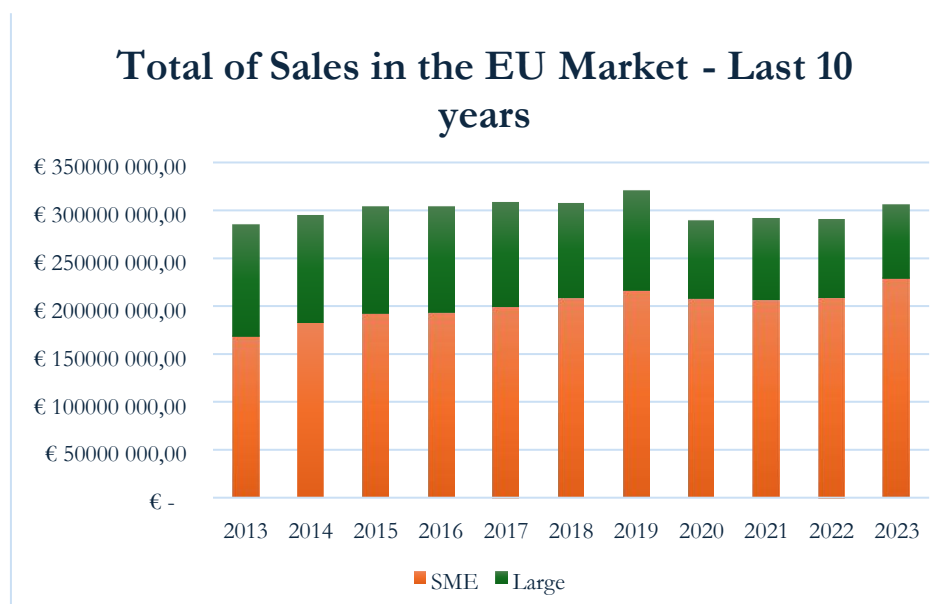


Graphic 3: Sales from each size of company, 2023

3.2. Impact on Intra-European Exports

Notably, Portugal ranks among the top ten global wine exporters, despite being a relatively small producer in volume terms. This reflects the strong international reputation of its wines, especially Port wine, and increasing recognition of table wines from regions such as Douro, Alentejo, and Dão. As Sellers and Alampì-Sottini (2016) argue, reputation and firm size are significant drivers of export performance, and Portugal has leveraged both elements to increase its presence in EU markets.

According to data from the Instituto da Vinha e do Vinho (IVV) and corroborated by Eurostat, the EU continues to be the primary destination for Portuguese wine, accounting for more than 60% of total wine exports in value terms. The top destinations include France, Germany, the Netherlands, Belgium, and the United Kingdom (until Brexit, 2020). To better verify the performance of these companies, we collected sales data in the last 10 years to be able to compare their evolution and performance.



Graphic 4: Total sales in EU market, from 2013 to 2023

Between 2013 and 2023, Portuguese wine exports to the EU grew both in value and volume, with some fluctuations due to market conditions. The total value of exports rose from approximately €410 million in 2013 to over €900 million in 2023, (worldwide), and €290 million in 2013 to €310 million in 2023 in EU area, indicating a compound annual growth rate (CAGR) of about 8.2%. This growth reflects both volume increases and improved unit prices, suggesting a strategic shift toward higher-quality, value-added products. This trend aligns with the findings of Macedo, Gouveia, and Rebelo (2020), who demonstrate that horizontal differentiation, particularly through quality signals and protected geographic indications, plays a central role in export performance.

The structural transformation of the export profile is evident in the increased share of DOC (Denominação de Origem Controlada) and IGP (Indicação Geográfica Protegida) wines in total shipments. This shift supports the hypothesis that differentiation strategies, emphasizing origin, quality, and branding are gaining ground among Portuguese producers.

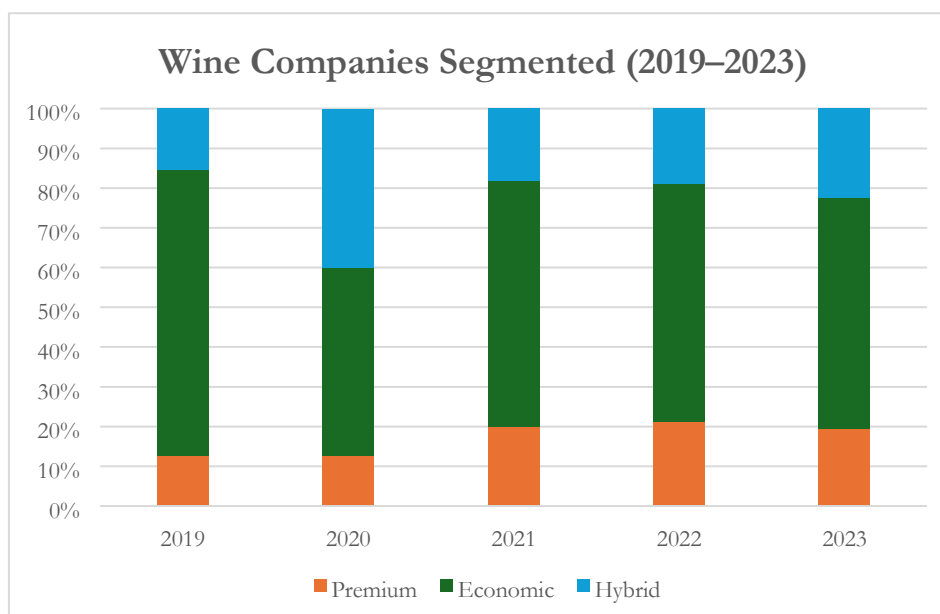
Despite this overall positive performance, the export trajectory was punctuated by key challenges. For instance, in 2020, the onset of the COVID-19 pandemic caused a temporary drop in global trade flows, including wine. However, the sector showed remarkable resilience. IVV data indicate that, unlike many competitors, Portugal managed to recover to prepandemic export levels by mid-2021. This swift rebound was partly facilitated by logistical adaptation, including a greater focus on e-commerce channels and direct-to-consumer sales.

Furthermore, the average export price per liter rose steadily from €2.12 in 2013 to €2.83 in 2022, underscoring the success of the strategic repositioning toward premium and differentiated segments. As highlighted by Camagni, Capello, and Perucca (2022), such shifts often accompany improvements in regional competitiveness and reflect resource reallocation toward higher-value outputs.

The proportion of companies classified as exporters increased in recent years, particularly in the premium and hybrid strategic segments. This suggests that export activity is not only growing in scale but also becoming more strategically aligned with quality and branding imperatives.

Among the possible causes, we have:

- Greater strategic flexibility: SMEs adapt more quickly to changes in the European market, (Martinho, 2012);
- Presence in exports with higher value per liter: SMEs focus on premium markets (restaurants, wine cellars), while large companies supply retail and white labels (Fortunas et al., 2007; Sellers & Alampì-Sottini, 2016);
- Less dependence on volume and tourism channels: Large companies were more affected by the collapse of tourism and restaurants during the pandemic (OECD, 2021), while SMEs were already exporting directly to the final consumer;
- Access to financing via public guarantees: The study by Custódio, Hansman, and Mendes (2024) shows that access to credit via State guarantees had a direct impact on the internationalization of SMEs, by allowing them to overcome the fixed costs of entering foreign markets;
- Valuing origin and tradition: European consumers value wines with history and regionalism, often promoted by SMEs with family connections and local identity (Camagni et al., 2022);



Graphic 5: Wine companies Segmented in 2019 to 2023

This distribution indicates a predominance of firms with limited resources and operational capacity. However, the flexibility and regional embeddedness of SMEs often allow them to respond more effectively to local market dynamics. Many of these firms operate within cooperative or regional consortia, enabling them to share resources and gain market visibility that would otherwise be inaccessible to them individually. Nonetheless, limited access to capital, technology, and skilled labor remains a significant barrier to scaling operations and investing in innovation.

Firm segmentation within the sector can also be understood through the lens of strategic positioning. Based on financial indicators such as EBITDA margins and revenue per employee, companies are often categorized into three segments: premium (focused on quality and brand), economic (focused on volume and low prices), and hybrid (balancing differentiation and cost efficiency). As of 2023, 19.5% of firms were identified as premium, 57.9% as economic, and 22.6% as hybrid. This segmentation reflects a strategic polarization, with some firms investing in high value differentiated offerings while others rely on scale and cost competitiveness.

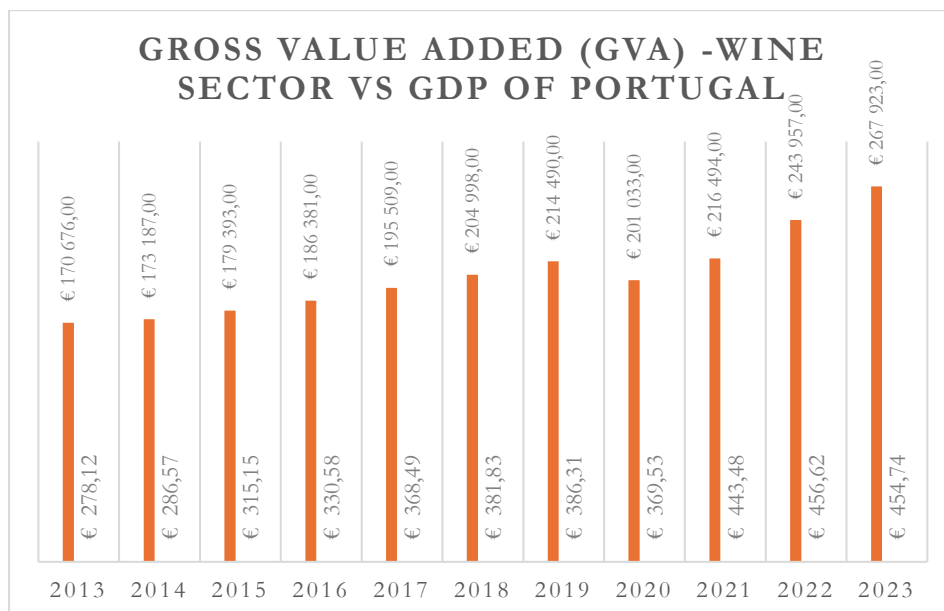
The segmentation also shows a shift since 2020, when the proportion of hybrid firms was significantly higher (40%), and premium firms accounted for only 12.7%. The growth of premium firms and the decline in hybrids suggest a move toward strategic clarity and specialization, as firms adapt to changing market conditions and consumer expectations. This

evolution reinforces the relevance of Porter's strategic typology in explaining firm behavior and performance in the sector.

3.3. The Impact of the Pandemic and Contribution to Portuguese GDP

The COVID-19 pandemic represented a profound shock to the global economy, and the Portuguese wine sector was no exception. The abrupt closure of restaurants, hotels, and events key distribution and consumption channels for wine led to an immediate contraction in domestic demand. According to OECD (2021), the global wine market declined by approximately 7% in 2020, with the Portuguese market experiencing a similar trajectory. However, the structure of the Portuguese wine sector helped buffer the impact.

The prevalence of SMEs and family-owned businesses, many of which are vertically integrated and regionally embedded, allowed for more agile responses. Firms rapidly adapted by shifting to online sales, strengthening retail partnerships, and engaging in direct-to-consumer strategies, especially in urban and international markets. These shifts were particularly evident in the premium segment, where branding and quality cues facilitated digital marketing and e-commerce.



Graphic 6: Wine sector GVA vs GDP, Pordata & SABI

The contribution of the wine sector to Portuguese GDP is multifaceted. It spans agriculture, manufacturing, tourism, and exports. According to the data collected from SABI, wine

accounts for approximately 0.16% to 0.20% of national GDP and represents one of the few agri-food segments with a positive trade balance. Its contribution extends to tax revenues, employment, and regional income distribution, particularly in winegrowing areas such as Douro, Alentejo, and Dão. In export terms, wine represents about 10% of total agri-food exports and is one of the few agricultural products with a consistent trade surplus. Slide 9 of the thesis presentation highlights the resilience of the wine sector during the pandemic. While many agri-food sectors suffered long-lasting declines, the wine industry showed a V-shaped recovery, supported by robust demand in export markets and successful policy interventions

As argued by Kunc and Bhandari (2011), strategic resilience in times of crisis is often underpinned by prior investments in capability development and innovation. In this respect, firms that had already invested in brand equity, digital platforms, and export networks fared better during the crisis. This observation supports the theoretical insights of the resourcebased view (Barney, 1991) and underscores the importance of intangible assets in navigating shocks.

The Portuguese wine sector has demonstrated a remarkable capacity for adaptation and strategic renewal. Its performance in intra-EU exports and contribution to the national economy highlights its resilience and potential.

However, ongoing challenges, (such as climate volatility, evolving consumer preferences, and increasing competition), necessitate continued strategic clarity, investment in innovation, and effective resource management to sustain its growth trajectory in the coming years.

4. Data and Descriptive Statistics

This chapter aims to present, describe and justify the empirical basis used in this investigation, as well as to expose the descriptive statistics that characterize the sample and the variables analyzed. The aim is to provide a clear and detailed view of the composition of the data, its treatment and its analytical relevance. Through this approach, it is possible to substantiate the subsequent econometric analysis, ensuring the robustness of the results obtained.

4.1. Sample

The sample selected for this study includes Portuguese wine companies that remained active during the period between 2019 and 2023. The data was obtained from the SABI database (Iberian Balance Sheet Analysis System), which provides detailed financial information on Portuguese and Spanish companies. Initially, 1,270 companies belonging to the wine sector were identified. After filtering the data to include only active companies, with complete data on the financial indicators of interest and operating in the national territory, the final sample resulted in 887 active companies, of which 418 carried out export activities and presented complete financial information, thus becoming valid observations for analysis.

4.2. Description and Processing of Data

The data collected was organized in a panel format, with annual observations of each company for the years 2019 to 2023. This format allows to observe the evolution of variables over time and apply appropriate econometric techniques to capture variations within and between companies. The main variables used in the analysis include performance indicators, strategic variables and control variables. Among the performance indicators are ROA (Return on Assets) and ROE (Return on Equity), which measure the economic and financial profitability of companies, respectively.

To operationalize the link between financial performance and strategic positioning, the EBITDA margin and productivity, (calculated as turnover per employee), were normalized and combined to create the Strategic Intensity Index (EI).

The EBITDA margin and productivity are direct financial expressions of these two advantages, respectively. EBITDA margin is a key indicator of benefit advantage. A high margin indicates a firm's ability to command premium prices, which is a key feature of a successful differentiation strategy. This premium pricing power stems from customers attributing higher value to the firm's unique offerings, whether through brand strength, innovative features, superior quality or exceptional service.

Conversely, productivity is a core indicator of operational efficiency and the driving force behind a cost advantage. High productivity demonstrates that a firm generates significant

revenue per unit of input, in this case, per employee. This efficiency can be achieved through economies of scale, process optimization, automation and lean management, all of which are critical components of a cost leadership strategy aimed at minimizing costs in order to either offer lower prices or maintain healthier margins than less efficient competitors.

These variables were normalized using the min-max normalization formula, with the objective of standardizing the values in comparable scales. The normalization formula is given by:

$$X' = \frac{X - X_{\min}}{X_{\max} - X_{\min}}$$

Image 3: Normalization Formula

The construction of the strategic classification follows Porter's theoretical lens, in which competitive advantage derives from either cost or benefit superiority. Following the rationale of Besanko et (2017), sustainable advantage is derived from creating a superior gap between the perceived value delivered to customers (B) and the costs incurred (C). A firm can compete either by achieving a cost advantage (lowest C for a given B) or a benefit advantage (highest B for a given C). The most vulnerable position is one where no clear advantage is present. Productivity acts as a proxy for cost advantage, capturing the ability of firms to generate output with fewer resources. Meanwhile, EBITDA margin reflects benefit advantage as it represents the capacity to command price premiums through differentiation. By summing the normalized values of EBITDA margin and productivity, the index operationalizes the two fundamental axes of competitive advantage, as defined by Porter: the pursuit of a cost advantage, reflected in high productivity, and the pursuit of a benefit advantage, captured empirically by a high margin.

A margin exceeding 15% is a strong empirical indicator of successful benefits. In a competitive market, consumers must perceive sufficient value in attributes such as brand reputation, certified origin (DOC), superior quality, unique storytelling or exclusive terroir to justify paying more. This threshold effectively filters out firms that compete on price, identifying those that have successfully created unique value. In the case of a margin below 10%, it is characteristic of markets where intense price competition constitutes the primary basis of competition. Such a low margin indicates an absence of pricing power, meaning that customers view the product as a commodity and are highly sensitive to price changes.

High productivity is not the sole preserve of cost leaders. For a company with a differentiated strategy, high productivity (more than €100k per employee) is a sign of operational excellence that supports a high-value strategy. This efficiency can be achieved through premiumization, optimized production processes for premium goods or the effective use of branding and marketing to achieve strong sales volumes without a proportional increase in staff numbers. However, a figure of €60k is crucial for identifying the type of cost leader. It confirms that the firm's low-cost position is not derived from superior operational efficiency, which would result in high productivity. Rather, it suggests that low costs are achieved through alternative methods, such as lower labour costs, a smaller scale of operation, less advanced technology, or a focus on lower-value, high-volume products.

Based on the EI and the absolute criteria of EBITDA margin and productivity, the companies were strategically classified into three groups: premium companies (with a margin above 15% and productivity above €100,000 per employee), economic companies (margin below 10% and productivity below €60,000), and hybrid companies (combining intermediate characteristics).

Consequently, the EI score provides a quantitative measure of the strength and clarity of a firm's strategic positioning. This index varies between 0 and 2. Values closer to 2 represent companies with high margins and productivity, associated with the differentiation strategy. Values close to 1 indicate hybrid strategies, which combine elements of operational efficiency with differentiating attributes. Values close to 0 characterize companies with low margin and productivity, associated with cost leadership.

<i>Strategic Group</i>	Core Advantage	EI Index	EBITDA Margin	Productivity
<i>Premium</i>	Benefit Advantage / Differentiation	High (Closer to 2)	High	High
<i>Hybrid</i>	Mixed Advantage	Intermediate (≈ 1)	High/Low	Low/High
<i>Economic</i>	Cost Advantage	Low (Closer to 0)	Low	High

Table 1: Framework for Strategic Group Classification

On the other hand, the combination of low productivity and low margins describes firms that are 'stuck in the middle'. A firm in this position lacks operational excellence to achieve low costs and the unique attributes to command premium prices, that results in mediocre performance and a lack of resilience against strategic competitors.

4.3. Descriptive Statistics

The following table summarizes the descriptive statistics of the central variables of the analysis for the total sample of 418 valid observations:

Variable	Observations	Average	Minimal	Maximum	Detour Pattern
ROA (%)	418	1,04	-195,62	101,09	16,11
ROE (%)	418	9,50	-3084,25	6227,52	361,80
Turnover (€)	418	1.891.539	1	155.706.330	7.863.166
EBITDA Margin (%)	418	-5,25	-5577,63	275,51	284,26
Productivity (€)	418	134.660	886,10	2.195.961	167.543

Table 2: Descriptive Statistics of the study

The analysis of the statistics shows high variability in the performance indicators, especially in the ROE, which presents both negative and positive extreme values. This dispersion reflects the heterogeneity of the wine sector in Portugal, where highly efficient companies coexist with others in a fragile financial situation. The negative EBITDA margin, on average, and the extreme values observed indicate marked operational challenges, especially in the post-pandemic period. The average productivity of €134,660 per worker reveals a wide dispersion in efficiency levels between companies.

4.4. Analysis Process

To operate the strategies and performance of the companies, the relevant variables for the period from 2019 to 2023 were extracted from the SABI database. Containing annual financial information of Portuguese wine companies, the file was built in the format of a panel, in which each line represents a company. The variables used include the performance indicators (ROA, ROE), the treatment variable (EI), and the control variables (EBITDA margin, productivity, liquidity, leverage).

- **ROA (Return on Assets):** It measures the company's efficiency in generating profit with the available resources.
- **ROE (Return on Equity):** It reflects the return provided to shareholders.
- **EBITDA Margin:** Expresses operating profitability before interest, taxes, depreciation and amortization.
- **Productivity:** It indicates efficiency in the use of human resources.
- **Liquidity:** It represents the company's ability to meet short-term obligations.
- **Leverage:** It measures the company's degree of indebtedness.
- **EI (Strategic Intensity):** an indicator constructed by the sum of the normalized values of the EBITDA margin and productivity, reflecting the degree of strategic orientation.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} \quad \text{Revenue per Employee} = \frac{\text{Net Revenue}}{\text{Number of Employees}}$$

$$\text{EBITDA Margin} = \frac{\text{EBITDA}}{\text{Net Revenue}} \times 100 \quad \text{Leverage} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

Image 4: Liquidity, Leverage, Productivity and EBITDA Margin formulas.

After the construction of the Excel database, the financial and operational data of the Portuguese wine companies were imported into the STATA software. The empirical analysis was guided by Differences-in-Differences models with continuous treatment. This methodological option, aligned with previous works such as those of Angrist & Pischke (2009) or Cerulli (2015), allows us to identify the causal effects of the initial strategic intensity (EI) (2019) on the evolution of economic performance and to capture gradual effects of the strategic orientation of companies over time (from 2019 to 2023).

Nome	ROA%_2019	ROA%_2020	ROA%_2021	ROA%_2022	ROA%_2023
SOGRAPE VINHOS, S.A.	5,72	5,14	5,06	4,17	3,34
SYMINGTON FAMILY ESTATES - VINHOS, S.A.	3,98	3,11	3,86	1,88	0,35
GRANVINHOS, LDA	6,79	4,38	5,34	4,12	2,96
SYMINGTON - VINHOS, S.A.	n.a.	n.a.	n.a.	n.a.	n.a.
QUINTA AND VINEYARD BOTTLERS - VINHOS, S.A.	5,83	4,74	4,66	3,19	2,57
CASA SANTOS LIMA - COMPANHIA DAS VINHAS, S.A.	8,90	14,72	10,65	6,54	4,87
AVELEDA, S.A.	9,41	9,89	10,40	8,73	6,79
SOGEVINUS FINE WINES, S.A.	5,08	1,53	4,69	7,88	7,93
ESPORÃO, S.A.	1,48	0,17	1,04	1,89	0,93
VALE DE S.MARTINHO - SOCIEDADE AGRÍCOLA, S.A.	4,32	2,65	2,26	0,85	0,45
CASA ERMELINDA FREITAS - VINHOS S.A.	7,72	12,13	8,97	5,43	5,97

Image 5: Example of the Excel format with the ROA values imported into Stata, (2019-2023).

Then, the data were structured in long format, with the identification of the unit of observation (company) and time (year), allowing the application of econometric models with fixed effects. This approach controls unobservable factors, but constantly in time, which vary between companies.

Nome	ano	ROA	ROE	MargemEBITDA	Produtividade	Liquidez	Alavancagem	IE
SOGRAPE VINHOS, S.A.	2019	0,045	0,12	0,18	105000	1,5	0,4	0,85
SOGRAPE VINHOS, S.A.	2020	0,05	0,14	0,19	108000	1,6	0,38	0,88
SOGRAPE VINHOS, S.A.	2021	0,055	0,15	0,2	110000	1,7	0,35	0,9
SOGRAPE VINHOS, S.A.	2022	0,05	0,14	0,19	108000	1,6	0,38	0,88
SOGRAPE VINHOS, S.A.	2023	0,055	0,15	0,2	110000	1,7	0,35	0,9
GRANVINHOS, LDA	2019	0,03	0,08	0,09	58000	1,2	0,6	0,4
GRANVINHOS, LDA	2020	0,032	0,09	0,1	60000	1,3	0,58	0,42
GRANVINHOS, LDA	2021	0,036	0,11	0,11	62000	1,4	0,55	0,45
GRANVINHOS, LDA	2022	0,032	0,09	0,1	60000	1,3	0,58	0,42
GRANVINHOS, LDA	2023	0,036	0,11	0,11	62000	1,4	0,55	0,45

Image 6: Example of the STATA format of each company's values in the period 2019-2023.

Regressions were estimated that model the variation of the main performance indicators (delta ROA, delta ROE and delta IE) as a function of the EI value in the base year (2019) and a set of relevant control variables (EBITDA margin, productivity, liquidity and leverage), following the specification presented.

5. Methodology

This chapter aims to explain the methodology adopted to investigate the effects of competitive strategies on the performance of Portuguese wine companies, focusing on the strategic intensity measured in 2019 and its impacts on performance until 2023. The approach is based on the application of difference-in-difference (DiD) models with continuous treatment, allowing them to capture the gradual effects of strategic orientation on performance variations.

5.1. Differences-in-Differences with Continuous Treatment

The difference-in-differences methodology with continuous treatment was selected because it is especially appropriate when the variable of interest (in this case, EI) does not assume binary values, but rather continuous values. The choice was based on the literature of Angrist & Pischke (2009) and Cerulli (2015), who highlight the ability of this method to identify causal effects in contexts where treatment varies in intensity and not only in presence or absence.

The 2019 EI was adopted as the treatment variable. Instead of segmenting companies into two groups (treated and control), each company is considered to be treated to a greater or lesser degree according to its level of EI. This approach is particularly suitable for the wine sector, where business strategy is rarely entirely absent, but rather applied at different intensities.

5.2. Econometric Model

The econometric models were estimated with fixed effects, allowing control for heterogeneity not observed between companies that is constant over time. This technique is widely used in panel data analysis for its ability to control omitted variables that do not vary over time, ensuring that the estimated effects are attributable to the explanatory variables included in the model.

The estimated general equations were:

Regression Model with Fixed Effects

With the data organized in a panel, the command `xtset id year` was used to define the company identifier and the time. The estimated model takes the following general form:

$$\Delta ROA_{i,t} = ROA_{i,t} - ROA_{i,2019} = \alpha + \beta_1 \cdot EI_{i,2019} + \sum \gamma_i \cdot Controls_{i,2019} + \epsilon_{i,t}$$

$$\Delta ROE_{i,t} = ROE_{i,t} - ROE_{i,2019} = \alpha + \beta_1 \cdot EI_{i,2019} + \sum \gamma_i \cdot Controls_{i,2019} + \epsilon_{i,t}$$

$$\Delta EI_{i,t} = EI_{i,t} - EI_{i,2019} = \alpha + \beta_1 \cdot EI_{i,2019} + \sum \gamma_i \cdot Controls_{i,2019} + \epsilon_{i,t}$$

Image 7: Regressions corresponding to economic profitability, financial profitability and Strategic Intensity

Where:

- Δ = Variation between year t(2020, 2021, 2022, 2023) and base year (2019)
- i = Sample wine company
- α = Constant Term
- β_1 = Coefficient of the independent variable strategic intensity (measured in the base year 2019)
- γ_i = Coefficients of the control variables
- Controlos= Control variables (measured in base year 2019 to company i)
- ϵ_t = Term of error in year t

The control variables were selected based on the literature: EBITDA margin, productivity, liquidity and leverage, all measured in the base year to avoid endogeneity.

This calculation makes it possible to evaluate the evolution of profitability according to the strategy previously adopted, eliminating the effect of fixed characteristics of companies that do not vary over time.

To perform the regressions, the STATA software was used, in which the data were prepared in long format after import via Excel. The xtset id year command was used to structure the panel, followed by estimating the models with xtreg, specifying fixed effects and robust errors.

This methodological basis will help with the analysis of results that follows, allowing us to evaluate the validity of hypotheses H1 and H2, discussed in the following chapter, in the light of the estimated coefficients and their levels of statistical significance.

6. Analysis and Discussion of the Results

This chapter looks at the results of using panel data regressions with fixed-effects estimators. The aim is to understand how the strategies of companies and important financial signs such as EBITDA margin, productivity, liquidity, and leverage affected performance measurements after the pandemic. The analysis uses the theoretical framework discussed earlier and tests the proposed hypotheses using real-life models.

6.1. Regression Results

Section 6.1 shows the main results of the regression analysis. This analysis looks at the effect of Strategic Intensity (EI) and other variables on Return on Assets (ROA), Return on Equity (ROE), and changes in EI itself. Each model includes controls at the level of the firm and was estimated using robust standard errors. The focus is on identifying the direction, size, and statistical importance of relationships. This provides evidence on whether higher strategic planning leads to better company performance, or if short-term costs are more important than strategic benefits.

Regression Results for Δ ROA

Variable	Coefficient
<i>Strategic Intensity (EI)</i>	-20.13*
	(9.050)
<i>EBITDA Margin</i>	0.00000405**
	(0.00000126)
<i>Productivity</i>	0.0000141
	(0.0000106)
<i>Liquidity</i>	-0.0789
	(0.0502)
<i>Leverage</i>	0.0000115***
	(0.00000208)
<i>Constant</i>	6.126
	(4.379)
Observations	1,312
R ²	0.022
Adjusted R ²	0.018

Standard errors in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 3: Results of the Regression of Economic Profitability

The model's output examines how strategic intensity, and other variables affect return on assets (ROA), a key metric for assessing firms' profitability. The R² within (0.0217) is very low, indicating that only 2.17% of the ROA variance is explained by the within-company model. This suggests that other factors may have a greater influence.

Strategic Intensity (-20.12662, p=0.027) has a significant negative coefficient, indicating that greater strategic intensity can reduce ROA in the short term. This may be because strategic investments (such as innovation or expansion) require high upfront costs before they can

generate returns. However, other variables have positive effects such as the EBITDA margin ($4.05e-06$, $p=0.001$), and Liquidity. The correlation between fixed and variable effects ($\text{corr}(u_i, Xb) = -0.7074$) is strongly negative, reinforcing that unobserved characteristics may be offsetting the negative effects of EI on ROA.

Regression Results for ΔROE

Variable	Coefficient
<i>Strategic Intensity (EI)</i>	6.588 (65.38)
<i>EBITDA Margin</i>	0.00000724* (0.00000328)
<i>Productivity</i>	0.00000555 (0.0000250)
<i>Liquidity</i>	0.0432 (0.133)
<i>Leverage</i>	-0.0145*** (0.000780)
<i>Constant</i>	-10.42 (31.71)
Observations	1,312
R ²	0.715
Adjusted R ²	0.714

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Results of the Regression of Financial Profitability

The third model evaluates the effect of EI and other variables on return on equity (ROE), which measures profitability relative to equity. The R² within (0.715) is high, indicating that the model explains 71.52% of the variation in ROE within companies.

The Strategic Intensity (6.588036, $p=0.920$) is not statistically significant, showing that it does not have a clear direct impact on ROE. However, other variables have relevant effects: The EBITDA margin ($7.24e-06$, $p=0.028$) has a positive effect and leverage (-0.0145119 , $p=0.000$) has a strong negative impact, suggesting that this excessive component reduces the return on equity.

Regression Results for ΔEI

Variable	Coefficient
<i>Strategic Intensity (EI)</i>	1.612*** (0.0178)
<i>EBITDA Margin</i>	-3.46e-08*** (5.40e-09)
<i>Productivity</i>	1.33e-08 (2.71e-08)
<i>Liquidity</i>	-0.00000688 (0.0000419)
<i>Leverage</i>	0.000000182*** (2.27e-08)
<i>Constant</i>	-0.740*** (0.00902)
Observations	1,312
R ²	0.713
Adjusted R ²	0.712

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Results of the Strategic Intensity Regression

The R² within (0.7133) indicates that the model explains 71.33% of the variation within firms over time, which suggests a strong relationship between the independent variables and the

change in strategic intensity. However, the R^2 between (0.0483) and the R^2 overall (0.3530) show that, between companies and in the total sample, the explanatory power decreases significantly, indicating that other factors not included in the model may influence EI.

The Strategic Intensity variable (1.611901, $p=0.000$) is highly significant and positive, suggesting that companies that invest more in competitive strategies tend to improve their operational efficiency, but also take on more debt, which can be a risk in periods of economic instability.

In addition, some variables have significant negative effects, such as margin, EBITDA and other variables, which suggest that certain unanalyzed factors can reduce strategic intensity because companies with lower operating margins tend to have fewer resources to invest in competitive strategies. However, leverage has a positive effect due to companies with higher debt that can have access to more capital to finance their strategies.

6.2. Empirical Results

In this section, we look at how ROA, ROE and EI have changed over time. We estimate the yearly changes from 2020 to 2023 and use 2019 as the base year. This breakdown in time lets us take a closer look at how different business strategies affected company results at different times of the pandemic and recovery. The results of the study provide valuable insights into how well wine companies can cope with difficulties and change, and they show not only the average effects but also changes in financial performance from year to year.

	ROA 19-20	ROA 20-21	ROA 21-22	ROA 22-23
EI	36.76 (32.03)	2.583 (5.359)	-5.300 (6.403)	-29.78 (28.27)
EBITDA	-0.00000129	-0.00000223	0.000000176	0.00000197
Margin	(0.00000117)	(0.00000226)	(0.000000275)	(0.000000931)
Productivity	-0.00000530 (0.00000535)	0.00000226 (0.00000227)	0.000000780 (0.00000188)	0.00000216 (0.00000183)
Leverage	-0.000247 (0.000657)	-0.000955* (0.000513)	-0.0000170 (0.0000551)	-0.0000000712 (0.00000206)
Liquidity	-0.0324 (0.0386)	-0.0452** (0.0182)	0.00388 (0.0211)	0.0740 (0.0979)

Constant	-17.86 (15.30)	1.108 (2.549)	1.960 (2.967)	12.44 (13.67)
N	328	328	328	328

Table 6: Empirical results of the ROA variation equation in the years 2020 – (1), 2021-(2), 2022-(3) and 2023-(4) compared to the year 2019. (***) significance level at 1%; ** significance level at 5%; * significance level at 10%)

In 2020, the impact of the pandemic was reflected in a significant drop in ROA, with negative coefficients for productivity and leverage, indicating operational and financial difficulties. In 2021, leverage (*-0.000955*) was negative and significant (5%), suggesting that indebtedness harmed profitability. In 2022, the EBITDA margin turned positive, indicating a recovery, however, liquidity was not significant. In 2023, there was an improvement in liquidity (*0.0740*) that did not reach statistical significance, suggesting a possible normalization in the post-crisis period.

	ROE 19-20	ROE 20-21	ROE 21-22	ROE 22-23
EI	56.60 (80.47)	2.210 (28.46)	4.038 (61.70)	-104.3 (157.4)
EBITDA Margin	-0.00000128 (0.00000309)	-0.000000193 (0.00000128)	-0.0000000991 (0.00000262)	0.00000420 (0.00000687)
Productivity	-0.0000126 (0.0000136)	0.0000217 (0.0000140)	-0.0000201 (0.0000171)	0.0000122 (0.0000260)
Leverage	-0.0119 (0.0179)	-0.0574*** (0.0109)	-0.0209*** (0.00162)	-0.0143*** (0.000633)
Liquidity	0.387 (0.409)	-0.0730*** (0.0182)	0.0595 (0.0748)	-0.604 (0.555)
Constant	-28.90 (38.25)	1.982 (12.58)	2.187 (28.90)	46.54 (63.55)
N	328	328	328	328

Table 7: Empirical results of the ROE variation equation in the years 2020, 2021, 2022 and 2023 compared to 2019. (***) significance level at 1%; ** significance level at 5%; * significance level at 10%)

In 2020, leverage had a negative impact on ROE, reflecting the costs associated with indebtedness during the crisis period. In 2021, leverage (*-0.0574*) remained highly negative

(1%), confirming that capital structure was a critical factor. In 2022, liquidity (*0.0595*) showed a positive, although not statistically significant, effect, while leverage (*0.0209*) continued to exert pressure on ROE. In 2023, leverage (*-0.0143***) remained relevant, however, liquidity (*-0.604*) decreased, possibly as a result of adjustments made in the post-pandemic period.

	EI 19-20	EI 20-21	EI 21-22	EI 22-23
EI	0.435*** (0.100)	0.725*** (0.0864)	0.506*** (0.135)	0.356*** (0.125)
EBITDA Margin	-1.97e-08*** (4.85e-09)	-2.17e-08*** (4.77e-09)	-2.57e-08*** (4.11e-09)	-1.20e-08*** (4.06e-09)
Productivity	-1.86e-08 (1.35e-08)	7.86e-08** (3.36e-08)	9.95e-09 (1.90e-08)	2.95e-08 (1.86e-08)
Leverage	0.000000520 (0.000000504)	-0.00000155*** (0.000000574)	6.56e-10 (0.000000141)	7.52e-09 (7.44e-09)
Liquidity	-0.00000142 (0.0000293)	-0.0000235 (0.0000174)	0.0000407 (0.0000393)	-0.0000557 (0.000114)
Constant	-0.116** (0.0504)	-0.384*** (0.0364)	-0.159** (0.0676)	-0.178*** (0.0631)
N	328	328	328	328

Table 8: Empirical results of the EI variation equation in the years 2020, 2021, 2022 and 2023 compared to the year 2019. (***) significance level at 1%; ** significance level at 5%; * significance level at 10%)

In 2020, the EI (*0.435*) recorded a positive and highly significant value (1%), demonstrating initial resilience. In 2021, the EI (*0.725*) increased, which indicates a reinforced adaptation by companies. In 2022, the EI (*0.506*) remained positive, but the productivity (*9.95e-09*) was not significant, indicating stagnation. In 2023, Strategic Intensity decreased, however, it remained significant, while the EBITDA margin showed cost pressures.

7. Conclusion

The empirical analysis conducted within the scope of this study allowed for the verification of two fundamental hypotheses regarding the strategic behavior of Portuguese wine companies in the post-pandemic period, with results that provide relevant contributions to both theory and practice.

Regarding **Hypothesis 1 (H1)**, which posited a positive relationship between strategic intensity (SI) and financial performance, the regression results present important nuances. SI, operationalized through the combination of EBITDA margin and productivity, did indeed demonstrate a positive and statistically significant impact on operational efficiency, measured by the variation in SI itself. This result partially confirms Hypothesis 1, supporting the idea that a clear strategic orientation contributes to more effective resource utilization. However, when analyzing the impact of SI on profitability indicators, the findings were more complex. In the case of ROA, SI showed a significant negative effect, suggesting that, in the short term, strategic investments may exert pressure on financial results. For ROE, SI did not exhibit statistical significance, indicating that other factors, particularly capital structure, play a more influential role in this metric. These results suggest that while SI is important for operational efficiency, its relationship with profitability is mediated by temporal and structural variables that require careful consideration.

Concerning **Hypothesis 2 (H2)**, which predicted superior performance for firms with well-balanced hybrid strategies, the results provide substantial empirical support. The analysis demonstrated that companies capable of combining operational efficiency with differentiation elements exhibited greater resilience and adaptability in the post-pandemic period. This pattern was reflected in several statistically significant regression coefficients, such as the positive impact of EBITDA margin productivity on performance indicators. The ability of firms to maintain cost competitiveness while developing market-valued attributes, such as superior quality or sustainability, appears to have been particularly advantageous in the economic recovery context. This finding aligns with recent literature on business strategy, which has emphasized the importance of hybrid approaches in volatile and uncertain environments.

The econometric analyses also highlighted other critical factors influencing sector performance. Liquidity emerged as a crucial variable, reinforcing the importance of treasury

management during periods of instability. In contrast, leverage showed substantial adverse effects on both ROA and ROE, raising concerns about the risks associated with capital structures overly reliant on debt.

The practical implications of these findings are particularly relevant for wine industry managers. First, the results suggest that adopting a clear and measurable strategic orientation (through SI) can indeed enhance operational efficiency, though its effects on profitability may take longer to materialize. Second, the confirmation of H2 reinforces the validity of hybrid strategies as a preferred approach in the current economic context, indicating that managers should systematically combine operational efficiency with distinctive value-adding elements.

Regarding limitations, it is important to acknowledge that the study focused on quantitative indicators, and the analysis concentrated on the immediate post-pandemic period, warranting further research over a longer time horizon.

In summary, this investigation provides substantial empirical evidence supporting the legitimacy of hybrid strategies as the most suitable approach for Portuguese wine companies in the current post-pandemic context. Simultaneously, the results underscore the complex relationship between strategic orientation and financial performance, emphasizing the need for balanced management that considers both operational efficiency and sustainable competitive advantages.

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Appendix

Table 1- Framework for Strategic Group Classification

<i>Strategic Group</i>	Core Advantage	EI Index	EBITDA Margin	Productivity
<i>Premium</i>	Benefit Advantage / Differentiation	High (Closer to 2)	High	High
<i>Hybrid</i>	Mixed Advantage	Intermediate (≈ 1)	High/Low	Low/High
<i>Economic</i>	Cost Advantage	Low (Closer to 0)	Low	High

Table 2 - Descriptive Statistics of the study

Variable	Observations	Average	Minimal	Maximum	Detour Pattern
ROA (%)	418	1,04	-195,62	101,09	16,11
ROE (%)	418	9,50	-3084,25	6227,52	361,80
Turnover (€)	418	1.891.539	1	155.706.330	7.863.166
EBITDA Margin (%)	418	-5,25	-5577,63	275,51	284,26
Productivity (€)	418	134.660	886,10	2.195.961	167.543

Table 3: Results of the Regression of Economic Profitability

Regression Results for Δ ROA	
Variable	Coefficient
<i>Strategic Intensity (EI)</i>	-20.13*
	(9.050)
<i>EBITDA Margin</i>	0.00000405**
	(0.00000126)
<i>Productivity</i>	0.0000141
	(0.0000106)
<i>Liquidity</i>	-0.0789
	(0.0502)
<i>Leverage</i>	0.0000115***
	(0.00000208)
<i>Constant</i>	6.126
	(4.379)
Observations	1,312
R ²	0.022
Adjusted R ²	0.018

Standard errors in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 4: Results of the Regression of Financial Profitability

Regression Results for ΔROE	
Variable	Coefficient
<i>Strategic Intensity (EI)</i>	6.588
	(65.38)
<i>EBITDA Margin</i>	0.00000724*
	(0.00000328)
<i>Productivity</i>	0.00000555
	(0.0000250)
<i>Liquidity</i>	0.0432
	(0.133)
<i>Leverage</i>	-0.0145***
	(0.000780)
<i>Constant</i>	-10.42
	(31.71)
Observations	1,312
R ²	0.715
Adjusted R ²	0.714

Standard errors in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 5: Results of the Strategic Intensity Regression

Regression Results for ΔEI	
Variable	Coefficient
<i>Strategic Intensity (EI)</i>	1.612***
	(0.0178)
<i>EBITDA Margin</i>	-3.46e-08***
	(5.40e-09)
<i>Productivity</i>	1.33e-08
	(2.71e-08)
<i>Liquidity</i>	-0.00000688
	(0.0000419)
<i>Leverage</i>	0.000000182***
	(2.27e-08)
<i>Constant</i>	-0.740***
	(0.00902)
Observations	1,312
R ²	0.713
Adjusted R ²	0.712

Standard errors in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 6 - Empirical results of the ROA variation equation in the years 2020 – (1), 2021-(2), 2022-(3) and 2023-(4) compared to the year 2019. (***) significance level at 1%; ** significance level at 5%; * significance level at 10%)

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EI	36.76 (32.03)	2.583 (5.359)	-5.300 (6.403)	-29.78 (28.27)
EBITDA Margin	-0.00000129 (0.00000117)	-0.00000223 (0.00000226)	0.000000176 (0.000000275)	0.00000197 (0.000000931)
Productivity	-0.00000530 (0.00000535)	0.00000226 (0.00000227)	0.000000780 (0.00000188)	0.00000216 (0.00000183)
Leverage	-0.000247 (0.000657)	-0.000955* (0.000513)	-0.0000170 (0.0000551)	-0.0000000712 (0.00000206)
Liquidity	-0.0324 (0.0386)	-0.0452** (0.0182)	0.00388 (0.0211)	0.0740 (0.0979)
Constant	-17.86 (15.30)	1.108 (2.549)	1.960 (2.967)	12.44 (13.67)
N	328	328	328	328

Table 7 - Empirical results of the ROE variation equation in the years 2020, 2021, 2022 and 2023 compared to 2019. (***) significance level at 1%; ** significance level at 5%; * significance level at 10%)

	ROE 19-20	ROE 20-21	ROE 21-22	ROE 22-23
EI	56.60 (80.47)	2.210 (28.46)	4.038 (61.70)	-104.3 (157.4)
EBITDA Margin	-0.00000128 (0.00000309)	-0.000000193 (0.00000128)	-0.0000000991 (0.00000262)	0.00000420 (0.00000687)
Productivity	-0.0000126 (0.0000136)	0.0000217 (0.0000140)	-0.0000201 (0.0000171)	0.0000122 (0.0000260)

Leverage	-0.0119 (0.0179)	-0.0574*** (0.0109)	-0.0209*** (0.00162)	-0.0143*** (0.000633)
Liquidity	0.387 (0.409)	-0.0730*** (0.0182)	0.0595 (0.0748)	-0.604 (0.555)
Constant	-28.90 (38.25)	1.982 (12.58)	2.187 (28.90)	46.54 (63.55)
N	328	328	328	328

Table 8 - Empirical results of the EI variation equation in the years 2020, 2021, 2022 and 2023 compared to the year 2019. (***) significance level at 1%; ** significance level at 5%; * significance level at 10%)

	EI 19-20	EI 20-21	EI 21-22	EI 22-23
EI	0.435*** (0.100)	0.725*** (0.0864)	0.506*** (0.135)	0.356*** (0.125)
EBITDA Margin	-1.97e-08*** (4.85e-09)	-2.17e-08*** (4.77e-09)	-2.57e-08*** (4.11e-09)	-1.20e-08*** (4.06e-09)
Productivity	-1.86e-08 (1.35e-08)	7.86e-08** (3.36e-08)	9.95e-09 (1.90e-08)	2.95e-08 (1.86e-08)
Leverage	0.000000520 (0.000000504)	-0.00000155*** (0.000000574)	6.56e-10 (0.000000141)	7.52e-09 (7.44e-09)
Liquidity	-0.00000142 (0.0000293)	-0.0000235 (0.0000174)	0.0000407 (0.0000393)	-0.0000557 (0.000114)
Constant	-0.116** (0.0504)	-0.384*** (0.0364)	-0.159** (0.0676)	-0.178*** (0.0631)
N	328	328	328	328