

Unit 29
Financial Statement Analysis: Horizontal and Vertical Analyses

ILO1. Limitations of Financial Statement Analysis

ILO2. Horizontal Analysis

ILO3. Vertical Analysis

ILO1. Limitations of Financial Statement Analysis

Despite the usefulness of accounting ratios and managerial benchmark, they are not without criticism or limitations. For example, industries can often use variations of accounting systems, or cost of goods sold, for instance in controlling inventory manufacturers could use FIFO, LIFO or the weighted average method. As such, comparing companies based solely through financial data can lead to inaccuracies. However, despite such concerns they still remain one of the best methods to gauge financial performance; comparing financial ratios and the use of industry standards, to provide corporate insight.

If we place ratios as a starting point, then we are free to employ other methods of analyses. In order to expand on these ratios, we may need to consider industrial trends, changes to both the internal and external environment, technology, and consumer preferences. Relying solely on a balance sheet now becomes very limiting. One way in which to add deep insights is through the following types of comparisons.

- Horizontal Analysis: Dollar and percent change
- Vertical Analysis: Common size appraisals

ILO2. Horizontal Analysis

A horizontal analysis is akin to a longitudinal analysis in that it analyzes data over a period of time. We can use this in two particular ways. Firstly, we have the capacity to compare dollar amount changes, and secondly to investigate percent changes over time. WE will use the fictional company Aspen to aid in our example.

Notice with the figures found in their balance sheets the column pertaining to increase in account balances. Therefore, it must also include a base year to calculate the origin of those changes. A column of percent change is included, with the relevant cash amounts and others included; dollar change (\$11,500), and percentage (48.9%).

| ASPEN CORPORATION | | | | |
|-------------------------------------|-------------------|-------------------|----------------------------|--------------|
| Comparative Balance Sheets | | | | |
| December 31 | | | | |
| | | | Increase (Decrease) | |
| | This Year | Last Year | Amount | % |
| Assets | | | | |
| Current assets: | | | | |
| Cash | \$ 12,000 | \$ 23,500 | \$ (11,500) | (48.9) |
| Accounts receivable, net | 60,000 | 40,000 | 20,000 | 50.0 |
| Inventory | 80,000 | 100,000 | (20,000) | (20.0) |
| Prepaid expenses | 3,000 | 1,200 | 1,800 | 150.0 |
| Total current assets | 155,000 | 164,700 | (9,700) | (5.9) |
| Property and equipment: | | | | |
| Land | 40,000 | 40,000 | - | 0.0 |
| Buildings and equipment, net | 120,000 | 85,000 | 35,000 | 41.2 |
| Total property and equipment | 160,000 | 125,000 | 35,000 | 28.0 |
| Total assets | \$ 315,000 | \$ 289,700 | \$ 25,300 | 8.7 |

Fig 29.1 Comparative Balance Sheet

We could perform a similar comparison for Aspen’s liabilities and equities with the following results. Their sales increased by 8.3%, but the net income decreased by 21.9%. The cost of goods sold increased by 14.3% but operating expenses increased by 2.1%.

| ASPEN CORPORATION | | | | |
|--|----------------------------|-------------------|-------------------|---------------|
| Comparative Income Statements | | | | |
| For the Years Ended December 31 | | | | |
| | Increase (Decrease) | | | |
| | This Year | Last Year | Amount | % |
| Sales | \$ 520,000 | \$ 480,000 | \$ 40,000 | 8.3 |
| Cost of goods sold | 360,000 | 315,000 | 45,000 | 14.3 |
| Gross margin | 160,000 | 165,000 | (5,000) | (3.0) |
| Operating expenses | 128,600 | 126,000 | 2,600 | 2.1 |
| Net operating income | 31,400 | 39,000 | (7,600) | (19.5) |
| Interest expense | 6,400 | 7,000 | (600) | (8.6) |
| Net income before taxes | 25,000 | 32,000 | (7,000) | (21.9) |
| Less income taxes (30%) | 7,500 | 9,600 | (2,100) | (21.9) |
| Net income | \$ 17,500 | \$ 22,400 | \$ (4,900) | (21.9) |

Fig 29.2 Comparative Income Statement

A longitudinal or horizontal analyses can be quite beneficial as it compares data from a number of accounting periods, and allows for the identification of trends and relevant changes. To calculate such trends, a base year is chosen with all years data being based on that percent change from the base year. Please see the example below of raw data.

| Item | Year | | | | |
|---------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | 1 | 2 | 3 | 4 | 5 |
| Sales | \$ 275,000 | \$ 290,000 | \$ 320,000 | \$ 355,000 | \$ 400,000 |
| Cost of goods sold | 190,000 | 198,000 | 225,000 | 250,000 | 285,000 |
| Gross margin | 85,000 | 92,000 | 95,000 | 105,000 | 115,000 |

Fig 29.3 Income Information

For our example Year 1 is the base year, and its amounts are valued at 100%. Year 2 data shows the percent increase from Year 1, and Year 3 compares data against Year 1 totals and so forth. The resulting data illustrates cost of goods sold growing faster than sales.

| Item | Year | | | | |
|---------------------------|-------------|-------------|-------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| Sales | 100% | 105% | 116% | 129% | 145% |
| Cost of goods sold | 100% | 104% | 118% | 132% | 150% |
| Gross margin | 100% | 108% | 112% | 124% | 135% |

Fig 29.4 Income Information Percentages

We can then transfer this information to a graph.

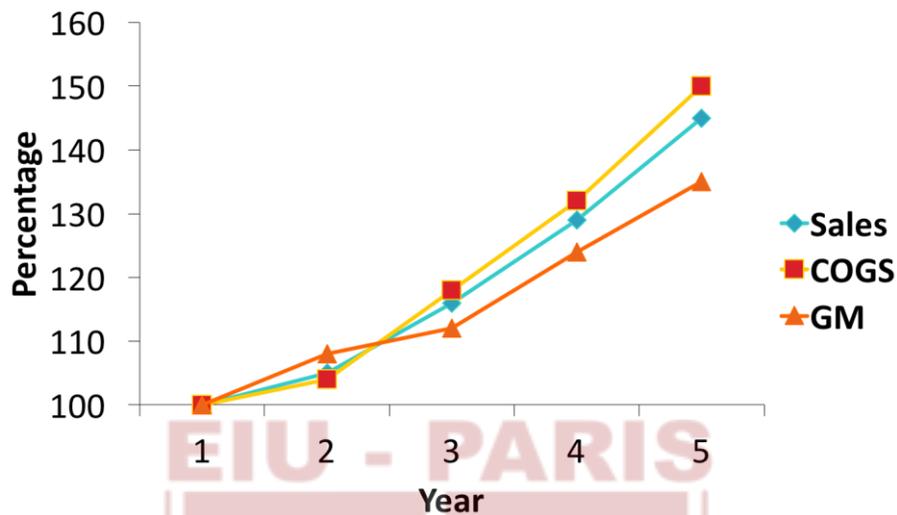


Fig 29.5 Trend Graph

ILO3. Vertical Analysis

Our second analysis is the vertical analysis. We'll use our Aspen Corporation to help our explanation of this comparison. The vertical analysis aims on the relationships among the data. For example, in a balance sheet, the account values are depicted as a percentage of total assets, or total liabilities. In a comparative income statement, all the account values are shown as a percentage of sales.

| ASPEN CORPORATION Comparative Income Statements For the Years Ended December 31 | | | | |
|---|-------------------------|------------|-----------|-----------|
| | Common-Size Percentages | | | |
| | This Year | Last Year | This Year | Last Year |
| Sales | \$ 520,000 | \$ 480,000 | 100.0 | 100.0 |
| Cost of goods sold | 360,000 | 315,000 | 69.2 | 65.6 |
| Gross margin | 160,000 | 165,000 | 30.8 | 34.4 |
| Operating expenses | 128,600 | 126,000 | 24.8 | 26.2 |
| Net operating income | 31,400 | 39,000 | 6.0 | 8.2 |
| Interest expense | 6,400 | 7,000 | 1.2 | 1.5 |
| Net income before taxes | 25,000 | 32,000 | 4.8 | 6.7 |
| Less income taxes (30%) | 7,500 | 9,600 | 1.4 | 2.0 |
| Net income | \$ 17,500 | \$ 22,400 | 3.4 | 4.7 |

Fig 29.6 Vertical Analysis

As shown, the sales amount is considered as the base with a value of 100%. In our example, the operating costs of last year represent 26.2% of sales, whereas they account for 24.8% of sales this current year. The common size percentages for the other accounts are also included.

References:

1. Managerial accounting, Ray Garrison-Eric Noreen-Peter Brewer - McGraw-Hill Education, 16 ed., 2018
2. Managerial accounting, John Wild-Ken Shaw - McGraw-Hill Education, 7ed, 2019
3. Management accounting, Will Seal-Carsten Rohde-Ray Garrison-Eric Noreen - McGraw-Hill Education, 6ed. - 2019

