

The Economic Impact of the COVID-19 Crisis on the Food Retail Sector in Greece: A Comparative and Quantitative Analysis of Financial Indicators

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Abstract: This study investigates the impact of the COVID-19 pandemic on the financial performance of the leading Greek food retailers by analyzing fluctuations in key financial ratios between the pre-pandemic (2017–2019) and the pandemic period (2020–2022). The research integrates a comparative analysis of the Greek grocery retail market within the framework of the European Single Market with a quantitative assessment of the financial indicators of the five dominant Greek chains. Paired t-tests and Wilcoxon signed-rank tests were employed to identify statistically significant differences. The empirical results indicate that profitability margins (NPM, ROA, ROE), liquidity ratios (CR, QR), and financial leverage did not undergo statistically significant changes during the COVID-19 period, suggesting that the sector exhibited high financial resilience. While the small sample size (five companies) may limit the generalizability of the findings, the analysis—based on audited financial statements—offers valuable insights for crisis management in essential goods sectors and the strategic design of supply chain resilience policies. The study contributes an empirically grounded assessment of the Greek food retail trade by synthesizing international comparative perspectives with robust statistical investigation.

Keywords: COVID-19, Food Retail, Financial Performance, Profitability, Economic Resilience, Greece.

JEL Classification: L81, M21, M21, I18.

1. INTRODUCTION

The COVID-19 pandemic constituted an unprecedented global economic shock, precipitating structural disruptions across nearly all business sectors. Despite widespread negative impacts on international markets, the food retail sector exhibited a distinct dynamic, driven by radical shifts in consumer behavior and demand patterns during the implementation of restrictive measures. Within this context, the primary research question of the present study focuses on determining the statistically significant impact of the health crisis on the financial performance and resilience of the dominant supermarket chains in Greece. The analysis explores whether this crisis substantially affected the sector's profitability and financial stability by comparing corporate performance prior to and during the pandemic period.

The economic shock precipitated by COVID-19 disrupted traditional distribution networks and generated widespread liquidity constraints across service and commercial enterprises throughout South-Eastern Europe (Ozen, 2021; Bajraktari & Kostoska, 2022). While smaller commercial entities experienced severe operational contraction (Hristoski et al., 2021), essential retail segments—most notably food supermarkets—navigated these systemic headwinds by adjusting inventory strategies and operational models.

To address the research question, the study focuses on a framework of five critical financial ratios: Net Profit Margin (NPM), Return on Assets (ROA), Return on Equity (ROE), Current and Quick Ratios, as well as Financial Leverage (Debt-to-Assets). These indicators were selected as the most appropriate for evaluating cost control efficiency, asset utilization effectiveness, and the ability to meet obligations under conditions of high uncertainty (Tóth, G. et al., 2024; Penman, 2013; Brigham & Ehrhardt, 2020). The research adopts a quantitative comparative approach, utilizing secondary data from the published financial statements of the five largest companies in the sector in Greece (Sklavenitis S.A., AB Vassilopoulos S.A., METRO S.A., Masoutis S.A., and ANEDIK Kritikos S.A.), which represent approximately 75% of the domestic market. The analysis period (2017–2022) is divided into the pre-pandemic phase (2017–2019) and the pandemic phase (2020–2022), enabling hypothesis testing via the paired-sample t-test and the non-parametric Wilcoxon signed-rank test, thereby ensuring the methodological reliability of the findings (Sipahutar & Purba, 2024; Anindita & Lestari, 2023).

The scholarly contribution of this study lies in highlighting the mechanisms of financial resilience demonstrated by major food retail enterprises in a systemic crisis environment, providing new data for the Greek market. Furthermore, the paper expands the analytical scope by situating domestic findings within an international

comparative framework encompassing the Italian and German markets, while simultaneously examining the regulatory environment (PMR index) and market concentration levels (HHI index). The article is structured as follows: firstly, the structure of the Greek market is presented within the context of the European Single Market, followed by a comparative analysis of indicators among the three member states, whereas the fourth section presents the results of the quantitative research, the analysis of the findings, and their final interpretation in relation to corporate strategy and economic policy. Finally, the conclusions and suggestions for future research are provided.

2. LITERATURE REVIEW AND MARKET FRAMEWORK

2.1. Market Structure and Concentration in the Food Retail Sector

Retail performance in developing and regional markets is heavily reliant on customer orientation and flexible procurement mechanisms (Ekşioğlu & Tolunay, 2020). Moreover, recent qualitative evidence from regional retail markets highlights that supplier selection, delivery timeliness, and inventory continuity remain key drivers of operational stability during economic volatility (Önem et al., 2021).

The Greek food retail market is characterized by a highly oligopolistic structure, which has been consolidated through successive mergers and acquisitions (M&A) over the last decade. Market concentration, as reflected in the Herfindahl-Hirschman Index (HHI), highlights the dominance of the top five chains (Sklavenitis, AB Vassilopoulos, METRO, Masoutis, and Kritikos), which collectively control approximately 75% of the total turnover. This structure differs significantly from other European markets, such as Italy, which remains more fragmented due to the strong presence of regional players and cooperatives, or Germany, where competition is defined by the dominance of discount retailers (discounters) (Eurostat, 2025).

EU competition policy, originating from the Treaty of Rome (1957), aims to prevent monopolistic practices and protect small-scale suppliers. The 2019 Unfair Trading Practices (UTPs) Directive further strengthens the bargaining position of small producers against large-scale retailers (European Commission, 2019). However, the increasing market power of supermarket chains has led to asymmetric oligopolistic structures, with implications for pricing strategies, product variety, and market access for small producers (Špička, 2016; Nes et al., 2024).

The concentration of the food retail market across the EU exhibits significant variation. On average, there are 2.4 supermarkets per 1,000 inhabitants, whereas Greece stands out with 6 stores per 1,000 inhabitants. Despite relative deconcentration in several member states, the majority of market share is controlled by the four largest chains (Van Dam et al., 2021). High concentration in Greece, combined with a limited number of stores per 100,000 inhabitants compared to the EU average, creates an environment of limited competitive intensity at the local level, directly influencing pricing strategies and product assortment.

2.2. The Regulatory Environment and Barriers to Entry

The regulatory framework plays a decisive role in shaping the sector's competitiveness. According to the OECD Product Market Regulation (PMR) Index, Greece traditionally exhibits a higher degree of regulation compared to Germany, which translates into increased administrative burdens for the entry and operation of new enterprises (OECD, 2024; World Bank, 2024). Despite reforms aimed at simplifying procedures, the Barriers to Trade and Investment (BTI) Index indicates that structural difficulties remain, deterring the entry of new international players into the domestic market (OECD, 2024).

In contrast, the German market operates under a highly liberalized framework (low PMR), which encourages economies of scale and operational flexibility. Italy occupies an intermediate position, having adopted digital tools (e.g., SUAP) to reduce bureaucracy and facilitate regional retail development (World Bank, 2024). Furthermore, the EU Common Agricultural Policy (CAP) has shaped the productive structure of the agri-food sector, favoring large-scale industrial production through subsidies and financial instruments. Simultaneously, specialized products, such as organic foods and local varieties, are promoted through targeted rural development policies and intellectual property protection systems (Grunert & Achmann, 2016).

The EU has also established three food quality schemes—PDO (Protected Designation of Origin), PGI (Protected Geographical Indication), and TSG (Traditional Speciality Guaranteed)—aiming to protect geographical origin

and traditional expertise. Although these labels enhance transparency and traceability, their recognition remains limited, with variations across countries and regions. Southern Europe exhibits higher levels of awareness, particularly in areas producing protected products (Grunert & Aachmann, 2016).

2.3. Pricing Dynamics and Purchasing Power

Furthermore, the structural configuration of food distribution channels in South-Eastern Europe plays a pivotal role in shaping supply chain resilience and price stability during economic shocks. Regional scholarship emphasizes that short food supply chains and localized quality frameworks (such as PDO and PGI labels) offer strategic mechanisms to mitigate logistical bottlenecks and enhance food security (Beke, 2020). In the Greek market, however, this dynamics intersects with severe geographical fragmentation—namely insularity and mountainous terrain—which inflates transport and distribution overheads. Consequently, despite regulatory attempts to protect traditional production and streamline trade barriers, major supermarket chains must maintain larger inventory cushions, which directly affects working capital structures and final shelf pricing.

One of the most significant challenges in the Greek market is the paradox of the Price Level Index (PLI); despite Greece having the lowest disposable income among the countries under examination, the PLI for food remains 6% higher than the EU average (PLI=106). This phenomenon is primarily attributed to geographical fragmentation, as insularity and mountainous terrain increase transportation and distribution costs (Hellenic Statistical Authority, 2025). Additionally, the tax burden plays a critical role, with the Value Added Tax (VAT) rate on food (13%) being significantly higher than in Germany (7%) or Italy (4%-10%), directly increasing final shelf prices. Finally, limited economies of scale, manifested through weaker bargaining power against multinational suppliers and lower penetration of private label (PL) products compared to Northern Europe, further exacerbate the issue (Eurostat, 2025; FAO, 2023).

It is evident that food inflation, influenced by increased production costs, supply chain disruptions, and climatic or geopolitical developments, has constituted a major pressure factor for households, particularly those with lower incomes (Bragoudakis et al., 2024; Kuik et al., 2024). In Greece, price increases were most intense during 2022–2023, leading to the re-emergence of proposals for targeted VAT reductions on essential goods in public discourse (Bank of Greece Economic Bulletin, 61). Consequently, according to Engel's Law, Greek households spend nearly one-fifth of their income on food, a fact that increases the price elasticity of demand and renders consumers extremely vulnerable to inflationary shocks (Global Economy, n.d.).

2.4. The Impact of the Pandemic and Strategic Resilience

The COVID-19 crisis acted as a catalyst for the sector's digital transformation in Greece, compelling supermarket chains to rapidly invest in e-grocery infrastructure. Despite the decline in consumer confidence, the sector demonstrated remarkable resilience, as the shift in consumption from food services to home meal preparation led to increased turnover (ELSTAT, 2025). This structural shift aligned with a broader regional trend across the Balkans, where consumer adoption of digital services and contactless channels accelerated rapidly (Schipor & Duhnea, 2021). In Greece, these evolving behavioral patterns prompted food retailers to integrate digital data analytics and upgrade online platforms to absorb lockdown-induced demand surges. Beyond serving as an immediate emergency response, developing robust digital capabilities emerged as a primary driver of performance differentiation, enabling leading chains to preserve stable revenues and safeguard their liquidity positions amid macroeconomic turbulence.

The study of this period offers valuable insights into the contribution of food retail to maintaining supply chain stability. Comparison with Italy and Germany highlights that economic resilience depends not only on market size but also on the ability of firms to adapt their cost structures and supply chains under conditions of extreme uncertainty (Tóth, G. et al., 2024; Anindita & Lestari, 2023). The present research contributes to the literature by analyzing the financial performance of Greek supermarkets within the context of the European Single Market. The research question focuses on whether the COVID-19 pandemic caused statistically significant changes in profitability, liquidity, and leverage indicators, or whether market structure and the regulatory environment served as a "shield" of resilience for major enterprises in the sector.

3. Comparative Analysis of the Retail Sector: Greece, Italy, and Germany

3.1. Market Concentration and Structure

Market concentration constitutes a critical factor in shaping the competitive environment. The Herfindahl-Hirschman Index (HHI) and the market shares of leading firms are employed to delineate market structure. The structure of the food retail market in Europe exhibits significant variations among member states. Table 1 presents the Herfindahl-Hirschman Index (HHI), the market shares of the top three and top five firms, and the number of supermarkets per 100,000 inhabitants for Greece, Italy, and Germany.

Table 1: HHI Index, Market Share of Top 3 / Top 5 & Supermarkets per 100,000 Inhabitants for Greece, Italy & Germany

Country	HHI Index	Market Share (Top 3 / Top 5) (%)	Enterprises (supermarkets/grocery stores) per 100,000 Inhabitants
Greece	2,180	Top-3: 55–60% Top-5: 71–75%	110 per 100k
Italy	2,550	Top-3: 41% Top-5: 52–57%	39.6 per 100k
Germany	1,980	Top-3: 49–50% Top-5: 60–76%	26.6 per 100k

Source: Own elaboration based on data from DataPulse (n.d.), Savills (2025), KPMG Greece (2023), Lloyds Bank (n.d.), Leogrande, A. (2025), Greenseed Group (July 15, 2022), IBISWorld (2025), and USDA FAS (2025).

In Greece, the food retail market is characterized by a high degree of concentration; in 2020, 75% of the total turnover was generated by the five leading chains, with Sklavenitis S.A. holding a dominant position (KPMG, 2023). Despite a steady increase in the sector's total size to €17.1 billion, a negative Compound Annual Growth Rate (CAGR of –1.8%) is recorded for the 2020–2025 period (IBISWorld, 2025).

Conversely, Italy exhibits lower concentration, with the top five chains holding 51.8% and the top three holding only 40% of the market (Italian Grocery Report, 2025). Germany presents an intermediate profile, where EDEKA, Rewe, Aldi, and Lidl control 54.6% of the market (Europe Market Research, 2022), with EDEKA maintaining a leading role (Wortmann, 2021).

The Herfindahl-Hirschman Index (HHI) confirms these variations: Germany (1,980), Greece (2,180), and Italy (2,550), with the latter showing the highest concentration (Eurostat, n.d.; 2025). Market concentration affects access for small producers, innovation, and profit margins, with varying implications across each country (Nes et al., 2024).

The concentration of food retail impacts the bargaining power of suppliers, often compressing their profit margins, while the impact on final prices depends on retailer strategy. In Greece, competition authorities have expressed concerns regarding the effects of concentration on small suppliers and local competition. In contrast, Italy presents a more fragmented retail landscape (top 5 ≈ 52%), allowing easier access for regional chains and specialized distributors, although national distribution remains a privilege for larger suppliers.

Germany is characterized by high concentration and the dominance of discount chains (Lidl, Aldi) and large groups (Edeka, Rewe), with stringent cost and process requirements. However, opportunities for innovation are provided through private labels and logistics efficiency. Business density (enterprises per 100,000 inhabitants) reflects the market structure: high in Greece (fragmentation), moderate in Italy (balance), and low in Germany (concentration) (Eurostat, n.d.). Consequently, the relationship between concentration, innovation, and competition differs significantly among the three nations.

3.2. Regulatory Environment and Barriers to Entry

Table 2 illustrates the regulatory environment and barriers to entry through the Product Market Regulation (PMR) Index, the number of procedures and days required to start a business, and the Barriers to Trade and Investment (BTI) Index.

Table 2: PMR Index, Number of Procedures / Days to Start a Business, "Starting a Business" Score, and BTI Index for Greece, Italy, and Germany

Country	OECD Product Market Regulation (PMR) Index	Procedures / Days to Start a Business	"Starting a Business" Score	OECD Barriers to Trade and Investment (BTI) Index
Greece	1.360	3 / 4 days	96.0	0.53
Italy	1.232	7 / 11 days	86.8	0.59
Germany	1.182	9 / 8 days	83.7	0.41

Source: Data sourced from OECD (2024) and World Bank (2024).

The OECD Product Market Regulation (PMR) Index captures the extent of regulatory intervention in markets, with values ranging from 0 (fully liberalized market) to 6 (heavily regulated market) (OECD, 2018). Based on this index, Greece (1.360) exhibits a slightly more restrictive framework compared to Italy (1.232) and Germany (1.182), a fact that may limit competition and the entry of new market players. A lower regulatory burden is associated with higher productivity and investment. Greece and Italy could further enhance their competitiveness by simplifying administrative procedures and reducing state intervention. However, Greece excels in the speed of business formation, requiring only 3 procedures and 4 days, compared to 7 procedures/11 days in Italy and 9 procedures/8 days in Germany.

The Barriers to Trade and Investment (BTI) Index highlights Germany (0.41) as the most open economy, while Italy (0.59) faces the greatest administrative complexity and regulatory uncertainty. Greece (0.53) exhibits moderate levels of regulatory friction, primarily linked to administrative bureaucracy rather than discrimination against foreign investors, confirming a gradual convergence with international best practices.

The "Starting a Business" score (0–100) reflects the administrative ease of establishing an enterprise (World Bank Group, 2019). Greece ranks high (96), with only three procedures, four days, and low costs, reflecting successful digitalization. Italy lags behind (~86) due to seven procedures and 11 days, mainly caused by local bureaucracy. Germany, despite its liberal framework, ranks lower due to nine procedures and eight days, emphasizing legal precision. Overall, Greece combines moderate regulation with high efficiency in business establishment.

3.3. Price Competitiveness and Cost Structure

Price competitiveness is influenced by factors such as the Food Price Level Index (PLI), the Consumer Price Index (CPI), retail profit margins, import costs, and VAT on food. As shown in Table 3, Greece presents a pricing paradox: the Food Price Level Index (PLI) stands at 106, i.e., 6% above the EU average, despite having the lowest disposable income. This structural price level is attributed to geographical fragmentation, which increases transportation costs, weaker economies of scale, and a high VAT rate on food (13%), which exceeds the standards of Germany (7%) and Italy (4-10%).

Table 3: PLI Index, CPI Index, Retail Profit Margins, Import Cost Share & VAT on Food for Greece, Italy & Germany

Country	Food Price Level Index (PLI)	Consumer Price Index (CPI) May 2025	Retail Profit Margins	Import Cost Share	VAT on Food
Greece	106	+2.6%	22–35%	10–30%	Standard: 24% Reduced: 13% Specific items: 6%
Italy	101	+3.7%	18–30%	10–25%	Standard: 22% Reduced: 10%, 4%
Germany	103	+2.4%	16–25%	15–35%	Standard: 19% Reduced: 7%

Source: Data sourced from Eurostat (2025), Hellenic Statistical Authority (2025), ISTAT (2025), Destatis (2025), European Commission (2019), and European Commission (2025).

In Italy, prices remain aligned with the EU average (PLI=101) due to high agricultural diversity and fiscal support through low VAT. Germany (PLI=103) achieves competitive prices through operational efficiency, despite high labor costs. In the Greek market, retailer profit margins range between 22–35%, levels higher than those in Germany (16–25%), suggesting reduced price competition pressure.

3.4. Consumer Demand and Purchasing Power

Table 4 presents indicators of consumer demand and purchasing power, such as disposable income per capita, food expenditure share, the consumer confidence index, price elasticity of demand, and the unemployment rate. The purchasing power of Greek consumers is the lowest among the three countries, resulting in the allocation of 1/5 of their income to food. This behavior confirms Engel's Law, where the share of expenditure on essential goods increases as income decreases. Consumer confidence in Greece remained fragile, with buyers exhibiting high price sensitivity, although factors such as product quality and staff remain critical for their satisfaction.

Table 4: Disposable Income per Capita, Food Expenditure Share, Consumer Confidence Index, Price Elasticity of Demand, and Unemployment Rate for Greece, Italy, and Germany

Country	Disposable Income per Capita	Food Expenditure Share	Consumer Confidence Index	Price Elasticity of Demand (Qualitative)	Unemployment Rate
Greece	20,639	18.56%	-50.6	High	8.2%
Italy	28,646	15.02%	-16.4	Moderate to High	6.0%
Germany	37,098	11.26%	-11.5	Low	3.7%

Source: Data sourced from Eurostat (2025), Destatis (2025), The Global Economy (n.d.), Hellenic Statistical Authority (n.d.), and ISTAT (n.d.).

In Italy and Germany, higher disposable income allows for greater flexibility in purchasing choices, with a shift toward products of high nutritional value and healthy foods—a trend increasingly driven internationally by Generation Z. Despite the differences, the COVID-19 pandemic served as a common catalyst for the growth of e-grocery in all three markets, highlighting the sector's adaptability under crisis conditions.

This comparative analysis documents that the Greek food retail market operates under conditions of high concentration and structural price stiffness. The research addresses the question of resilience, demonstrating that the oligopolistic environment and rapid administrative adaptation allowed Greek enterprises to maintain their financial stability despite macroeconomic constraints and an increased tax burden compared to Italy and Germany.

4. Methodology

The methodological approach of the present study is grounded in a quantitative, comparative research design, aiming to evaluate the impact of the COVID-19 pandemic on the financial performance of the dominant supermarket chains in Greece. The sample was selected using purposive sampling and includes the five largest enterprises in the sector—Sklavenitis S.A., AB Vassilopoulos S.A., METRO S.A., Masoutis S.A., and ANEDIK Kritikos S.A.—chosen for their dominant market position and the availability of audited financial statements. The analysis spans a six-year period (2017–2022), which is bifurcated into two distinct phases: the pre-pandemic baseline period (2017–2019) and the pandemic outbreak period (2020–2022). Secondary data were obtained directly from the companies' published annual financial reports, ensuring research transparency and reliability.

The evaluation of corporate financial performance relies on a framework of established financial ratios. Net Profit Margin (NPM) captures the ability to convert revenue into net income, reflecting efficiency in cost management and pricing (Fridson & Alvarez, 2011). Return on Assets (ROA) measures the effectiveness of total asset utilization in generating profits (Penman, 2013), while Return on Equity (ROE) reflects the return on shareholders' invested capital. Liquidity ratios (Current Ratio – CR, Quick Ratio – QR) assess the capacity to meet short-term obligations, while the financial leverage ratio captures the degree of reliance on debt financing, indicating relative financial risk (Tóth et al., 2024).

These indicators were selected due to their extensive use in international literature for assessing the financial health of enterprises during periods of crisis. Comparing their values across different time intervals enables the detection of shifts in corporate performance and resilience.

Statistical processing involves the formulation of research hypotheses and the employment of specialized tests to determine the statistical significance of changes between the two periods. Initially, descriptive analysis is conducted to identify general trends, followed by the application of the paired-sample t-test to compare means, provided the normality of differences is met (Sipahutar & Purba, 2024). Given the limited sample size (N=5), the results are cross-validated using the non-parametric Wilcoxon signed-rank test, which enhances the methodological robustness of the conclusions (Anindita & Lestari, 2023).

A primary limitation of the analysis is the small sample size; although it represents the majority of the sector, it restricts the generalizability of findings to the broader population of small and medium-sized retail enterprises. This methodology contributes to substantiating whether the observed profitability during the pandemic resulted from transitory factors or structural financial stability.

5. Quantitative Research Results

The analysis of descriptive statistics (Table 5) reveals general trends in financial metrics for the five largest supermarket chains in Greece. A marginal improvement in mean profitability ratios is observed during the COVID-19 period, accompanied by a stabilization of liquidity ratios and heterogeneous shifts in financial leverage.

5.1. Analysis of Profitability Ratios (NPM, ROA, ROE)

The assessment of sectoral profitability was conducted using Net Profit Margin (NPM), Return on Assets (ROA), and Return on Equity (ROE) indicators, comparing the pre-COVID (2017-2019) and COVID-19 (2020-2022) periods.

Table 5: NPM, ROA, and ROE Results for the Pre-COVID and COVID-19 Periods for the Five Greek Enterprises

Company	NPM Pre	NPM COVID	ROA Pre	ROA COVID	ROE Pre	ROE COVID
Sklavenitis S.A.	-0.049	0.018	-0.030	0.021	-0.791	0.376
METRO S.A.	0.008	0.016	0.012	0.025	0.086	0.131
Masoutis S.A.	0.018	0.010	0.025	0.014	0.130	0.081
ANEDIK Kritikos S.A.	0.005	0.005	0.009	0.009	0.128	0.132
AB Vassilopoulos S.A.	0.017	0.009	0.033	0.013	0.088	0.043

Table 6: Summary of Statistical Test Results for Profitability Ratios

Ratio	Period	Mean	t-test	t-test (p-value)	Wilcoxon (p-value)
NPM	Pre/COVID	-0,00015 / 0,01159	-0,828	0,454	0,893
ROA	Pre/COVID	0,00962 / 0,01642	-1,385	0,238	0,225
ROE	Pre/COVID	0,09330 / 0,14720	-1,124	0,324	0,345

Table 5 demonstrates that the impact of the COVID-19 period on profitability was heterogeneous across the examined firms. Sklavenitis S.A. exhibited a marked improvement across all three profitability ratios, transitioning from negative pre-COVID values to positive levels for NPM, ROA, and ROE during the pandemic, indicating a significant recovery in both operational efficiency and returns on equity. METRO S.A. also demonstrated consistent improvement in profitability, with increases observed in all three metrics, suggesting enhanced financial performance during the pandemic.

Conversely, Masoutis S.A. experienced a decline in profitability, as evidenced by decreases in NPM, ROA, and ROE, although all ratios remained positive, reflecting reduced yet sustainable profitability. ANEDIK Kritikos S.A. showed marginal changes in the examined measures, with relatively stable NPM, ROA, and ROE values, indicating resilience but limited improvement during the COVID-19 period. Finally, AB Vassilopoulos S.A. recorded a noticeable decrease in profitability across all three ratios, particularly in NPM and ROE, suggesting increased pressure on profit margins and returns during the pandemic. Overall, while certain firms benefited from pandemic-related market conditions, the results indicate that the impact of COVID-19 on profitability was not uniform across the sector.

The statistical evaluation of NPM (Table 6) shows that, despite the nominal increase in the mean, the differences are not statistically significant. The Wilcoxon test confirms the failure to reject the null hypothesis (p-value = 0.893), indicating that profitability remained at low, marginal levels, characteristic of intense competition and increased operating expenses during the pandemic. Commenting on the findings, the increase in turnover was largely absorbed by the costs of implementing health protocols and supply chain disruptions, maintaining the net profit margin below 1.5% for the majority of the companies.

A similar pattern is observed for ROA and ROE, where statistical analysis did not reveal significant changes (p-value = 0.465 and p-value = 0.225, respectively). The resilience of ROA suggests effective asset management under crisis conditions, while the improvement in ROE reflects more efficient utilization of equity by the leading chains. The lack of statistical significance confirms that the sector, although benefiting from increased demand, did not exhibit "excess profits" due to structural costs and investments in digital transformation.

5.2. Analysis of Liquidity Ratios (Current & Quick Ratio)

The examination of the sector's short-term financial stability focuses on the ability of enterprises to meet their current obligations, comparing Current Liquidity (Current Ratio - CR) and Quick Liquidity (Quick Ratio - QR).

The results of the liquidity ratios in Table 7 reveal differentiated responses at the corporate level during the COVID-19 period. Sklavenitis S.A. showed a moderate improvement in both the Current Ratio and the Quick Ratio, indicating improved short-term and immediate liquidity compared to the pre-COVID period. METRO S.A. recorded a noticeable increase in the Current Ratio, while the Quick Ratio decreased marginally, suggesting that the liquidity improvement was primarily driven by higher inventory levels rather than liquid assets.

Table 7: Liquidity Ratio Results for the Pre-COVID and COVID-19 Periods for the Five Greek Enterprises

Company	CR Pre	CR COVID	QR Pre	QR COVID
Sklavenitis S.A.	0,513	0,528	0,221	0,261
METRO S.A.	0,526	0,580	0,143	0,139
Masoutis S.A.	0,510	0,562	0,208	0,247
ANEDIK Kritikos S.A.	0,629	0,612	0,303	0,279
AB Vassilopoulos S.A.	0,487	0,499	0,223	0,212

Masoutis S.A. demonstrated consistent strengthening of liquidity, with increases observed in both CR and QR, reflecting improved short-term financial flexibility. Conversely, ANEDIK Kritikos S.A. showed a slight decrease in both liquidity ratios, although it continued to maintain the highest liquidity levels among the examined firms, indicating a relatively strong liquidity position despite the marginal decline. Finally, AB Vassilopoulos S.A. showed only minor changes in liquidity, with a slight increase in the Current Ratio accompanied by a slight decrease in the Quick Ratio, indicating a largely stable but constrained liquidity profile. Overall, while some firms improved their liquidity during the COVID-19 period, the results suggest that liquidity enhancement was not uniform and, in several cases, was more attributable to inventory accumulation than to an increase in near-cash assets.

Table 8: Summary of Statistical Test Results for Liquidity Ratios

Ratio	Period	Mean	t-test	t-test (p-value)	Wilcoxon (p-value)
Current Ratio	Pre / COVID	0,8197 / 0,8357	-0,351	0,743	0,893
Quick Ratio	Pre / COVID	0,4283 / 0,4562	-0,767	0,485	0,500

The data analysis in Table 8 shows a marginal increase in the mean Current Ratio from 0.8197 (pre-COVID) to 0.8357 (during COVID). Despite this slight improvement, statistical tests confirm the stability of the ratio, as the paired sample t-test ($t(4) = -0.351$, $p\text{-value} = 0.743$) and the Wilcoxon test ($p\text{-value} = 0.893$) did not indicate a statistically significant change. The fact that values remain below unity for the majority of the sample is common in food retailing, due to high inventory turnover rates and credit terms provided by suppliers.

The QR index, which excludes inventory to assess the immediate availability of liquid assets, increased from 0.4283 to 0.4562. In this case as well, no statistically significant difference was detected ($p\text{-value} = 0.485$ for the t-test and $p\text{-value} = 0.500$ for Wilcoxon), suggesting that the internal structure of liquidity was not structurally affected by the pandemic.

Maintaining liquidity at stable levels amidst a health crisis is an indicator of operational resilience. Increased demand ensured continuous cash flow, allowing firms to manage emergency protection expenses and supply without compromising their short-term solvency. The high reliance on inventory (the discrepancy between CR and QR) remains the primary characteristic of the sector, making efficient supply chain management a critical survival factor.

5.3. Capital Structure Analysis (Leverage)

The capital structure of the sample firms was examined through the Financial Leverage ratio (Total Liabilities / Equity) to assess reliance on external capital during the health crisis; results are presented in Table 9.

Table 9: Financial Leverage Ratio Results for the Pre-COVID and COVID-19 Periods for the Five Greek Enterprises

Company	Lev Pre	Lev COVID
Sklavenitis S.A.	0,968	0,942
METRO S.A.	0,862	0,806
Masoutis S.A.	0,817	0,832
ANEDIK Kritikos S.A.	0,928	0,932
AB Vassilopoulos S.A.	0,643	0,680

Leverage ratio analysis indicates heterogeneous debt dynamics among the examined firms during the COVID-19 period. Sklavenitis S.A. recorded a moderate decrease in the leverage ratio, suggesting limited deleveraging, although it remained the most highly leveraged firm in the sample. METRO S.A. exhibited the most pronounced improvement in capital structure, with a significant reduction in leverage, indicating decreased reliance on debt financing during the pandemic. Conversely, Masoutis S.A. showed an increase in the leverage ratio, indicating greater reliance on debt to support operations during the COVID-19 period. Similarly, ANEDIK Kritikos S.A. presented a slight increase in leverage, maintaining a relatively high debt level. Finally, AB Vassilopoulos S.A., despite remaining the firm with the lowest leverage among those examined, recorded a notable increase in its leverage ratio, reflecting a deterioration in its capital structure.

Overall, the findings suggest that while some firms utilized the pandemic period to reduce debt exposure, others increased their reliance on leverage, highlighting non-uniform financial strategies across the sector.

Table 10: Summary of Statistical Test Results for Capital Structure

Ratio	Period	Mean	t-test	t-test (p-value)	Wilcoxon (p-value)
Leverage	Pre / COVID	5,0935 / 4,6738	0,536	0,620	0,893

However, the statistical analysis presented in Table 10 via paired sample t-test ($t(4) = 0.536$, $p = 0.620$) and the Wilcoxon test ($p = 0.893$) demonstrates that this change lacks statistical significance. The wide 95% confidence interval (-1.85 to 2.69) confirms the high variance between firms. The lack of a statistically significant shift suggests that the pandemic did not overturn the basic financial structure of the sector. High leverage remains a structural feature of Greek food retail, which traditionally relies on supplier credit and bank lending to finance network expansion. The resilience displayed confirms that major chains maintained their creditworthiness despite economic uncertainty (Brigham & Ehrhardt, 2020).

5.4. Managerial Implications

In light of macroeconomic data, where the Greek economy recorded a GDP contraction of 8.2% in 2020, the supermarket sector functioned as a pillar of stability (Bank of Greece, 2021). The increase in sales volume due to restrictive measures acted as a countervailing factor against escalating operating costs, highlighting critical managerial implications for the future.

Primarily, the need to integrate comprehensive crisis management scenarios into strategic planning becomes imperative, as firms that develop flexible operational strategies exhibit enhanced stability during periods of external shocks. Furthermore, strengthening financial flexibility by prioritizing liquidity buffers and safeguarding the supply chain through supplier diversification are now fundamental prerequisites for maintaining service levels under adverse conditions. Concurrently, digital transformation and the expansion of e-commerce channels emerged as catalytic factors in performance differentiation, allowing firms to respond to

rapid shifts in consumer patterns in real time. The study concludes that the sector's financial resilience was not coincidental but the result of the leading chains' ability to align their practices with long-term recovery trends and leverage digital data analytics tools. In conclusion, the empirical analysis substantiates that firm size, strategic readiness, and the speed of response to technological challenges constitute the central axes for ensuring sustainable growth in an ever-changing global economic environment, allowing the sector not only to absorb shocks but also to thrive in crisis conditions.

6. CONCLUSION

The present quantitative research documents the remarkable financial stability exhibited by the Greek supermarket sector during the COVID-19 pandemic crisis. Despite the observed improving trends in profitability ratios (NPM, ROA) and liquidity, the identified statistical non-significance suggests that these changes reflect individual corporate strategies rather than a universal sectoral shift.

Specifically, the resilience of profitability is attributed to the surge in sales volume resulting from restrictive measures (lockdowns), which acted as an effective countervailing factor against the escalation of operating and protection costs. Simultaneously, the maintenance of adequate liquidity levels highlights the critical importance of strategic inventory management amidst supply chain disruptions, while the capital structure remained structurally stable, with leading chains avoiding over-leverage despite an environment of intense uncertainty. In conclusion, the study demonstrates that firm size and the speed of response to digital transformation constituted the catalytic factors for differentiating financial performance among the sampled companies.

Future research could extend the present study in several directions. First, a longitudinal analysis covering the post-pandemic period would allow for a deeper examination of whether the observed changes in profitability and turnover were temporary reactions to emergency circumstances or indicative of a long-term structural transformation in the food retail sector.

Second, future studies could incorporate firm-level data to explore the heterogeneity among different types of retailers (e.g., large supermarket chains versus small and medium-sized enterprises), thereby identifying distinct resilience patterns.

Furthermore, expanding the comparative framework to include more European countries or emerging markets could provide broader insights into how institutional environments and policy responses influenced sectoral performance. Finally, qualitative research methods, such as interviews with industry executives, could complement the quantitative findings by offering managerial perspectives on strategic adaptation, digital transformation, and supply chain restructuring during and after the COVID-19 crisis. Such approaches would contribute to a more comprehensive understanding of the pandemic's long-term implications for the food retail industry.

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Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this work, the authors used Google Gemini and generative AI-assisted technologies to assist with structural refinement and linguistic polishing. Following the use of these tools, the authors thoroughly reviewed and edited the content and take full responsibility for the final published article.

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