Solution

# Productivity

The solution is shown below. Based upon these calculations, the manufacturing operation has done a good job to achieve 4.4% productivity. The rest of the operation had negative productivity to the point that they wiped out all of the manufacturing improvement and left the business with a 0.8% negative productivity.

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| --- | --- | --- | --- | --- |
| **Category** | **Prior Year** | **Current Year** | **Adjustment Factor** | **Adjusted Current Year** |
| Domestic Sales | $253,870,155 | $271,012,291 | 1.017 | $266,482,095 |
| International Sales | $197,902,254 | $229,067,322 | 0.986 | $232,319,799 |
| Direct Material | $103,761,723 | $113,855,651 | 1.022 | $111,404,746 |
| Direct Labor | $82,345,609 | $86,521,561 | 1.017 | $85,075,281 |
| Variable Overhead | $1,253,009 | $1,371,889 | 1.04 | $1,319,124 |
| Administrative Expenses | $71,879,810 | $79,140,893 | 1.033 | $76,612,675 |
| Engineering Expenses | $62,366,766 | $76,779,715 | 1.012 | $75,869,283 |
| IT Expenses | $42,096,461 | $50,153,471 | 0.989 | $50,711,295 |
| All Other Expenses | $39,210,105 | $48,764,031 | 1.025 | $47,574,665 |

These can be summarized as:

|  |  |  |  |
| --- | --- | --- | --- |
| **Category** | **Prior Year** | **Current Year** | **Adjusted Current Year** |
| Total Sales | $451,772,409 | $500,079,613 | $498,801,895 |
| Total Costs | $402,913,483 | $456,587,211 | $448,567,070 |
| Variable Costs | $187,360,341 | $201,749,101 | $197,799,152 |

The Sales/Cost Ratio for the prior year is 451,772,409 / 402,913,483 = 1.121

The Adjusted Sales/Cost Ratio for the current year is 498,801,895 / 448,567,070 = 1.112

The Productivity is (1.112 – 1.121) / 1.121 = -.0080 or -0.8%

The Sales/Variable Cost Ratio for the prior year is 451,772,409 / 187,360,341 = 2.411

The Adjusted Sales/Variable Cost Ratio for the current year is 498,801,895 / 197,799,153 = 2.522

The Variable Cost Productivity is (2.522 – 2411) / 2.411 = .0460 or 4.6%