

# Investment Analysis of Drinks and Soft Drinks Firms: The Weighted Ratio Analysis in Modeling in Excel

Mengxiang Zhang\*

Social Science, University of California, Irvine, the U. S.

\*Corresponding author: mengxiz7@uci.edu

**Abstract.** Financial innovation, Information System and technology application today has become the most popular topic in financial analysis. Professional researchers and data analysts working in the financial and economic area actually applied various modeling tools to make estimation and evaluation for the firm's financial performance. Data analysis and ratio analysis are traditional tool in financial analysis, but also provide new ideas and models in the evaluation of the stock performance. The application of the modeling in weighted ratio analysis in excel would help investors and other stakeholders to understand how the firms are ranked based upon their financial performance. The soft drink industry develops quickly after the industrial revolution and becomes a large quick consumption market in the modern world. The cost management in modern production lines in this market increases the competition and product differentiation. This paper, it is aimed at investigating the performance of the drink and soft drink corporations to provide investment analysis. According to the empirical analysis, the capital structure, cost and revenue management, profitability and growth are the main consideration for investors to make a decision. In this study, Coke Cola, Pepsi and Monster Beverage Corporation are the three main target firms. Their five-year profitability performance is examined based on the ratio of P/E, EPS growth and Sales/Assets. In terms of the weighted ranking process, Coke Cola is ranked with the highest weighted score to show strong growth and profit-generating. The report has certain limitations such as time horizon limitation and sampling scale limitation of firm number and ratio number. It provides the further opportunity to make a wider investigation and some useful insights for investment and strategy. Overall, these results shed light on guiding further exploration of investment analysis for the soft drink industry.

**Keywords:** soft drink industry; application of software; profitability; financial performance; investment strategy.

## 1. Introduction

Drinks and soft drinks play an important role in the consumption market, and in the different business cycles, these firms might perform differently compared with the other firms. The development of the soft drink industry does not have a long history because this product is an invention after the Industrial Revolution. In the early year of this product, it was made by small family stores and candy shops as a complement to sell. However, large business operators notice the profitability of this industry when they find people's preference in consuming them. In the modern world, the soft drink industry is occupied by large multinational corporations which have strong brands and cover the global market such as Coke Cola and Pepsi.

The previous empirical research provides the supportive evidence and method guide for this report. The maximization of the shareholders' profit and benefits is the management's primary goal and it would be reflected in the daily operation and stock performance [1]. It is important for the investors to understand the characteristics of the firm's nature, the industry performance, the earning generation, growth, long-term strategy, and other key financial factors to evaluate their investment decisions. Investors may pay a lot of attention to the high percentage of debt to total capital. When the debt ratio is high, the firm's value may be undervalued by investors. The investors who focus on the drink and food industry are mainly concerned about the health of cash flow management and debt management, especially in capital structure, and cost-profit management [1]. Contemporaneity, with the modern production line application, more and more small soft drink firms decide to merge and acquire with the larger soft drink firms to find new ways in the long-run development. One possible reason is that

the cost management in modern production lines increases competition and product differentiation [2]. Dubé emphasizes that customers' increasing demand stimulates the market to become more competitive.

The researchers have found that the own-price elasticity for a soft drink is about -1.37, indicating that the consumption quantity of the soft drink would decrease by 13.7% when the price of soft drink increase by 10% [3]. The soft drink has substitutes (e.g., food and beverage) with a cross-price elasticity of 0.63. On this basis, when the price of soft drinks increases by 10%, the consumption of the other goods would increase by 6.3% [3]. The soft drink has the specific characteristics of the nature of inferior goods. One special nature is that when people's income decreases, people tend to consume more soft drinks than before [4]. It would connect with some complex physical and psychological reasons. However, one potential reason is that soft drink is cheap and easy to consume, even if it is not good for the health. It could easily bring happiness to the customers and during the recession period, the consumption of soft drinks actually shows an increasing trend.

In the soft drink industry, customer choice and preference mainly come from product differentiation. For example, in the early history of the soft drink market development, the special new favor and new taste could create market power to attract more customers. Subsequently, the product differentiation would be the new energy to drive the new market [5]. The classical example is the energy drink Monster which quickly wins the likes of the young generation. Contemporaneity, old brands need to merge the new product to create better product diversification to cover more markets [6].

The current strategy for large multinational corporations is to enter developing countries such as Vietnam in Asia and Kenya in Africa. These new markets are in the developing process and with a large group of potential customers. However, the uncertainty in competition, politics, and financial markets in the emerging market would bring significant challenges and risks [7]. The local culture and domestic taste would also require the MNCs to make further research before making the entry decision. In some specific period in the business cycle, the soft drink firms might face a similar challenge as the other quick consumption firms. The first challenge is that these firms also face pressure on the finance and capital management side [8]. Especially, the high debt in the capital structure would bring high pressure on cash flow management, when the interest repayment would affect the free cash owned by the firm. It would affect the long-run development by reducing the research and innovation costs. Meanwhile, the merge activities are reduced during the recessions and market power for large brands might be influenced negatively [8].

To understand the financial performance of the firm, five key ratios as Profit Margin, Return on Assets, Return on Equity, Capital turnover ratio, and Expense ratio would be the primary consideration [9]. These five ratios could exhibit the strengths and weaknesses of the soft drinking industry in the past several years to provide some supportive resources for investment decision-making. Meanwhile, researchers point out that the operating income and profitability are still the primary target for the soft drink market investors [10]. It would reflect the capacity of the business owner in operation and management. At the same time, the long-run growth trend could meet the expectation of the investors to examine the future price increase and bring a better return for investors. These two key factors could exhibit productivity improvement and cost & revenue management by the firms.

In this paper, the profitability and growth would be examined. Profitability is still the main and most significant indicator in ratio analysis to examine the firm performance. In the introduction, industry background, empirical research, and research target are presented. The analysis uses five years of financial performance for the most important three large firms in the soft drink market. The historical performance analysis and the weighted ranking process would be done in the second part with the analysis and limitation discussion. In conclusion, the investigation in results and the further research suggestion would be given. The rest part of the paper is organized as follows. Sec. II will discuss the methodology of the weighted score examination and also the formulation of the ratios

which are used in the research. Sec. III will discuss the results and limitations of the research. Eventually, a brief summary will be given in Sec. IV.

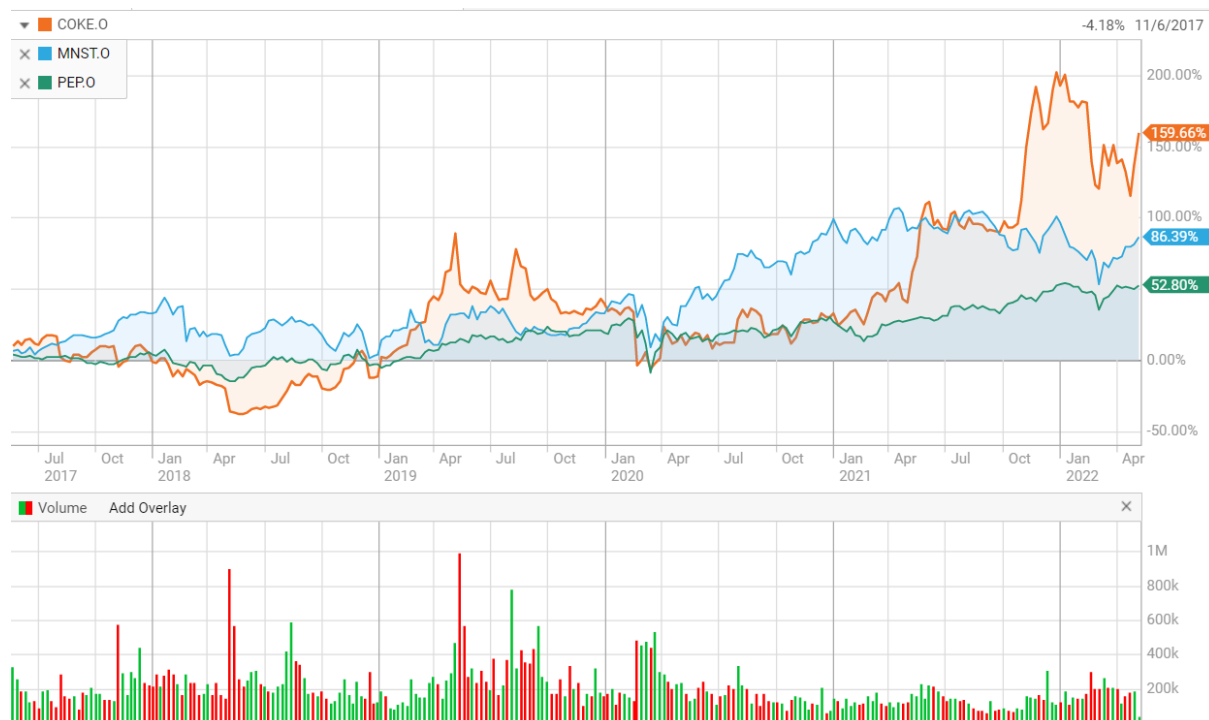


Figure 1. The price trends of COCE, MNST and PEP.

## 2. Methodology

In this research, Coke Cola, Pepsi, and Monster Beverage Corporation are the three main target firms, where the price trends among the five years are given in Fig. 1. The data comes from five years of financial performance and stock information for five thousand public corporations from 2016 to 2020. The historical financial performance data is from Yahoo finance.com. One interesting fact is that in the past five years, the business cycle phase in the US is from expansion to recession. The recession came from the beginning of 2020 and still lasts due to the COVID19 pandemic. The three main ratios used in this report are the Price/Earnings ratio, Earnings per Share Growth Ratio, and Sales/Assets ratio. The formulae are shown as:

$$\text{Price Earning ratio} = \frac{\text{Close Price}}{\text{Earnings per share}} \quad (1)$$

$$\text{Earnings per share growth ratio} = \frac{EPS1 - EPS0}{EPS0} \quad (2)$$

$$\text{Sales Asset ratio} = \frac{\text{Annual Revenue}}{\text{Total Assets}} \quad (3)$$

After calculating the three ratios in five years, the average of these three ratios is found as well. It would be used as the key variable in the weighted score evaluation. The weights for the three ratios are 0.3 for P/E, 0.5 for EPS growth, and 0.2 for the Sales/Assets ratio. The reason is that the profitability and growth would be equally calculated in the weights. However, both earning for stock and earning for revenue are considered and earnings for the stock are weighted slightly heavier on the profitability side. The EPS growth would be the only factor used in the consideration of growth.

Average of these three ratios is found as well. It would be used as the key variable in the weighted score evaluation. The weights for the three ratios are 0.3 for P/E, 0.5 for EPS growth, and 0.2 for the

Sales/Assets ratio. The reason is that the profitability and growth would be equally calculated in the weights. Nevertheless, both earning for stock and earning for revenue are considered and earnings for the stock are weighted slightly heavier on the profitability side. The EPS growth would be the only factor used in the consideration of growth.

**Table 1.** Key Ratio Performance In Five Years Analysis

| COKE         |              | 2016    | 2017    | 2018    | 2019    | 2020    | Average |
|--------------|--------------|---------|---------|---------|---------|---------|---------|
| P/E          | P/E          | 33.22   | 20.81   | -83.25  | 234.08  | 14.47   | 43.87   |
| EPS growth   | EPS growth   |         | 0.92    | -1.21   | -1.57   | 14.16   | 3.08    |
| Sales/Assets | Sales/Assets | 1.29    | 1.41    | 1.54    | 1.54    | 1.55    | 1.47    |
| MNST         |              | 2016.00 | 2017.00 | 2018.00 | 2019.00 | 2020.00 |         |
| P/E          | P/E          | 35.25   | 43.67   | 26.95   | 30.79   | 34.65   | 34.26   |
| EPS growth   | EPS growth   |         | 0.15    | 0.26    | 0.13    | 0.29    | 0.21    |
| Sales/Assets | Sales/Assets | 0.73    | 0.70    | 0.84    | 0.82    | 0.74    | 0.77    |
| PEP          |              | 2016.00 | 2017.00 | 2018.00 | 2019.00 | 2020.00 |         |
| P/E          | P/E          | 23.61   | 35.06   | 12.44   | 25.99   | 28.74   | 25.17   |
| EPS growth   | EPS growth   |         | -0.23   | 1.60    | -0.41   | -0.02   | 0.24    |
| Sales/Assets | Sales/Assets | 0.85    | 0.80    | 0.83    | 0.86    | 0.76    | 0.82    |

### 3. Results & Discussion

As listed in Table. I, it is found that Coke has generated the highest average P/E of the three firms. It has the year of significant negative in 2018, but in 2019 recovered strongly. In the EPS growth ratio, Coke also plays the strongest player of the three firms. It has a growth rate of more than ten times that of the other competitors. In the Sales/Assets ratio analysis, Coke wins the game again and gains double that of the other two firms. Clearly, in the past five years, Coke-Cola has dominated the performance in both growth and profitability.

As shown in Table II, Coke has a final score of 14.99. MNST has a score of 10.54 and Pepsi has a score of 7.55. Coke ranks first place with the highest weighted score, MNST ranks second place and Pepsi ranks third place. According to the analysis, Coke Cola still plays the strongest performance of the three firms in the past five years, even at the beginning of the recession.

However, it should be noted that the discussion and investigation in this paper do have some shortcomings and defects. Primarily only five years' data are included in the research. It means the examination only focuses on the recent five years while not covering the whole business cycle. The data is inconclusive to show the whole screen of the firm performance. In addition, the number of firms in this report is only three which could not represent the whole industry. Further examination should expand the brands and numbers of firms to cover more information. The current research result is not accurate to be used as an investment suggestion or commercial advice in the real world. Moreover, the specific period in the current market might be a special challenge in the market as well since the COVID19 pandemic has a significant difference compared with the other recession. It might be affected significantly due to the impact of the COVID19 pandemic, which might strongly influence sales and performance.

**Table 2.** Rank by weight

|              | Weight        | COKE  | MNST  | PEP  |
|--------------|---------------|-------|-------|------|
| P/E          | 0.3           | 13.16 | 10.28 | 7.55 |
| EPS growth   | 0.5           | 1.54  | 0.10  | 0.12 |
| Sales/Assets | 0.2           | 0.29  | 0.15  | 0.16 |
|              | Overall score | 14.99 | 10.54 | 7.83 |
|              | Rank          | 1     | 2     | 3    |

#### 4. Conclusion

In summary, this paper investigates the growth and profitability would be the most important two parts in an examination of the soft drink industry stock performance. According to the analysis, Coke-Cola is the first investment choice because it generates the highest weighted score in the analysis. It gets the first rank in the profitability in its operation in the last five years. Especially, its weighted rank score is about two times larger than Pepsi. One of the most important ratios is the EPS growth, which shows the potential capacity for the firm to generate profit in the future. Nevertheless, this paper still has limitations because it does not focus on the long-run financial performance and it only focuses on the three key ratios of profitability. Further research would focus on three areas. Firstly, the research target firms would be expanded into more firms, not only limited to the US market. Secondly, debt analysis, cash flow analysis, and capital structure should be included in the report to see a wider examination of the firm performance and operation. Thirdly, the time horizon could be expanded to more than twenty years to see the significant business cycle fluctuation in these firms. This research would be one attempt to examine the drink firms, but not for commercial suggestions. Overall, these results offer a guideline for industry investment analysis based on a fundamental index.

#### References

- [1] T. G. Ngo, and A. T. Dang. "Financial performance, dividend payment and firm value an exploratory research on Vietnam listed firms in the food and drink industry." VNU Journal of Science: Economics and Business vol. 32.2, 2016, 1.
- [2] J. P. Dubé, "Product differentiation and mergers in the carbonated soft drink industry." Journal of Economics & Management Strategy vol. 14.4 2005, pp. 879-904.
- [3] C. M. Guerrero-López, M. Unar-Munguía, and M. A. Colchero. "Price elasticity of the demand for soft drinks, other sugar-sweetened beverages and energy dense food in Chile." BMC public health vol. 17.1 2017, pp. 1-8.
- [4] T. Chan, "Demand for Soft Drinks: Characteristics, Corners, and Continuous Choice." RAND Journal of Economics vol. 37 2006, pp. 466-482.
- [5] R. W. Cotterill, A. W. Franklin, and L. Y. Ma. Measuring Market Power Effects in Differentiated Product Industries: An Application to the Soft Drink Industry. No. 1586-2016-134172. 1996.
- [6] E. Wang, C. Rojas, and F. Colantuoni. "Heterogeneous behavior, obesity, and storability in the demand for soft drinks." American Journal of Agricultural Economics vol. 99.1, 2017, pp. 18-33.
- [7] M. K. Joseph, "Market entry strategies pursued by Pepsicola company in entering the soft drink industry in Kenya." Online, 2013, Retrieved from [http://erepository.uonbi.ac.ke/bitstream/handle/11295/63425/Joseph\\_Market%20entry%20strategies.pdf?sequence=3](http://erepository.uonbi.ac.ke/bitstream/handle/11295/63425/Joseph_Market%20entry%20strategies.pdf?sequence=3)
- [8] M. Braun, and B. Larrain. "Finance and the business cycle: international, inter-industry evidence." The Journal of Finance vol. 60.3, 2005, pp. 1097-1128.

- [9] A. S. Sultan, "Financial statements analysis-measurement of performance and profitability: applied study of baghdad soft-drink industry." Research Journal of Finance and Accounting vol. 5.4 2014. pp. 49-56.
- [10] R. A. Jaf, H. Shatnawi, and F. Al-Kake. "The impact of strategic analysis for operating income on the performance evaluation case study on Baghdad soft drink company." International Conference on Accounting, Business, Economics and Politics, ICABEP. 2019