ASSESSING COMPETITIVENESS RELATIONS AS A STRATEGY BETWEEN FLOUR MILLING MANUFACTURING FIRMS: EVIDENCE FROM GREECE

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Abstract

The flour milling industry in Greece is one of the most dynamic sectors not only for Greek manufacturing but also for the whole Greek economy contributing at a high percentage in different economic indexes like value-added, turnover, and number of employees. On the other hand, the notion of competitiveness and its estimation is crucial for all firms because it determines at a high level the strategy which the firms may select to follow (Chikán, Czakó, Kiss-Dobronyi, & Losonci, 2022). For these reasons as well as the fact that no other studies for the specific sector in Greece have been met in the literature the current study holds a special interest both for academics and policymakers. The competitiveness can be estimated either with Porter's methodology or with the use of financial indexes (Fischer & Schornberg, 2007). In this paper, the second way is selected and the most used financial indexes are calculated for the two biggest in terms of market share flour milling manufacturing firms in Greece. A comparison between these firms as a case study takes place using a combination of the financial indexes for each one of them constituting the main authors' contribution by depicturing problems and current situation from this sector, while the use of econometric models may be the next step for the methodology of similar future research. In the end, the conclusions and the discussion accompanied by the proposals for future research close the current manuscript.

Keywords: Competitiveness, Strategy, Financial Indexes, Flour Milling Firms

Authors' individual contribution: Conceptualization — C.K.; Methodology — C.K.; Formal Analysis — P.P. and S.Z.; Investigation — S.K.; Writing — Original Draft — C.K. and P.P.; Writing — Review & Editing — PP., S.K., and S.Z.; Supervision — C.K.

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1. INTRODUCTION

The flour milling industry is one of the most significant segments of the Greek food and beverage industry in terms of employment, revenue, and value-added. This sector is characterized by fierce competition because it includes a sizable number of businesses, the majority of which are engaged in local or regional business. However, 4–5 significant flour milling enterprises account for the majority

of production (Institute for Commercial and Administration Programmes [ICAP], 2019).

Accordingly, the domestic food and beverage industry as a whole places a high value on the flour milling sector in terms of gross value contributed, production value per company, revenue, and personnel count. More specifically, the industry of flour milling accounts for 20% of the total gross value added, followed by the industries of fruits and vegetables (16%), dairy products and drinks (14%), and flour (14%). The flour milling business is in second with 15% of the production value, followed by beverages, vegetables, and meat with 14% each, and dairy products with 16%. The flour milling industry has the greatest number of businesses (58%), followed by the oils and fats industry (11%), and it also generates the highest amount of revenue (16%), followed by the dairy industry, fruits and vegetables, and meat products (14%). Last but not least, the flour milling sector employs 39% of the total workforce in the food industry, followed by the production of fruits, vegetables, and dairy products (12%), and meat and drinks (9%) (Foundation for Economic and Industrial Research, 2020, pp. 6–7).

On the other hand, competitiveness is a widely used concept that is difficult to be measured and defined accurately (Fischer & Schornberg, 2007). In the international literature, there are two main ways for estimating competitiveness. The first one has as its main representative Michael Porter (1985) with his famous "Porter's diamond", while the second one which is the most frequently used takes place with the use of financial indexes.

So, taking into account the importance of the flour milling industry for the Greek manufacturing sector connecting with the special importance of competitiveness estimation the main aim of this paper is to assess competitiveness relations as a strategy in the flour milling manufacturing firms by comparing specific financial indexes of the two biggest firms belonging in this sector. This estimation is expected to help the firms fully understand the role of their main financial indexes in what strategy they may select to follow in order to succeed in their main goals and to curve their future route. In addition, this choice is a main supporting factor in the sector of decision-making, a crucial factor for the survival of the firm (Abdullayev, 2022).

This aim holds special importance both for academic and policymakers and comes to fill the existing gap in the literature because no other studies for Greek flour milling manufacturing firms at a firm level took place before.

This paper is organized into several sections. Section 2 contains the literature review including papers for the competitiveness estimation starts. Section 3 describes research methods. Section 4 highlights the empirical result from the data set and Section 5 discusses the results obtained by this study. Section 6 concludes and cites the recommendations and limitations.

2. LITERATURE REVIEW

The notion of competitiveness has been extensively studied by international writers and researchers (Fischer & Schornberg, 2007). The current COVID-19 health crisis has compelled all players (academics, entrepreneurs, and managers) to separate themselves from their rivals through innovation due to the instability of the economy and business environment (Vrontis & Christofi, 2019). According to Porter's (1985) definition of a five-factor model of competitiveness in Porter's Five Diamonds, these factors are the threat of a new competitor's entry, the threat of substitute products, the bargaining power of suppliers and buyers, and the level of competition that currently exists.

Chikán (2008) created a model for evaluating both micro- and macroeconomic competitiveness, concluding that Porter's forces are an effective method for measuring competitiveness and bridging the gap between them. Centidamar and Kilitsioglu (2013) created a shared model at the micro and macro levels that identify factors that affect competitiveness based on an approach similar to Chikán (2008). The authors claim that managerial practices, competitive outcomes, and business resources all have an impact on competitiveness. At the national level, a competitiveness yearbook is a helpful resource.

Fischer and Schornberg (2007) define competitiveness as profitability, productivity, and market share. The UK's beverage sector was examined between 1995 and 2002, and the researchers concluded that it was the most competitive in terms of profitability, productivity, and market share, as well as the most competitive within the EU's 15 member states. Returning to the beverage industry and concentrating on the wine sector, in particular, it is discovered that the brand is a crucial factor in determining competitiveness (Scorrano, Fait, Maizaa, & Vrontis, 2019).

Similar to this, ownership status, organizational structure, and communication methods are crucial competitive criteria for winemaking businesses (Iaia et al., 2019). Geographical location is another element that affects a country's ability to compete in the global market (Notta, Vlachvei, & Samathrakis, 2010). The competitiveness of the food and beverage industries varied greatly amongst EU members during the period 2002–2007, primarily due to geographic location. Food quality and safety affect the entire supply chain, from the producer to the consumer, as well as competitiveness (Mattas & Tsakiridou, 2010).

Productivity in the Italian food business has a significant role in determining competitiveness (Lauretti & Viviani, 2010). According to Crescimanno, Galati, and Bal (2014), among nations like Spain, Turkey, and Italy, Turkey experienced the smallest drop in competitiveness since the economic crisis. Turkey also has the lowest per capita income. In contrast to Crescimanno et al. (2014), Harvey, Hubbard, Gorton, and Tocco (2017) contend that innovation, its application, and the creation of distinct goods foster sector competitiveness.

Wijnands, Van Berkum, and Verhoog (2015) found that attaining a competitive advantage is the most crucial success element after using a variety of commercial indicators and a competitive advantage to assess competitiveness and profitability in the food business. According to Firlej, Kowalska, and Piwowar (2017) adopting and implementing innovations, having a favorable trade balance, and exporting are all important aspects of gaining a competitive edge in the Polish food

business. According to Suchanek and Kralova (2019), the competitiveness of the food industry is determined by and stimulated by consumer satisfaction, adequate product information, and corporate compliance with existing rules.

The competitiveness of the Greek food and beverage industry is greatly impacted by human resource management and training (Petropoulos, 2019). According to Ragimun and Widodo (2019), and Bigliardi, Ferraro, Filippelli, and Galati (2020), increasing exports is the best way to boost the competitiveness of the Indonesian food industry and encourage the use of new technology.

Tsoukatos, Psimarni-Voulgaris, Lemonakis, and Vassakis (2017) assert that implementing quality management systems has a greater positive impact on manufacturing enterprises' competitiveness in Greece than doing research and development. A Global Index of regional competitiveness for Italian manufacturing enterprises was also created by Vrontis, Tardivo, Bresciani, and Viassone (2018). Their study revealed significant regional variability, highlighting the fact that Italian industry is mostly based on a small number of fiercely competitive regional systems.

Additionally, Vrontis, Christofi, and Katsikeas (2020) concluded that a variety of factors, including cause-related marketing, can contribute to international competitiveness in addition to factors like brand name and innovation in their literature review on cause-related marketing and its implications on competitiveness. Zanotti, Reyes, and Fernandez (2018) investigated the connection between the brewing industry's competitiveness and operational and financial performance. The study's method of choice was a confirmatory and exploratory factor analysis, which was followed by the use of structural equation modeling. Two hundred fourteen (214) brewery businesses represented more than 12 European economies. The competitive design of the industry, according to the study, greatly influences financial performance but not necessarily operational performance. A company's financial performance is not always correlated with its organizational structure.

Kuzminski, Jalowiec, Masloch, Wojtaszek, and Miciula (2020) conducted an analysis of the variables affecting the competitiveness of manufacturing firms. The following elements were examined: 1) the size of the business; 2) the amount of competition; 3) the number of suppliers and customers, an evaluation of the dynamics of supplier and customer collaboration over the previous five years; and 4) the nature of the market for the company's products. According to the findings, there are comparatively more competitive organizations than those who have maintained their relationships throughout the previous five years. Additionally, businesses that appear to have low levels of competitiveness are among those whose relationships with suppliers have deteriorated recently.

In a different study, Chikán, Czakó, Kiss-Dobronyi, and Losonci (2022) linked the competitiveness of businesses from the perspectives of operations and strategic management. They investigated the Hungarian manufacturing industry using a resource-based view of the business, resource-based view (RBV) theories, and the measure of the Firm Competitiveness Index (FCI). The findings show that whereas regular production capabilities are not significantly connected with firm-level competitiveness, dynamic production capabilities are. Additionally, Bargoni, Bertoldi, Giachino, and Santoro (2022) discovered that building networks and clusters between small and medium-sized businesses is an effective technique for enhancing competitiveness in Italian agro-industry firms.

3. RESEARCH METHODOLOGY

As referred to above, in the international literature, there are two main ways for competitiveness estimation. The first one is according to Porter's (1985) methodology, while the second one is with the use of financial indexes. In this work, the second way is selected and presented below.

The two most important Greek flour milling manufacturing firms in terms of sales, turnover, and employees are selected as a case study for the estimation of these indexes while the published annual balance sheets for the 2016–2020 period use the basis for the financial indexes' estimation. The signs of recovery which the flour manufacturing firms appeared after the international financial crisis — and then the Greek economic crisis — accompanied by the "hard" COVID-19 period which followed make the specific time period have special importance for the competitiveness estimation and the selection of the proper strategy for the flour milling manufacturing firms.

According to the Industrial Organization Theory ratio analysis is used with great frequency as a useful tool for investigating financial statements. Through this analysis, the numerical or quantitative relationship between two numerical data of a financial statement is determined to determine the strengths and weaknesses of a company as well as its current financial position and historical performance. It helps various stakeholders to evaluate certain aspects of a company's performance.

For the assessment of these indicators, the two most important Greek flour companies (E.J. Papadopoulos S.A. and Violanta S.A., which are the largest companies in the Greek flour industry) are selected as a case study in terms of sales, turnover, and employees, while their published annual balance sheets (for the years 2016–2020 that are at the end of Greek economic crisis till the COVID-19 era) are used as the basis for the assessment of the financial indicators that was possible to be found in their internet sites. There is a two-fold classification of numerators: 1) the traditional classification and 2) the functional one which is the one that is used the most since the main purpose of the analysis is to inform about the financial performance (profitability), its financial position as well as its changes (Kantzos, 2013).

According to the existing literature (Chikán et al., 2022; Bargoni et al., 2022), the most used number indicators are eight. The *net profit ratio* and the *return on equity* (ROE) are the most important profitability indicators and are essential for the extraction of significant results since profit is the main objective of all businesses. The net profit ratio is a widely used profitability ratio that shows the relationship between net profits before taxes and net sales. It is calculated by dividing net profit (before taxes) by net sales. The ROE ratio is widely

used to measure the overall profitability of the company from the perspective of preferred and common shareholders and is obtained by dividing net profit by equity.

Liquidity ratios are also very important in data extraction because they measure the adequacy of circulating and liquid assets and help to evaluate the company's ability to pay its short-term debts (Gikas, 2002). The most used indicator is that of general liquidity because it is an effective tool for evaluating the short-term solvency position of a company and is calculated by dividing the total current assets by the total short-term liabilities of the company.

The *inventory turnover ratio* is an activity indicator that is an important tool for assessing inventory liquidity. This ratio measures how many times a company has sold and replaced its inventory during a specific time period (Notta et al., 2010). The inventory turnover ratio is calculated by dividing the cost of goods sold by the average inventory at cost prices.

The *asset turnover ratio* indicates how much the company's assets are used to generate sales and is calculated by dividing sales by the total assets of the company being studied. The higher the index, the better the company's efficiency (Batsinilas & Patatoukas, 2012).

The *equity to fixed assets ratio* shows what percentage or part of the firm's fixed assets were bought or paid for with shareholders' money. The *equity to total capital ratio* shows the contribution of shareholders to the company's total capital and finally, the *current assets to total liabilities ratio* shows the liquidity of the business in terms of its capability to pay off all its short-term and long-term obligations

In the next section, the results from the specific financial indexes estimation accompanied by a short comparison between the firms are presented.

4. RESULTS

Continuing with the results, the estimation starts with the net profit ratio and the ROE ratio, continuing with the general liquidity ratio, the inventory turnover ratio, the asset turnover ratio, the equity to fixed assets ratio, the equity to total capital ratio, and the current ratio assets to total liabilities, for the businesses E.J. Papadopoulos S.A. and Violanta S.A. which are the largest companies in the Greek flour industry as referred above.

4.1. Performance indicators

Firstly, regarding the net profit ratio and the results of E.J. Papadopoulos S.A., the net profit index has shown five profitable years with a slight increase in this index. Table 1 shows a significant increase in sales and this is accompanied by a slightly larger increase in net profits before taxes and thus the ratio increases. The increase in sales which results in an increase in profits holds great importance for the specific firm due to the fact that it has the ability to increase its market share and to make investments as a development strategy. From the other part, the results of Violanta S.A. show that after ups and downs for all five years, the current index of the company Violanta S.A. is in all years with a positive sign and therefore with profits before taxes, regardless of the level of profits. The increase in profits between the years 2016 and 2020 as well as the sales recorded by the company during the same period is significant. A comparison of these prices with industry prices gives more reliable conclusions to the analyst making them able to understand the reasons why these ups and downs happen and as a result avoid them.

Next, considering the ROE ratio, the results of E.J. Papadopoulos S.A. reveals that the return on equity ratio overall shows a slight upward trend between the years 2016–2020. An increase in net profits (before taxes) and equity can be seen in Table 1. In five years, the index yields a total of 59.96% profits and per year (five-year average) 11.99% percentages that reasonably satisfy the company's shareholders. From the other part, the results of Violanta S.A. depictures that this company for the five years — by analyzing its performance — has only shown positive net profits, despite their fluctuations. For the five-year period 2016–2020, the profits of Violanta S.A. is 113.68% while the average annual return is 22.74%. So, taking into account the specific index, it is verified that the two firms of this case study present the conditions of this sector helping this work to conclude with safer results.

Table 1. Performance indicators analysis

Performance indicators	*2016*	*2017*	*2018*	*2019*	*2020*	*Mean*
Company E.J. Papadopoulos S.A.						
Net profit ratio	7.02%	7.13%	7.69%	8.11%	8.33%	7.66%
Return on equity ratio	11.10%	11.14%	11.60%	12.41%	13.71%	11.99%
Company Violanta S.A.						
Net profit ratio	17.58%	15.86%	13.29%	19.24%	14.73%	16.14%
Return on equity ratio	22.38%	22.76%	22.45%	30.90%	15.19%	22.74%

4.2. Liquidity ratios

Considering the category of liquidity ratios and examining the most representative current ratio, the results of E.J. Papadopoulos S.A. show that the values of the current ratio show good behavior in the first three years and a mediocrity a little higher than unity but below 1.5. The decline in the index is due to the significant increase in short-term liabilities in relation to the decline in current assets. The general liquidity ratio is characterized as good for 3 years and moderate for 2 years. Furthermore, the results of Violanta S.A. for the current ratio have shown significant values throughout the years and despite its ups and downs, it is always at high levels. Thus, a well-characterized liquidity level for both two firms gives them a specific competitive advantage against their competitors because they can face all their needs and obligation which may occur.

Table 2. Liquidity ratios

Liquidity ratios	*2016*	*2017*	*2018*	*2019*	*2020*	*Mean*
Company E.J. Papadopoulos S.A.						
Current ratio	1.93%	2.00%	2.04%	1.36%	1.29%	1.72%
Company Violanta S.A.						
Current ratio	3.01%	3.47%	3.03%	4.08%	3.55%	3.43%

4.3. Activity indicators

For the activity ratios, the inventory turnover ratio for the company E.J. Papadopoulos S.A. seems to have stability, with a slight downward trend, and due to the special product, the days of recycling of the goods fluctuate as they should at low levels. A comparison with other industries or with the industry index provides the analyst with better conclusions. Furthermore, the results of Violanta S.A. defeats the flour milling industry Violanta S.A. has to show a fairly high inventory turnover ratio in the first year (i.e., average or bad) but as shown in Table 3 it is improving (days are decreasing). This may help the specific firm to become more competitive and to gain more profits.

For the second ratio of this category, the asset turnover ratio, the study results of E.J. Papadopoulos S.A. show good values in general which fluctuate around the unit. A significant increase in the number of sales is observed, which is accompanied by a parallel increase in total assets. With this behavior, the indicator is characterized as a good indicator giving the specific firm the ability to sustain their profits becoming more competitive. From the other part, the results of Violanta S.A. reveals that the asset turnover rate all the years is around the unit with small or larger changes. Changes in the index from year to year cannot change the classification of this index, i.e., this index in five years is an average but also a good index. A very impressive element of Table 3 is the very large increase in sales recorded by the company between the years 2016–2020. Following this trend, the asset turnover ratio increases the competitiveness of both two firms.

Table 3. Activity indicators

Activity indicators	*2016*	*2017*	*2018*	*2019*	*2020*	*Mean*
Company E.J. Papadopoulos S.A.						
Inventory velocity ratio	46	45	45	42	42	44.00
Asset turnover velocity ratio	0.90	0.93	0.93	0.94	0.96	93.20%
Company Violanta S.A.						
Inventory velocity ratio	59	49	43	37	35	44.60
Asset turnover velocity ratio	0.83	0.96	1.12	1.06	0.78	95.00%

4.4. Sustainability indicators

In the category of the sustainability ratios and the equity to fixed assets ratio, the results of E.J. Papadopoulos S.A. supports that the ratio of equity to fixed assets is close to 100% every year, which is considered the lowest good value for this ratio. The changes are small and there is a relative parallel increase in the company's equity and fixed assets. This cannot be characterized as a pretty good indicator for the company. Furthermore, the results of Violanta S.A. show that this index is always much higher than 100% and is thus considered an excellent index, without its fluctuations affecting the characterization of the index. Another important element of Table 4 is the large increase in equity and the larger increase in fixed assets. So, comparing the two indicators between the two firms of this case study it can be seen the existing difference which may happen due to their differences in their capital structure as a whole.

The second ratio of this category, the equity to total capital ratio, for the results of E.J. Papadopoulos S.A., for all 5 years, shows very good values, higher than 50%, and thus this ratio is a good indicator for the company. An approximately parallel increase in equity and total capital is observed between the years 2016 and 2020. Thus, the ratio of equity to total capital is a good indicator for this company due to prices. From the other part, the results of Violanta S.A. in this indicator move higher than the smallest good level, 50%, and with a tendency to improve between the 2016–2020 period. The equity to total capital ratio for the biscuit industry Violanta S.A. for the period 2016–2020 receives good values and is characterized accordingly.

Table 4. Sustainability indicators

Sustainability indicators	*2016*	*2017*	*2018*	*2019*	*2020*	*Mean*
Company E.J. Papadopoulos S.A.						
Equity to fixed assets ratio	93.83%	100.10%	109.66%	95.65%	89.63%	97.77%
Equity to total funds ratio	56.80%	59.31%	61.62%	61.74%	58.33%	59.56%
Current assets to total liabilities ratio	91.36%	100.14%	114.15%	92.66%	83.80%	96.42%
Company Violanta S.A.						
Equity to fixed assets ratio	228.30%	296.41%	263.17%	272.33%	170.22%	246.09%
Equity to total funds ratio	64.90%	67.09%	66.46%	65.99%	75.21%	67.93%
Current assets to total liabilities ratio	203.95%	235.15%	222.85%	227.13%	230.64%	223.94%

Last, for the current assets to total liabilities ratio, the results of E.J. Papadopoulos S.A. show that the ratio of current assets to its total liabilities has the desired values, i.e., close to 100%, and only in 2020 does the ratio drop a little. There are small or larger fluctuations but every year the index is

around 100% and therefore this index is characterized as a good index. Furthermore, the results of Violanta S.A. claims that the values of this indicator are high, much higher than 100% with similar fluctuations without affecting its characterization, that is, it is a good indicator for the biscuit industry Violanta S.A. So, both the two under study firms can be characterized as reliable in the market and they may be developed in new markets following extended strategies for their development.

5. DISCUSSION

Taking into account the presentation of the previous results, the increase in the profitability of both companies under study is due to an increase in the efficiency of their own funds, which has the consequence that, despite the ups and downs shown by their liquidity, it also moves to satisfactory levels which is line with other similar studies (Fisher & Schornberg, 2007; Notta et al., 2010; Bargoni et al., 2022). The speed of stock renewal does not appear to be particularly high even though it shows signs of improvement in the company Violanda S.A., an element which is probably due to the specificity of the products of the flour industry, which is not the case with the speed of assets which appears satisfactory in both companies.

In terms of sustainability, the ratio of equity to fixed assets moves at low levels for the E.J. Papadopoulos S.A. company, in contrast to the ratio of equity to total capital, which shows satisfactory values, while as regards the Violanta company, the relationship between these ratios is inverse, which also found in similar studies (Ragimun & Widodo, 2019). Finally, with regard to the ratio of total assets to liabilities, a fairly satisfactory element appears, which is largely due to the utilization of the existing profits mentioned above by the companies in question.

Completing this section and taking into consideration the results mentioned above it can be accepted that the two most competitive Greek flour milling manufacturing firms present good performance in their understudy financial data, which gives them the ability to curve extended strategies in new markets increasing their market share and becoming more competitive.

6. CONCLUSION

Concluding with the current manuscript the great importance of the flour industry both for the manufacturing sector and for the entire Greek economy in terms of economic size is generally accepted. The lack of previous work in the flour industry sector combined with the particular importance of determining competitiveness as a factor determining the strategy that will be followed by the companies in question acquires particular interest both at the political decision-making level and at the academic level.

On the other hand, the determination of the indicators and the possible relationships such as the indicators of efficiency, liquidity, activity, and sustainability as well as their individual indicators give a clear picture of the existence of intense competition between the two largest companies in the sector and, by extension, the rest of the prevailing picture in the airline industry, even though the indicators express a single variable and do not take into account other important factors such as political and economic conditions as well as particular demand conditions.

In addition, taking into consideration the fact that only two flour milling manufacturing companies are studied is probably a limitation of the research, but the fact that these two companies present the highest results in terms of market share and other different economic sizes is a guide for safe conclusions about the conditions and trends in the sector. Also, the creation of an econometric model which will take into account other factors for the competitiveness estimation may help in safer results regarding the selection of the proper strategy for the specific firms.

The investments of the profits of these companies in extroversion strategies such as increasing exports, creating networks and in general, expanding into new markets is the subject of further current research by the authors of this paper.

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