# Catalyst® User's Guide

**A financial statement analyzer for small business**

**A product of Alliance Business Appraisal, LLC**

This document is set up to print double-sided

CATALYST ®



Revised January 2020

The noun catalyst is something or someone that causes a change and is derived from the Greek word katalύein, meaning "to dissolve."

# Prologue

## The fundamental objective of every business is to ***maximize owner wealth.***

This objective is measured via the firm's financial statements. The purpose of the Income Statement among all small businesses is to report the firm's Net Profit, a historical report of profit for the past month or year and is the source document for preparing your tax return.

The single most important insight a business owner needs to glean from the Income Statement is the firm's ***expected future cash flow***—NOT historical net profit! Net cash flow is the lifeblood of every business.

### ***Net cash flow is a fact; net profit is only an opinion***

*Catalyst* is a program that restates your business's historical financial performance in a way that will enable you to gain far better insight, control and improvement of expected future financial performance—especially expected future cash flow.

*Catalyst*, a product of Alliance Business Appraisal, will open your eyes to a whole new world of ways to improve the financial management of your company and maximize your wealth.

TABLE OF CONTENTS

# The Macro Commands

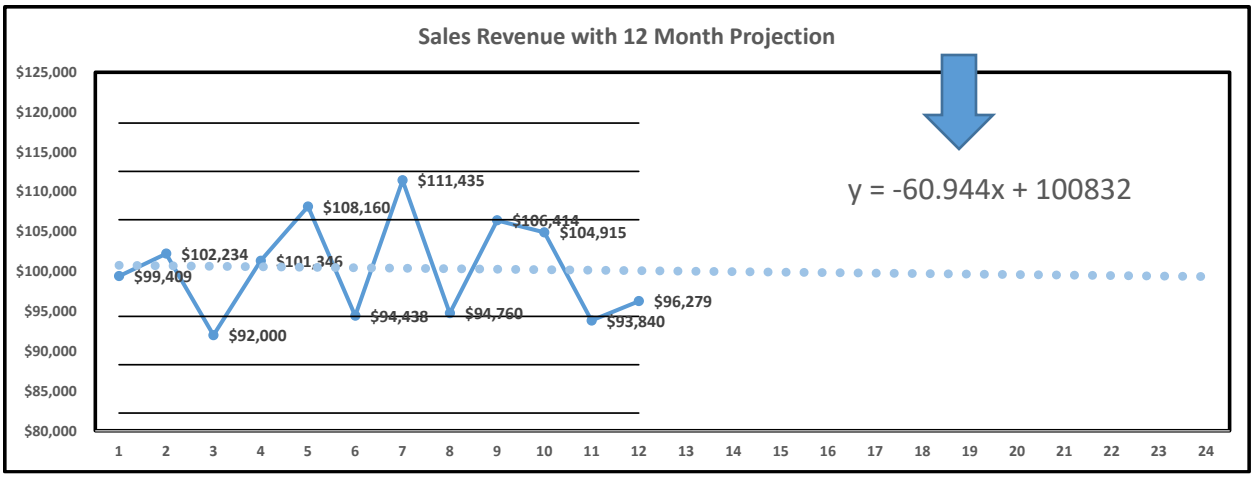
The Macro command tab is the user's home page.

There are four types activities for this workbook's user; Tasks, Updates, Performance Standard Resets and Views. All activities are initiated by clicking the appropriate macro button. This User's Guide provides detailed instructions on how to perform tasks that are not self-evident.

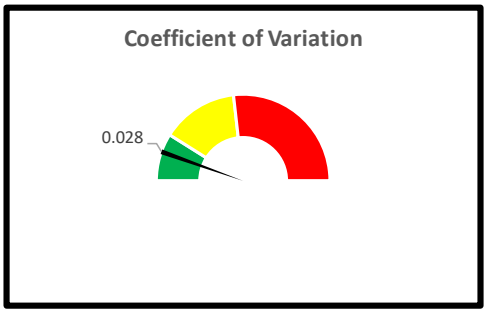
When executing the updates, always start with the update macro in the top left corner. Then, execute the updates down the rest of the first column, then start at the top of the second column and work down. Follow this update sequence for all four columns.

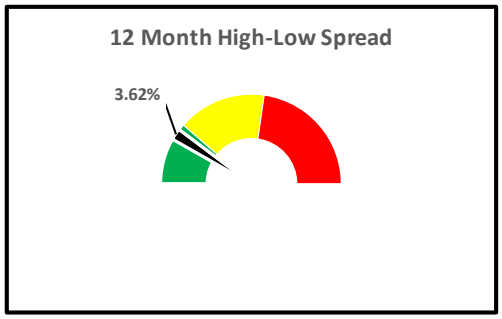

The update macros require the user to update the values employed in calculating the future projection lines. When you click an equation update button, in this example, projected future sales revenue, it will deliver you to this data table. As we see, this table requires you to input two numbers, in this example -60.94and 100832.

| 12 Month Projection | | -60.94 | 100832 |
|---|---|---|---|
| Apr-19 | $100,040 | | |
| May-19 | $99,979 | | |
| Jun-19 | $99,918 | | |
| Jul-19 | $99,857 | | |
| Aug-19 | $99,796 | | |
| Sep-19 | $99,735 | | |
| Oct-19 | $99,674 | | |
| Nov-19 | $99,613 | | |
| Dec-19 | $99,552 | | |
| Jan-20 | $99,491 | | |
| Feb-20 | $99,430 | | |
| Mar-20 | $99,369 | | |




The source for these two numbers appears on the chart immediately to the left of the data table. This is the equation for the projection line—the dotted line passing through the historical data and projected twelve months forward.




| Acceptability Ranges | | | | |
|---|---|---|---|---|
| Coefficient of Variation | | | 12 Month High-Low Spread | |
| Acceptable | 0.05 | Return to Macros | Highest Acceptable | 4.00% |
| Marginal | 0.08 | | Highest Marginal | 5.00% |
| Out of Control | 0.15 | | Out of Control | 8.00% |

All of your company's variable cost centers are bracketed by acceptable, marginal and unacceptable performance standards. These standards are established by the company' owner and or senior management. The significance of these performance standards will be explained momentarily.

# How to Interpret the Analyses

This financial performance report is an ideal tool to enable business owners and their employees to practice ***management by exception.***

Management By Exception (MBE) is a style of management that consists of focus and analysis of statistically relevant anomalies in system performance data. In a reasonably well-run company, most of the reported data will not reflect any statistically relevant anomalies most of the time. In these cases, a quick glance at a particular system or operation's historical performance data over a reasonably relevant lookback time period is all that is required. The analyses presented in this report are based on a *rolling 12-month* lookback time period. This "quick glance and pass" management technique therewith frees up a great deal of time that management can then devote to those situations that are anomalous in some way.

For example, if all operating costs are within a statistically expected or pre-defined acceptable range for the lookback time period except one particular cost center which is not performing within acceptable statistical parameters, only that operating cost requires further investigation and discovery of the root cause of unacceptable performance. Management by exception is intended to reduce the managerial load and enable managers to spend their time more effectively in areas where it will have the most impact.

The first report is the company's reformatted Income Statement. Then we see the company's balance sheet. The reformatted Income Statement makes possible a large number of analyses that are not possible to produce using the company's standard Income Statement format.

The first Income Statement analysis is the company's rolling 12 months sales revenue history ending with the most recent month's sales.

This report is based on the book *Turning Black Ink Into Gold: How to improve your company's profitability and market value through excellent financial performance reporting, analysis and control* by Toby Tatum. This book is published as an ebook. To obtain a copy Google 'Turning Black Ink Into Gold.'

# The Company's Financial Statements

## Original Income Statement Format

| Billy Bob's Barbecue | Mar-19 | |
|---|---|---|
| **Sales Revenue** | | |
| Food & Beverage Sales | $82,289.85 | 107.53% |
| Less Sales Tax | -$5,760.29 | -7.53% |
| Total Revenue (net of sales tax) | $76,529.56 | 100.00% |
| | | |
| Cost of Goods Sold | | |
| Food cost | $29,980.34 | 39.17% |
| Beer & Wine | $4,048.21 | 5.29% |
| Total Cost of Goods Sold | $34,028.55 | 44.46% |
| Gross Profit | $42,501.01 | 55.54% |
| | | |
| General & Administrative Expenses | | |
| Bookkeeping & Accounting | $264.75 | 0.35% |
| Charitable Contributions | $0.00 | 0.00% |
| Cleaning Materials | $433.91 | 0.57% |
| Depreciation Expense | $1,706.71 | 2.23% |
| Direct Labor | $14,730.77 | 19.25% |
| Direct Mail Advertising | $147.78 | 0.19% |
| Dues & Subscriptions | $75.00 | 0.10% |
| Employer's SSN | $1,225.43 | 1.60% |
| Federal Unemployment Insurance | $117.85 | 0.15% |
| Interest on Bank Loan | $423.05 | 0.55% |
| Newspaper Advertising | $1,509.24 | 1.97% |
| Outside Maintenance | $512.51 | 0.67% |
| Overhead on Owner's Salary | $610.00 | 0.80% |
| Overtime Labor | $927.55 | 1.21% |
| Owner's Automobile Expenses | $188.54 | 0.25% |
| Owner's Health & Life Insurance | $416.67 | 0.54% |
| Owner's Salary | $5,000.00 | 6.53% |
| Property & Liability Insurance | $425.46 | 0.56% |
| Radio Advertising | $1,509.24 | 1.97% |
| Rent | $5,893.84 | 7.70% |
| Repairs | $316.00 | 0.41% |
| Small Wares | $205.95 | 0.27% |
| State Unemployment Insurance | $176.77 | 0.23% |
| Travel & Entertainment | $0.00 | 0.00% |
| Utilities | $1,597.76 | 2.09% |
| Vacation Pay | $680.73 | 0.89% |
| Worker's Comp Insurance | $441.92 | 0.58% |
| Yellow Pages | $39.30 | 0.05% |
| Total General & Administrative Costs | $39,576.71 | 51.71% |
| Net Profit | $2,924.30 | 3.82% |

The bookkeeper for our hypothetical company, Billy Bob's Barbecue has produced a month-end income statement that typifies nearly all small (and many) midsize businesses. That is, that the format of this statement is to list sales revenue at the top, then present the cost of goods sold as a stand-alone cost center. After that, all remaining expenses are arranged in approximate alphabetical order.

This workbook is designed to accommodate whatever income statement format the subject company routinely produces.

Thus, the first step is to enter the revenue and expense data presented above into this workbook template.

The specific data importation method is explained later in this user's guide.

Reformatted Income Statement

| Billy Bob's Barbecue | Mar-19 | |
|---|---|---|
| **Sales Revenue** | | |
| Food & Beverage Sales | $82,289.85 | 107.53% |
| Less Sales Tax | -$5,760.29 | -7.53% |
| Total Revenue (net of sales tax) | $76,529.56 | 100.00% |
| | | |
| Cost of Goods Sold | | |
| Food cost | $29,980.34 | 39.17% |
| Beer & Wine | $4,048.21 | 5.29% |
| Total Cost of Goods Sold | $34,028.55 | 44.46% |
| Gross Profit | $42,501.01 | 55.54% |
| | | |
| Direct Labor Cost | | |
| Direct Labor | $14,730.77 | 19.25% |
| Overtime Labor | $927.55 | 1.21% |
| Vacation Pay | $680.73 | 0.89% |
| Employer's SSN | $1,225.43 | 1.60% |
| State Unemployment Insurance | $176.77 | 0.23% |
| Federal Unemployment Insurance | $117.85 | 0.15% |
| Worker's Comp Insurance | $441.92 | 0.58% |
| Total Direct Labor Cost | $18,301.02 | 23.91% |
| Total Direct Conversion Costs | $52,329.56 | 68.38% |
| Gross Margin | $24,199.99 | 31.62% |
| | | |
| Marketing | | |
| Newspaper Advertising | $1,509.24 | 1.97% |
| Radio Advertising | $1,509.24 | 1.97% |
| Yellow Pages | $39.30 | 0.05% |
| Direct Mail Advertising | $147.78 | 0.19% |
| Total Marketing Expenses | $3,205.55 | 4.19% |
| | | |
| Other Variable Costs | | |
| Cleaning Materials | $433.91 | 0.57% |
| Small Wares | $205.95 | 0.27% |
| Outside Maintenance | $512.51 | 0.67% |
| Repairs | $316.00 | 0.41% |
| Total Other Variable Costs | $1,468.36 | 1.92% |
| Total Variable Costs | $57,003.48 | 74.49% |
| Contribution Margin | $19,526.08 | 25.51% |

The income statement prepared by the subject company's bookkeeper is not presented in this report. The first page of data is the reformatted income statement.

This primary purpose for this income statement formatting protocol is to make possible numerous studies of the company's *cash Flow*. Both historic and expected future cash flow.

Robert Trueblood led an AICPA study group from 1971 to 1973 the purpose of which was to assess and articulate the purpose of financial statements. A key conclusion from this study is that the single most important information management should be able to glean from the firms' financial statements is the ability to get a handle on *expected future cash flow* (*not* expected future profit).

And why not 'profit?' The answer to this question has been put best by Madrid, Spain University Professor Pablo Fernandez, in his book *[Business] Valuation and Common Sense*. To wit: Net cash flow is a fact; net profit is only an opinion. In other words, at the end of the day you don't put profit in your wallet—you put cash in your wallet.

Also, note that the company's name is Billy Bob's Barbecue. Entering the company name is a user data input requirement. The color of this cell is light blue with a red border. All and ONLY the cells requiring user data input will look like this. By changing the value in any other cell will corrupt this workbook's operation.

| Non-Discretionary Fixed Costs | | |
|---|---|---|
| Rent | $5,893.84 | 7.70% |
| Utilities | $1,597.76 | 2.09% |
| Property & Liability Insurance | $425.46 | 0.56% |
| Bookkeeping & Accounting | $264.75 | 0.35% |
| Total Non-Discretionary Fixed Costs | $8,181.82 | 10.69% |
| | | |
| Discretionary Fixed Costs | | |
| Owner's Salary | $5,000.00 | 6.53% |
| Overhead on Owner's Salary | $610.00 | 0.80% |
| Owner's Health & Life Insurance | $416.67 | 0.54% |
| Owner's Automobile Expenses | $188.54 | 0.25% |
| Travel & Entertainment | $0.00 | 0.00% |
| Dues & Subscriptions | $75.00 | 0.10% |
| Interest on Bank Loan | $423.05 | 0.55% |
| Charitable Contributions | $0.00 | |
| | | |
| Total Discretionary Fixed Costs | $6,713.25 | 8.77% |
| Total Fixed Costs | $14,895.07 | 19.46% |
| Total Operating Costs | $71,898.55 | 93.95% |
| Net Operating Income (Loss) | $4,631.01 | 6.05% |
| | | |
| Other Income | | |
| Other Expense | $1,706.71 | 2.23% |
| After-Tax Net Profit | $2,924.30 | 3.82% |

| Billy Bob's Barbecue | Mar-19 |
|---|---|
| **Assets** | |
| Current Assets | |
| Cash in banks & on-premises change bank | $50,444.59 |
| Inventory | $21,124.88 |
| Other Current Assets | $30,084.30 |
| Total Current Assets | $101,653.76 |
| | |
| Fixed Assets | |
| Lease Deposit | $15,000.00 |
| Food Service operating equipment | $174,834.00 |
| Office Equipment | $4,371.00 |
| Owner's Automobile | $25,600.00 |
| Accumulated Depreciation | -$104,725.01 |
| Total Fixed Assets | $115,079.99 |
| Total Assets | $216,733.75 |
| | |
| **Liabilities** | |
| Current Liabilities | |
| Wages Payable | $21,982.38 |
| Accounts payable | $9,165.09 |
| Sales Tax Payable | $1,950.20 |
| Unredeemed Gift Certificates | $249.00 |
| Total Current Liabilities | $33,346.67 |
| | |
| Long Term Liabilities | |
| Bank of America Equipment Loan | $44,766.91 |
| Loan from Owner | $10,000.00 |
| Total Long Term Liabilities | $54,766.91 |
| Total Liabilities | $88,113.58 |
| | |
| Owner's Equity | |
| Net Profit Year to Date | $2,924.30 |
| Paid In Capital | $70,000.00 |
| Retained earnings prior Years | $55,195.87 |
| Owner Draws (dividends) | $500.00 |
| Other | $0.00 |
| Total Owner's Equity | $128,620.17 |
| Total Owner's Equity & Liabilities | $216,733.75 |

The subject company's balance sheet follows the income statement.

# Importing the firm's financial Statements for the Month

There are two ways to import the firm's Income Statement and Balance Sheet data. One way is to copy and paste the data as it appears in the firm's bookkeeping software. However, the account descriptions and dollar amounts must all be listed in two contiguous columns. This means that if this is not how the firm's bookkeeping software is configured, then the bookkeeper must first rearrange the multi-column report so it is in just two contiguous columns. It is important to determine how much of the bookkeeper's time it takes to arrange the data into two columns. This is because the other way to import the data is for the bookkeeper to manually enter the data into this worksheet. That takes time, buy quite possibly less time than via copying and pasting the data.

There is a big advantage to manually entering the data and that is that hidden rows can be included in the initial adaption of this workbook to a firm's chart of accounts. This, in turn makes possible the ability to add new accounts to the workbook by unhiding an unused row. If this workbook is set up so that the data can be copied and pasted, then it is not possible to later alter the chart of accounts.

| Billy Bob's Barbecue | Mar-19 | other income | other expense | | | | Other Income | Other Expense |
|---|---|---|---|---|---|---|---|---|
| Sales Revenue | $82,289.85 | | | | $82,289.85 | | | |
| Interest Income | $75.00 | y | | | | | $75.00 | |
| Food cost | $29,980.34 | | | | $29,980.34 | | | |
| Beer & Wine | $4,048.21 | | | | $4,048.21 | | | |
| Bookkeeping & Accounting | $264.75 | | | | $264.75 | | | |
| Charitable Contributions | $0.00 | | | | $0.00 | | | |
| Cleaning Materials | $433.91 | | | | $433.91 | | | |
| Depreication & Amortization Expense | $1,706.71 | | y | | | | | 1,706.71 |
| Direct Labor | $14,730.77 | | | | $14,730.77 | | | |
| Direct Mail Advertising | $147.78 | | | | $147.78 | | | |
| Dues & Subscriptions | $75.00 | | | | $75.00 | | | |
| Employer's SSN | $1,225.43 | | | | $1,225.43 | | | |
| Federal Unemployment Insurance | $117.85 | | | | $117.85 | | | |
| Fine | $300.00 | | y | | | | | 300.00 |
| Gain on Sale of Equipment | $259.36 | | | | $259.36 | | | |
| Bad debt | $850.00 | | y | | | | | 850.00 |

Here we see the first sixteen rows of data entered into the P&L Data worksheet into Columns A and B.

Rows C and D are where Other Income and Other Expenses are identified however those income and expenses have been redefined in *Catalyst* as Non-Recurring, Non-Operating and Non-Cash income and expense accounts. The reason for separating this data is explained in detail in its own section of this Users' Guide. As you can see, if an income or expense account is deemed to fall into one of these two categories, the user must so designate this fact by entering a 'Y' for yes. If the subject account is an income account, enter the Y in the left column and enter a Y in the right column for expense accounts.

Once the firm's bookkeeping data is entered into this workbook it links to this workbook's reformatted income statement. The design of the reformatted income statement and the linking of the raw data is accomplished by the vendor from whom you purchased your copy of *Catalyst*.

As for the Balance Sheet, this data must also be configured in two contiguous columns. With that done, the two columns are entered into *Catalyst.* The program vendor will then create the links that produces a reformatted balance sheet. The reformatted balance sheet will be a highly compressed report. This is done to improve the 'readability' of the report. It is not at all uncommon for a firm's balance sheet to be stacked a mile high with assets and liabilities yet very little of that detail is required to analyze the report.

# Labor Cost Reallocation

The majority of small businesses tend to lump all wages, salaries, bonuses, etcetera for all employee classifications into one expense account. However, direct hourly labor is a variable expense, office staff and non-owner managers are a non-discretionary fixed cost and owner salaries are a discretionary fixed cost. As such, it is necessary to reallocate the labor cost on the firm's reformatted income statement to properly forecast expected future cash flow.

| Sales Revenue $1,724,404.73 | Current amount inclued in Direct Labor Cost linked in from P&L data entry | | | | | | Link these revised Direct Labor Costs to Format P&L |
|---|---|---|---|---|---|---|---|
| Direct Labor Cost | $14,730.77 | -$1,550.00 | -$900.00 | -$1,000.00 | -$750.00 | $0.00 | $10,530.77 |
| Overtime Labor | $927.55 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $927.55 |
| Vacation Pay | $680.73 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $680.73 |
| Employer's Social Security | $1,225.43 | -$116.25 | -$67.50 | -$75.00 | -$56.25 | $0.00 | $910.43 |
| State Unemployment Insurance | $176.77 | -$31.00 | -$18.00 | -$20.00 | -$15.00 | $0.00 | $92.77 |
| Federal Unemployment Insurance | $117.85 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $117.85 |
| Workers' Compensation Insurance | $441.92 | -$15.50 | -$9.00 | -$10.00 | -$7.50 | $0.00 | $399.92 |

| | Individuals who's pay is included in the Direct Labor Cost that should be reallocated. Link these values or individule total amounts to Format P&L | | | | | | |
|---|---|---|---|---|---|---|---|
| | Bill Jones | Carol Smith | Jack Andersen | Randy Carlson | | | |
| Base Salary or Wage | $1,550.00 | $900.00 | $1,000.00 | $750.00 | | | |
| Overtime Labor | | | | | | | |
| Vacation Pay | | | | | | | |
| Employer's Social Security | $116.25 | $67.50 | $75.00 | $56.25 | | | |
| State Unemployment Insurance | $31.00 | $18.00 | $20.00 | $15.00 | | | |
| Federal Unemployment Insurance | | | | | | | |
| Workers' Compensation Insurance | $15.50 | $9.00 | $10.00 | $7.50 | | | |
| **Total Labor Cost to reallocate** | **$1,697.25** | **$985.50** | **$1,095.00** | **$821.25** | **$0.00** | **$0.00** | |
| Enter N for Non-Discretioary or D for Disc. | N | N | N | D | | | Total Allocated |
| Reallocates to Non-Discretioary Fixed Costs | $1,697.25 | $985.50 | $1,095.00 | | | | $3,777.75 |
| Reallocates to Discretionary Costs | | | | 821.25 | | | $821.25 |

All of the firm's financial statement data is downloaded into the Data Entry worksheet. This data then links directly into the reformatted Income Statement and Balance Sheet with the exception of labor cost. That downloaded data is linked to this worksheet. The yellow cells are the labor costs that appears on the firm's income statement. The gray cells are the revised direct labor costs.

The wages and salaries subject to reallocation are manually entered here by the user which in turn, links to the reformatted income statement. The amount that links are in the green cells. There are only two reallocation options: Non-Discretionary Fixed Costs or Discretionary Costs. Enter N for Non-Discretionary Fixed Costs or D for Discretionary Costs. It is these totals that link. All detail regarding the components of the totals will not appear on the reformatted income statement. However, this worksheet can be included as an appendix to the body of the report.

Once this data is entered as part in the initial workbook adaptation process it need not be revisited until there is a change in a reallocated person's pay rate.

# Account Consolidation

The fundamental purpose of *Catalyst* is a presentation of the 'big picture' focused on the firm's cash flow and overall financial performance as opposed to a detailed presentation of multiple income statement and balance sheet accounts. "A clearing of the clutter" one could say so as to avoid being distracted by relatively miniscule revenue sources, expenses, assets and liabilities. It's a matter of judgement of where to draw the line on what individual accounts should appear on the reformatted income statement and balance sheet and which accounts are candidates for consolidation. However, many companies may not need to take this step because a reasonable amount of consolidation is built into their chart of accounts.

| Office Supplies | Amount |
|---|---|
| Printer paper | $52.66 |
| Printer ink cartrages | $113.98 |
| Envelopes | $15.34 |
| File folders | $8.75 |
| Staples | $5.28 |
| Postage stamps | $200.00 |
| Total | $396.01 |
| Link Total to Format P&L | |

Once a determination of where the line should be drawn, the Account Consolidation worksheet is where those accounts are linked in from the data entry worksheet for consolidation by the Catalyst vendor.

Here's an example of a company that has established individual expense accounts for each of these items. As such, all of these expenses appear on their month-end and year-end income statements. This example is a bit absurd because it is unlikely a company would have given all of these expenses their own expense account numbers but it helps in grasping the concept. On the other hand, for those small businesses with income statements three or more pages long, clearly some material expense account consolidation is in order.

The total amount of the listed items is then linked to the workbook's reformatted income statement. In this example, the total amount of $396.01 will appear on the reformatted income statement as 'Office Supplies'.

This compressed data can be included as an appendix to the report if one so desires.

# Non-Recurring, Non-Operating & Non-Cash Expenses

All bookkeeping software provides a place to enter Other Income and Other Expenses. This is below the Income From Operations tabulation. The income and expenses that are typically entered here are left largely to the bookkeeper's judgement.

In the reformatted income statement, these two sections take on a more important role. This is because one of the most important features of *Catalyst* is the forecasting of future cash flow as a linear projection line through the past twelve month's data.

For this reason, one-time expenses that are not expected to occur in the future should be excluded from the calculation of Income from Operations to avoid misdirecting the slope of the projection line. Examples of candidates for inclusion in this section of the reformatted income statement as non-recurring are one-time legal fees, bad debt, fines and penalties, loss on sale of equipment, candidates that would ordinarily be entered as Miscellaneous Expense and so forth. It should not be left entirely up to the bookkeeper to decide what expenses are to be entered here. Management needs to be proactive regarding these types of expenses and provide proper direction to the bookkeeper.

Non-operating expenses and income are ongoing expenses or revenue that have no connection with normal business operations, the most common being interest income.

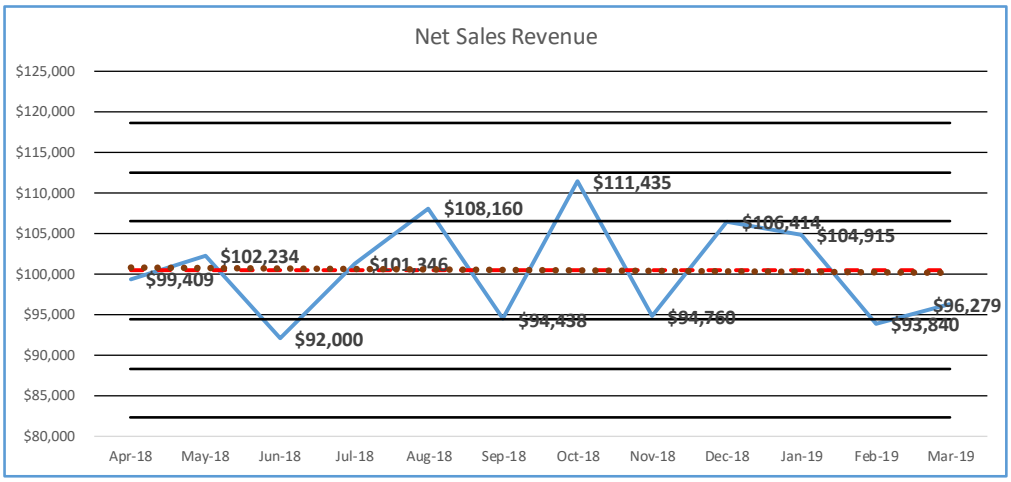
As with non-recurring expenses, non-recurring income would include such items as gain on sale of equipment, collection of bad debt and insurance proceeds.

And finally, this is the new venue for depreciation and amortization expense.

# Sales Revenue and Variable Costs

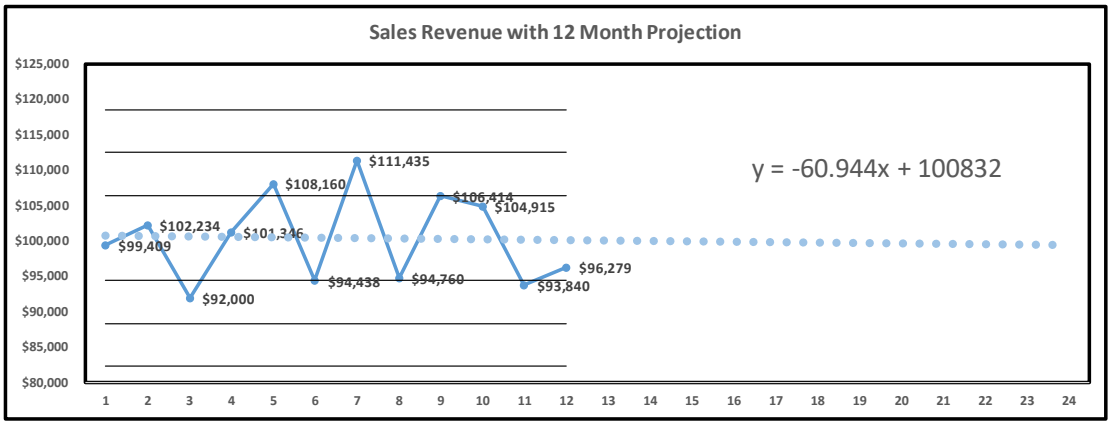
**Sales Revenue**

The first chart presented in this report is the company's rolling 12-month sales revenue with the current month's data appearing at the right end of the continuum.




| Twelve Month Sales History | |
|---|---|
| Highest Value | $111,435 |
| Lowest Value | $92,000 |
| Average Value | $100,436 |
| High-Low Spread | $10,999 |

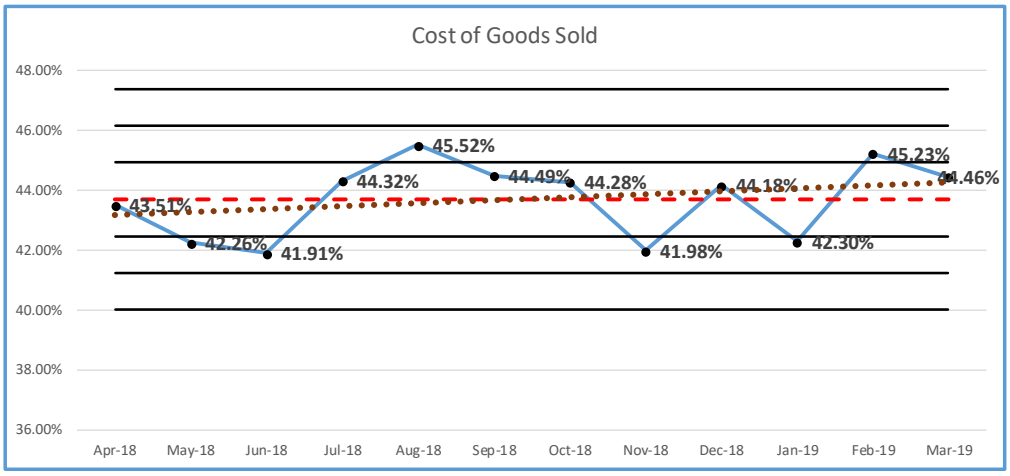
Next, this same historical data is re-presented together with a projection line extending 12 months into the future



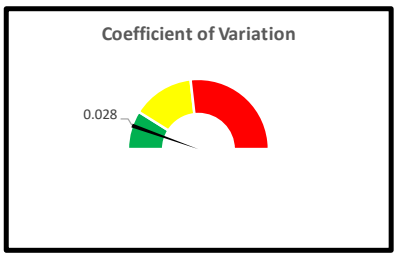

| Annual Growth Rate of the Projection Line | Projection | |
|---|---|---|
| -0.67% | Apr-19 | $100,040 |
| | May-19 | $99,979 |
| | Jun-19 | $99,918 |
| | Jul-19 | $99,857 |
| | Aug-19 | $99,796 |
| | Sep-19 | $99,735 |
| | Oct-19 | $99,674 |
| | Nov-19 | $99,613 |
| | Dec-19 | $99,552 |
| | Jan-20 | $99,491 |
| | Feb-20 | $99,430 |
| | Mar-20 | $99,369 |

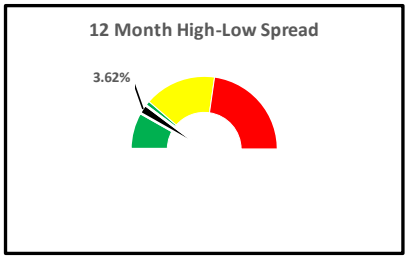
The presentation of a rolling 12-month history is repeated for all of the company's operating cost centers. There are two reasons for presenting the most recent month end financial performance within the context a rolling 12-month history. The first reason is that the business owner can gain a far better understanding of his or her company's financial performance for the month just ended when considered within the context of the last 12 months—especially when presented graphically. The second reason is that 12-months of data serves well as the basis for projecting the subject performance metric 12 months into the future. It's true that a simple linear projection line into the future based on the past 12 months' history is not a sophisticated forecasting methodology. On the other hand, however, these projections are far better than having little or no idea of what the future may hold in store—especially if current trends suggest trouble ahead if remedial action is not initiated immediately. The best way to get a good feel for current trends is to consider the most recent performance data as presented in the preceding 12-month projection chart.

## Cost of Goods Sold




| | |
|---|---|
| Coefficient of Variation | 0.0281 |
| Highest Value | 45.52% |
| Average Value | 43.70% |
| Lowest Value | 41.91% |
| Hi-Low Spread | 3.62% |




The Cost of Goods Sold graph presents our first operating cost category for consideration. There is a lot to be gleaned from this chart.

In this example we're looking at a chart based on the past twelve months' Cost of Goods Sold percentage of Sales Revenue. Thus, the first thing we see is that the cost of goods sold is presented in terms of its percentage of sales revenue. This is because the Cost of Goods Sold is a *variable cost* meaning that it approximately mirrors Sales Revenue's increases and decreases from month to month. For this reason, assessing the characteristics of any *variable cost* in terms of that cost's percentage of sales revenue is by far the most effective way to determine if it is under control and at an acceptable level.

Each month's cost of goods sold percentage appears as a dot on the graph. The next feature of this graph to consider is the line connecting the dots. It forms something of a zig-zag pattern, the dotted line is a linear regression line thought the data which displays the general twelve-month trend in this cost.

Below the graph a table presents the cost of goods sold Coefficient of Variation (to be explained momentarily), the twelve-month average value, the highest and lowest values over the last twelve months. Below that there is a dashboard with indications for the degree of acceptability

for this cost's twelve-month coefficient of variation and high-low spread. These degrees of acceptability are established by management.

**Amplitude of Variable Costs**

A very important matter for management's attention is the *amplitude* of the zig-zags. The greater their amplitude the less predictable this metric will be on a going-forward basis. Ideally, we want to see a very low amplitude; all amplitude, i.e. all departure from the average value—the red line--should be considered a bad thing that needs to be minimized and controlled as best as possible. A common way to compare the relative amplitude of a variable cost center's performance metric is to assess it in terms of a subjectively determined acceptable maximum amplitude which is the array's *Coefficient of Variation.* This is the array's standard deviation divided by the array's average value. The lower the standard deviation, (i.e., the tighter the grouping of an array's values around the array's average value) the lower will be the Coefficient of Variation. The left gage on the dash board indicates that the coefficient of variation is .028 and lies inside of management's subjectively established acceptable maximum desired level. If the actual performance bar was in the red zone it would mean that this cost is not under control from a volatility perspective and management should take a deep dive into this operating cost to find out the reason for the high volatility. It could be for any number of reasons such as increased wholesale cost of some raw materials, or spoilage, or careless portion size control, or employee theft of raw materials or cash, or sloppy bookkeeping (very common, in fact the first possible reason to examine), or all of them combined. As an aside, a consistent commitment to keep the coefficient of variation for all variable costs in the green zone is an excellent way to quickly detect employee embezzlement of cash should it occur because that would move the needle up simultaneously on all variable costs. Or, if a company is currently the victim of systematic embezzlement that extends back more than twelve months then this cost of doing business will have become baked in to its operating cost percentage of sales and invisible in the *Catalyst* reports. In this case, the embezzlement will be discovered when the embezzlement stops and the needle drops significantly for all variable costs.

This chart also shows the spread between the highest percent of sales and the lowest percent of sales for this cost over the last twelve months. Here we see that the high-low spread is 3.62%. which is below the maximum acceptable percentage of 4.0 This metric is ideally suited to establishing goals for minimizing a cost center's volatility.

As a sidebar, it has been my experience that the vast majority of business owners *do not* take a physical inventory of their resale products on hand at the end of each month. In order for the expected future cash flow charts in this report to be reasonably reliable, it is *imperative* that the cost of goods sold must be accurately reported which means it is essential that an *accurate* ending inventory needs to be incorporated into your business's bookkeeping protocol. And here again, if management does not take a monthly physical inventory of resale products, the door is wide open for employee theft of the firm's inventory to go perpetually undetected.

**Statistical Stability of Variable Costs**

The three lines above and below the red center line are one, two and three standard deviations away from the average. The relative width of the one, two and three standard deviations provides

management with very good direction of where to focus their time and energy in system improvement efforts and that is, discerning this cost's *statistical stability.*

Statistical stability is the *absence* of any kind of pattern to the zig-zags over the twelve-month history. Being *statistically stable* means that the observed oscillations in the cost's percentage of sales revenue from month to month are caused by random influences which are often beyond management's ability to measure or to even know their cause. Thus, in this chart we see an operating cost that is statistically stable.

There is an extremely important concept that attaches to the indication that a performance metric indicates low volatility an is statistically stable. That concept is that it is *impossible* to improve a performance metric that is statistically unstable or highly volatile. In other words, the first order of business in trying to bring about improvement in any operating cost's performance is to establish that performance's statistical stability and reduce month-to-month volatility. This is because it is impossible to know if efforts to reduce an unstable performance metric are working because its pre-existing instability corrupts measurements of the degree of improvement, if any, that is being accomplished.

The preceding raises the question of what constitutes a "pattern" in a metric's observed performance variability over a given time period—in this case twelve months. Well, here is a list of rules-of-thumb.

1. More than 5 consecutive points either above or below the average value.
2. More than 5 consecutive points above or below the average value but all between two and three standard deviations.
3. A point greater than two standard deviations either above or below the average.
4. More than 4 points in succession with each value greater than or less than the preceding point (i.e., an upward or downward trend)
5. More than 4 consecutive points above, then below, then above, then below the average value.

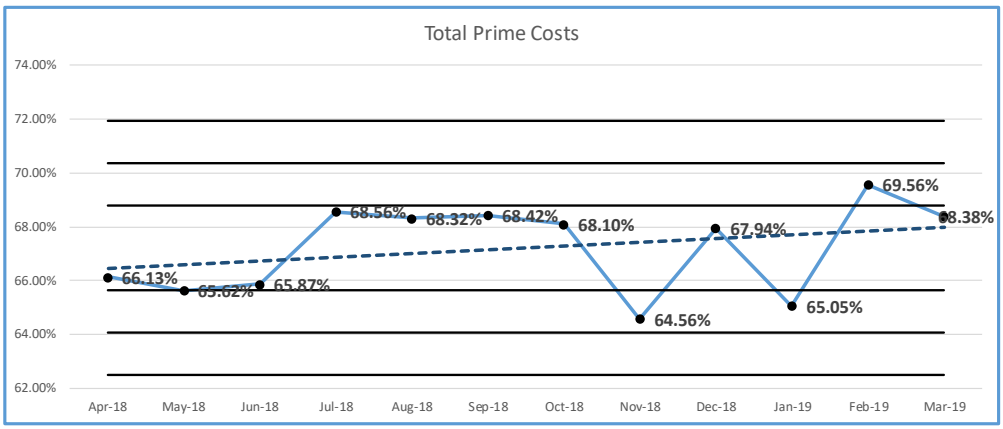
Another important concept that can be gleaned from our Statistical Control Chart is evidence that attempts to improve a metric's performance is working. And that evidence is the occurrence of an out-of-control indication. For example, if management embarked on an attempt to reduce the Cost of Goods Sold, proof of that effort's success would be an "out of control" indication of more than 5 consecutive points below the average value and/or more than 4 points in succession with each value less than the preceding value.

In the table below the chart, the bottom metric is the percentage growth rate between the first and twelfth month. This is a number to watch because if it suddenly jumps up from the prior month's report. That's a call for investigation and possible action. Also, it is possible for this growth rate metric to show an increase while the 12-month projection line is declining and vice versa. This fact is helpful in keeping the business owner from jumping to the wrong conclusion for the better or the worst by only considering the percentage change between the fist and twelfth month and ignoring what the general trend all twelve months combined is indicating.

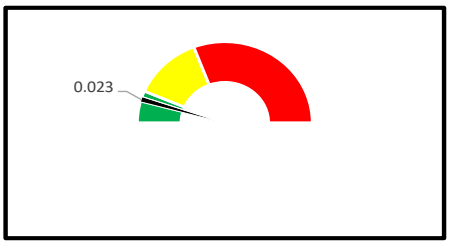
All of our subject company's variable cost centers—Cost of Goods Sold, Direct Labor Cost, Marketing Expense, and Other Variable Costs are charted like the Cost of Goods Sold. Every company's chart of accounts is different and *Catalyst* has been designed to accommodate up to ten unique cost centers.

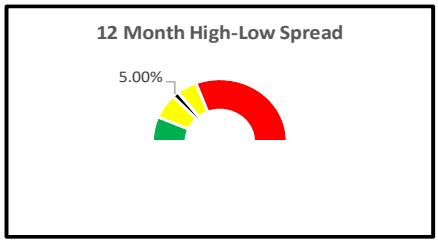
Even though establishment of an "acceptable" coefficient of variation—the acceptable range for the amplitude of the oscillations—is a subjective judgement of management, it is important to set the acceptable range fairly tight even if it means that when first implementing this analytical process most of the variable costs are above that range. The reason is that the cumulative effect of high amplitudes across the board translates into a high amplitude for the *Contribution Margin* which is sales revenue minus total variable costs. This in turn results in less reliability in projections of future cash flow which is determined by the forward projection of the contribution margin relative the forward projection of fixed costs.

# Prime Costs




| | |
|---|---|
| Coefficient of Variation | 0.023 |
| Highest Value | 69.56% |
| Lowest Value | 64.56% |
| Average Value | 67.21% |
| Hi-Low Spread | 5.00% |




Prime Costs are the total of the Cost of Goods sold plus the Direct Labor Cost. This combination of costs can often be useful when benchmarking variable costs with industry averages. This is because in many cases when benchmarking the Cost of Goods Sold percentage of sales revenue with the industry average there may be a significant difference and likewise with Direct Labor Cost but there will be a close relationship between the subject company's prime cost's percentage of sales revenue with its industry average prime costs percentage of sales revenue.

For example, in the restaurant industry there is a significant difference between these two costs in different segments of the industry. The cost of goods sold in high-end fine dining may be around 24% of sales revenue and direct labor around 26% while the cost of goods sold in fast food operations will generally be around 33% of sales revenue and direct labor around 17%. In this example the total prime costs in both cases is 50% of sales revenue. In such cases, this means that the significant difference between the subject company's cost of goods sold and direct labor percent of sales revenue with industry averages is of no concern.

# Fixed Costs

Assessing an operating cost's volatility and statistical stability only makes sense for *variable* costs. It is a company's variable costs that pose the greatest challenge for minimizing volatility and maintaining statistical stability. Fixed costs are different. The term "fixed" means that this cost does not ebb and flow in tandem with sales revenue. Fixed costs do vary over time and most of the variation (but not all) is attributable to reasons other than changes in sales revenue. Probably the most significant factor that causes fixed costs to change is monetary inflation. Therefore, a fixed cost's percent of sales revenue is a meaningless metric. The best fixed cost we can use to demonstrate this proposition is rent. In our hypothetical restaurant, its monthly rent is $5,500. This is the amount the owner pays every month. Thus, there is no volatility in this cost whatsoever and it is perfectly stable. However, if we calculate its percent of sales revenue every month and plot those percentages on a graph, we will obtain the same zig-zag pattern we get in all of the variable cost graphs. In this case our observed "cost volatility" is actually a mirror reflection of the volatility in sales revenue. The same principle goes for all fixed costs but with a little "noise" added in from minor month-to-month fluctuations in those costs. The fixed cost measurement metrics management should watch most closely are its long-term trend and proximity to industry average percentage of sales revenue.

| Non-Discretionary Fixed Costs | | |
|---|---|---|
| Rent | $5,893.84 | 7.70% |
| Utilities | $1,597.76 | 2.09% |
| Property Damage & Liability Insurance | $425.46 | 0.56% |
| Bookkeeping & Accounting | $264.75 | 0.35% |
| Total Non-Discretionary Fixed Costs | $8,181.81 | 10.69% |

Following several views of the Contribution Margin, this report presents several charts presenting three key levels of pre-tax cash flow. The first level is *Non-Discretionary Fixed Costs*. In order to grasp what this means, consider how the company's fixed costs are presented in the reformatted Income Statement.

This Income Statement formatting protocol is enormously helpful in understanding the company's true profitability which is its *Cash Flow before Discretionary Costs and Non-Cash Expenses*.

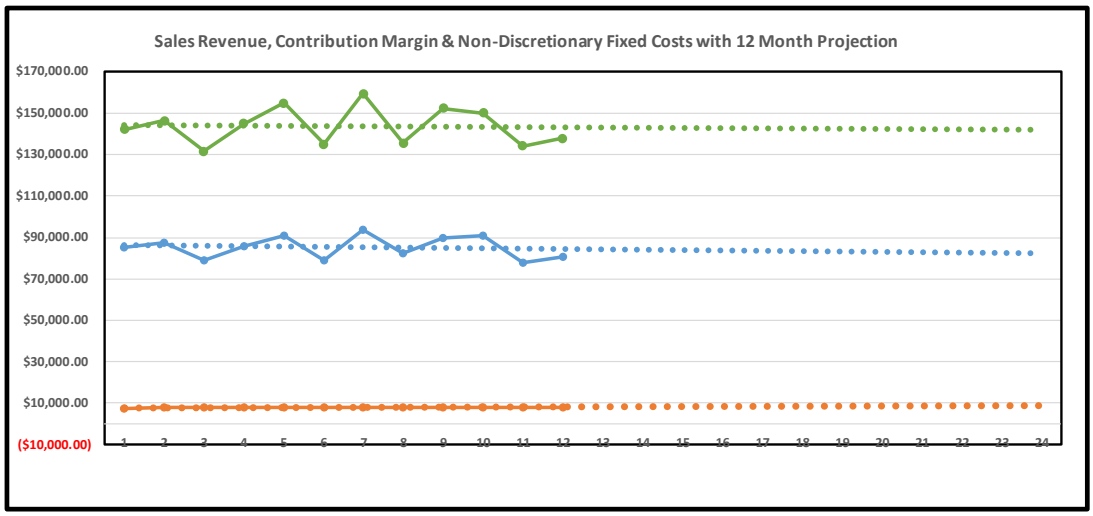
| Discretionary Costs | | |
|---|---|---|
| Owner's Salary | $5,000.00 | 5.68% |
| Overhead on Owner's Salary | $610.00 | 0.69% |
| Owner's Health & Life Insurance | $416.67 | 0.47% |
| Owner's Automobile Expense | $188.54 | 0.21% |
| Travel & Entertainment | $0.00 | 0.00% |
| Dues & Subscriptions | $75.00 | 0.09% |
| Interest on Bank Loan | $423.05 | 0.48% |
| Charitable Contributions | $0.00 | 0.00% |
| Total Discretionary Costs | $6,713.25 | 7.62% |

*Discretionary Costs* are costs over which the owner has a significant ability to modify. Thus, if there is an indication that projected future cash flow will turn negative in the near future, this cost center is the first place where management can make a material, albeit painful, reduction quickly.

# Cash Flow Forecasts

It has been stated once already but is worth repeating here. According to Robert Trueblood who led a distinguished group of accountants in determining the single most important insight that financial managers need to obtain from the firm's financial statements is getting a handle on expected future cash flow.

We will start with a look at the big picture regarding financial statement data that form the basis of cash flow forecasts which are the trends in sales revenue, the contribution margin and fixed costs.



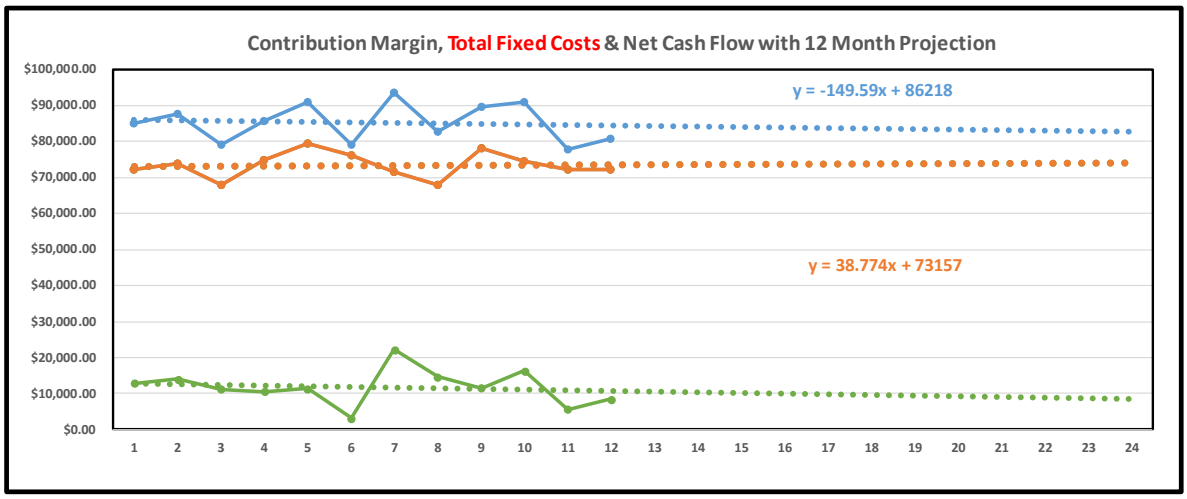

| Annual Growth Rates of the Projection Line |
|---|
| Sales Revenue |
| -3.15% |
| Contribution Margin |
| -5.01% |
| Fixed Costs |
| 6.32% |

The Contribution Margin is an enormously useful performance metric to calculate. It shows the firm's cash flow resulting from sales revenue minus all variable costs. In other words, this is the money available to "contribute" to covering all fixed costs and net profit. It summarizes the combined effect of increasing and decreasing changes in all of the firm's variable costs and sales revenue. It is necessary to watch the trend in the Contribution Margin relative to the company's fixed costs. If the Fixed Costs trend line is converging on the Contribution Margin's trend line it means that the company is heading for bankruptcy because cash flow turns negative when the fixed costs exceed the contribution margin.

In a perfect world where all variable costs are in perfect control, the rate of change in the contribution margin should mirror exactly the trend in sales revenue. For example, if the trend in

sales revenue is increasing or decreasing by, say 3%, then so too should the cost of goods sold be in near lockstep with that rate of change. Likewise, for direct labor cost and all other variable costs. In the above chart we see that sales are trending down at 3.15%. We see that the contribution margin is trending down at 5.01%. We can conclude thereby that one or more variable cost centers in this example are increasing at a steeper rate than sales revenue. It is important for management to understand why the difference. For example, has the wholesale cost of the firm's resale merchandise or a manufacturer's cost of raw materials gone up? If so, this suggests that management should consider increasing the price for the firm's products. Or, alternatively, this dichotomy between the two trends could be attributed to increases in labor cost—or possibly *both* the cost of goods sold and labor cost are trending up faster than sales revenue. Whatever the reason, allowing this condition to persist indefinitely will eventually sink the firm.

Another thing to look for is if the fixed cost trend line is heading upward at a steeper slope than the contribution margin's trend line. Over the long-run, fixed costs always increase because they are driven primarily by inflation and forces external to the company—e.g., rent, property damage and product liability insurance, utilities, business license, accounting and tax return preparation, etc.

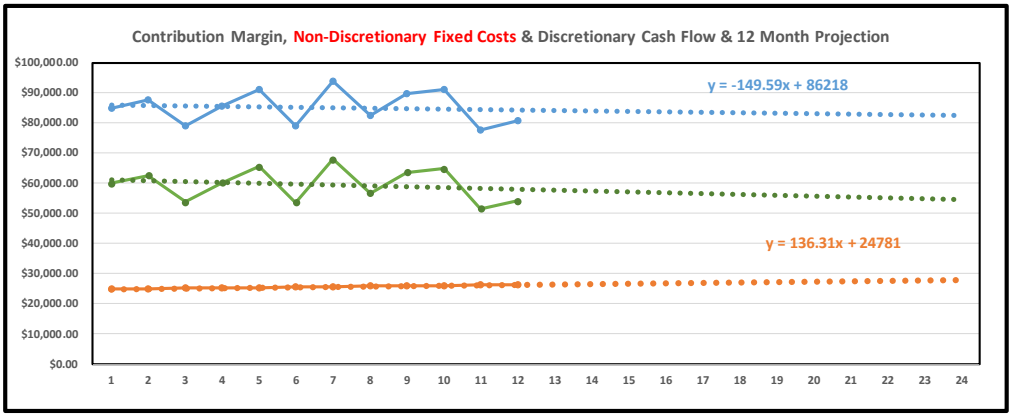



| Projections for | Contribution Margin | Total Fixed Costs | Cash Flow | Annual Growth Rates |
|---|---|---|---|---|
| Apr-19 | $84,273 | $73,661 | $10,612 | |
| May-19 | $84,124 | $73,700 | $10,424 | Contribution Margin |
| Jul-19 | $83,974 | $73,739 | $10,236 | -5.01% |
| Aug-19 | $83,825 | $73,777 | $10,047 | |
| Sep-19 | $83,675 | $73,816 | $9,859 | Fixed Costs |
| Oct-19 | $83,525 | $73,855 | $9,670 | 0.23% |
| Nov-19 | $83,376 | $73,894 | $9,482 | |
| Dec-19 | $83,226 | $73,932 | $9,294 | Cash Flow |
| Jan-20 | $83,077 | $73,971 | $9,105 | -34.54% |
| Feb-20 | $82,927 | $74,010 | $8,917 | |
| Mar-20 | $82,777 | $74,049 | $8,729 | |
| Apr-20 | $82,628 | $74,088 | $8,540 | |

**Net cash flow will turn negative in 116 Months**

In the above scenario, the contribution margin is declining at an average annual rate of 5.01%. Total fixed costs, on the other hand, are increasing at an annualized rate of .23% Thus, fixed costs are converging on the contribution margin and therewith, cash flow is declining. However, a feature of this analysis is a forward look at when cash flow will become negative. The analysis looks forward for 120 months. If cash flow has not turned negative within that time span, the analysis simply indicates that cash flow is projected to turn negative beyond 120 months. In this example we see that cash flow is projected to turn negative in 116 months. This is a simple *mathematical projection*, not a prediction.

The next chart excludes Discretionary expenses plus principal payments on debt (which replaces depreciation expense). In this scenario compared to the preceding chart we can conclude that this company is exceedingly burdened with excessive discretionary expenses and/or principal payments on long-term debt because removing those costs from the analysis leads to the conclusion that the expected conversion of fixed costs with the contribution margin remains, it is projected to occur beyond ten years—plenty of time for course corrections.




| Projections for | Contribution Margin | Fixed Costs | Discretionary Cash Flow | Annual Growth Rates |
|---|---|---|---|---|
| Apr-19 | $84,273 | $26,553 | $57,720 | Contribution Margin |
| May-19 | $84,124 | $26,689 | $57,434 | -5.01% |
| Jul-19 | $83,974 | $26,826 | $57,149 | |
| Aug-19 | $83,825 | $26,962 | $56,863 | Fixed Costs |
| Sep-19 | $83,675 | $27,098 | $56,577 | 6.32% |
| Oct-19 | $83,525 | $27,235 | $56,291 | |
| Nov-19 | $83,376 | $27,371 | $56,005 | Cash Flow |
| Dec-19 | $83,226 | $27,507 | $55,719 | -9.72% |
| Jan-20 | $83,077 | $27,644 | $55,433 | |
| Feb-20 | $82,927 | $27,780 | $55,147 | |
| Mar-20 | $82,777 | $27,916 | $54,861 | |
| Apr-20 | $82,628 | $28,052 | $54,575 | |

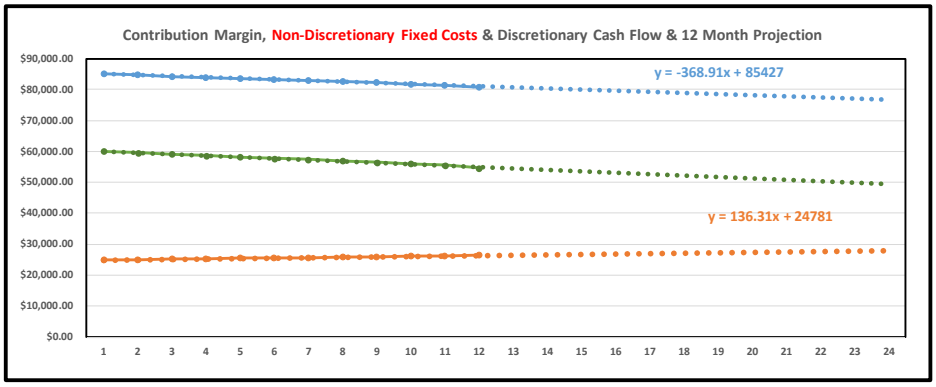
**Net cash flow will turn negative in Beyond 120 Months Months**

As a general rule, if cash flow is determined to become negative beyond, say, forty-eight months or so, a reasonable assumption is that actual the trend in expected future cash flow will be approximately flat *assuming* management makes no course corrections and the local economy remains fairly stable. If cash flow is projected to become negative in less than thirty-six months or so, this is an indication of a likely real problem and the shorter the time period, the greater the likelihood.

To reiterate the cautionary statement about the need to report your businesses' cost of goods sold accurately, it bears repeating here. If the volatility of your contribution margin is indicating anything other than low volatility (the green zone) then the cash flow projections in this report will be less reliable. The end result will be that in one month your expected future cash flow will be trending up, then the next month trending down with an indication that cash flow will turn negative and so on in random order of increasing the decreasing expected future cash flow from month-to-month—the greater the volatility in reported operating costs, the less reliable the future projections. Generally, exceedingly high volatility in all of the variable cost centers—say with a coefficient of variation greater than .15 is most likely the result of sloppy bookkeeping, not actual high volatility in variable costs which should be considered a serious problem.

One exception to this rule of thumb are repair and maintenance expenses which are generally unpredictable and do not track with sales revenue.

That fact notwithstanding, this workbook provides a work-around if the volatility of the contribution margin is too high. And that is, to smooth out the contribution margin—that is, to eliminate *all* month-to-month volatility as we see here. The fixed costs projection can also be smoothed out.




| Projections for | Contribution Margin | Fixed Costs | Discretionary Cash Flow | Annual Growth Rates |
|---|---|---|---|---|
| Apr-19 | $80,631 | $26,553 | $54,078 | Contribution Margin |
| May-19 | $80,262 | $26,689 | $53,573 | -5.01% |
| Jul-19 | $79,893 | $26,826 | $53,068 | |
| Aug-19 | $79,524 | $26,962 | $52,562 | Fixed Costs |
| Sep-19 | $79,156 | $27,098 | $52,057 | 6.32% |
| Oct-19 | $78,787 | $27,235 | $51,552 | |
| Nov-19 | $78,418 | $27,371 | $51,047 | Cash Flow |
| Dec-19 | $78,049 | $27,507 | $50,542 | -9.06% |
| Jan-20 | $77,680 | $27,644 | $50,036 | |
| Feb-20 | $77,311 | $27,780 | $49,531 | |
| Mar-20 | $76,942 | $27,916 | $49,026 | |
| Apr-20 | $76,573 | $28,052 | $48,521 | |

**Net cash flow will turn negative in Beyond 120 Months Months**

If you switch between the actual and smoothed scenario, you have to also change the numbers in the projection line equation

| | | |
|---|---|---|
| Use smoothed Contribution Margin? | Yes | No |
| Use smoothed Total Fixed Costs? | Yes | No |

Smoothing out or eliminating the month-to-month volatility is accomplished via these macro commands immediately to the right of the chart.

It is a matter of user judgment to determine when to smooth out the historical data. Generally, it is probably best to smooth out the contribution margin when its volatility is not within the acceptable limit. Fixed costs are another matter. As for fixed costs it is generally best not to smooth the data unless there is some significant anomaly in the past twelve months historical data or high volatility. High month-to-month volatility in non-discretionary fixed costs should generally be considered as a red flag indicating sloppy bookkeeping. On occasion as in the preceding chart, historical fixed costs can also be smoothed out.

If you smooth the data it is necessary to insert the revised regression equation data. When doing so, it will be common to encounter a value for x that looks like this: 2E-12x.  In this case enter a value of zero for X.

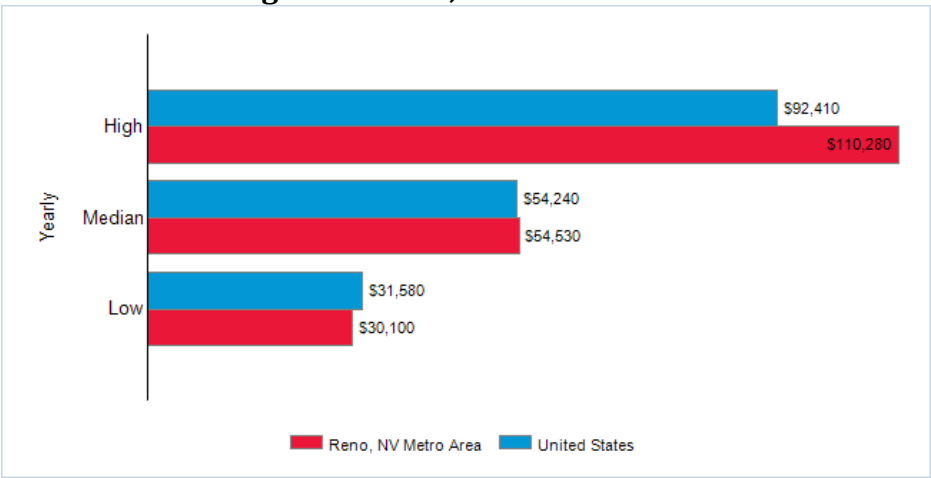
# Owner's Cash Flow

| Billy Bob's Barbecue | 12 Month Total |
|---|---|
| Net Operating Income (Loss) | $52,359 |
| Add back Total Discretionary Costs & Non-Cash Expenses | $102,595 |
| Owner's Discretionary Cash Flow | $154,953 |
| Minus Fair Market Value Owner/Manager Salary | $75,000 |
| Earnings Before Interest, Taxes, Depreciation & Amortization | $79,953 |

For the purpose of valuing business based on pre-tax cash flow, there are two primary levels of cash flow. These financial performance metrics do not appear on the company's Income Statement. They are compiled separately in the report. The first is *Owner's Discretionary Cash Flow*. This is the total cash flow before *Discretionary Costs and Non-Cash Expenses*. This metric is by far the most common indication of a company's profitability used by business brokers, business buyers and often business appraisers to estimate the fair market value and most probable selling price for small, mostly main-street businesses. Additionally, there is *Earnings Before Interest, Taxes, Depreciation & Amortization* which goes by the acronym 'EBITDA' pronounced just as it is spelled that is often used to estimate the value of businesses. This is *Owner's Discretionary Cash Flow* **minus** a 'fair market value salary' for the business owner—i.e., *not* the owner's actual salary, bonuses and other perquisites.

The determination of a fair market value salary for the owner i.e., the cost to replace an *assumed* absentee owner with a non-owner salaried manger is a subjective estimate made by the user. However, there are websites that provide guidelines to go by. Here is a salary estimate for a restaurant manager obtained from www.careeronestop.org.

Wages for **Food Service Managers** in **RENO, NEVADA**




Given this information, the user can then make an informed subjective judgement of what would be a reasonable fair market value salary for the subject company's owner/manager. To find salary information on at the CareerOneStop website, select **Job Search**, then select **Research Salaries**, then select **Salary Finder**.

# Cash Flow Analyses

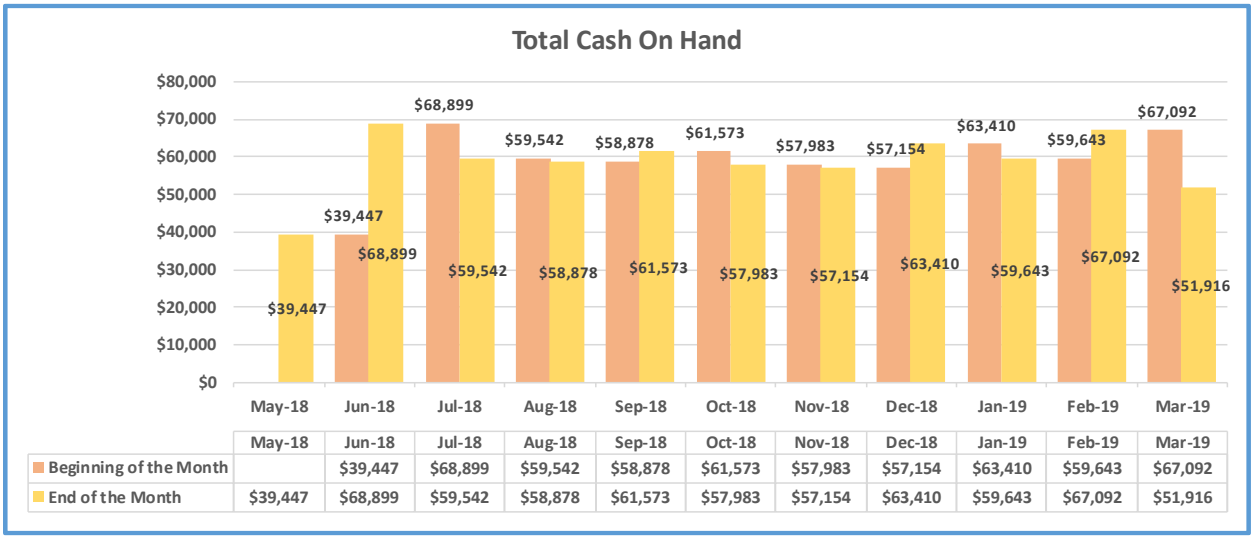
| Billy Bob's Barbecue | 28-Feb-19 | 31-Mar-19 | | |
|---|---|---|---|---|
| ASSETS | | | | |
| Current Assets | | | | Net Change |
| Total Cash Accounts & undposited funds | $52,033.70 | $50,444.59 | $1,589.11 | ($1,589.11) |
| Total Accounts Receivable | $0.00 | $0.00 | $0.00 | |
| Total Inventory | $18,580.10 | $21,124.88 | ($2,544.78) | |
| Total Pre-Paid Expenses | | $0.00 | $0.00 | |
| Total Other Current Assets | $28,449.37 | $30,084.30 | ($1,634.93) | |
| Total Current assets | $99,063.18 | $101,653.77 | | |
| | | | | |
| Fixed Assets | | | | |
| Furniture and Fixtures | $0.00 | $0.00 | $0.00 | |
| Office Equipment & Computers | $4,371.00 | $4,371.00 | $0.00 | |
| Machinery and Equipment | $174,834.00 | $174,834.00 | $0.00 | |
| Vehicles | $25,600.00 | $25,600.00 | $0.00 | |
| Leasehold Improvements | | $0.00 | $0.00 | |
| Owned Property Improvements | | $0.00 | $0.00 | |
| Deposits | $15,000.00 | $15,000.00 | $0.00 | |
| Other Fixed Assets | | $0.00 | $0.00 | |
| Accumulated Depreciation | -$103,018.30 | -$104,725.02 | $1,706.72 | |
| Total Fixed Assets | $116,786.70 | $115,079.98 | | |
| Total Assets | $215,849.87 | $216,733.75 | | |
| | | | | |
| LIABILITIES | | | | |
| Current Liabilities | | | | |
| Total Accounts Payable | $9,895.54 | $9,165.09 | ($730.45) | |
| Wages & Employer PR Taxes Payable | $21,201.15 | $21,982.38 | $781.23 | |
| | | | $0.00 | |
| | | | $0.00 | |
| Taxes Payable | $2,454.80 | $1,950.20 | ($504.60) | |
| Other Current Liabilities | $166.00 | $249.00 | $83.00 | |
| Total Current Liabilities | $33,717.49 | $33,346.67 | | |
| | | | | |
| Long Term Liabilities | | | | |
| Total Long Term Liabilities | $55,219.10 | $54,766.91 | ($452.19) | |
| Total Liabilities | $88,936.59 | $88,113.58 | | |
| | | | | |
| Equity | | | | |
| Paid-In Capital (Common Stock) | $70,000.00 | $70,000.00 | $0.00 | |
| Retained earnings prior Years | $55,195.87 | $55,195.87 | ($0.00) | |
| Net Profit | $1,217.41 | $2,924.30 | $1,706.89 | |
| Treasury Stock | | $0.00 | $0.00 | |
| Owner Draws (dividends) | $500.00 | $500.00 | $0.00 | |
| Other Equity | | $0.00 | $0.00 | |
| Total Equity | $126,913.28 | $128,620.17 | ($1,589.11) | |
| Total Equity & Liabilities | $215,849.87 | $216,733.75 | Net Change | |

The next group of charts focus on the last eleven months' monthly change in cash and arguably are the most important of the rolling 12-month analyses to consider. As the saying goes, "managing a business is like playing poker: your profitability can ebb and flow but when you run out of cash, you are out of the game."

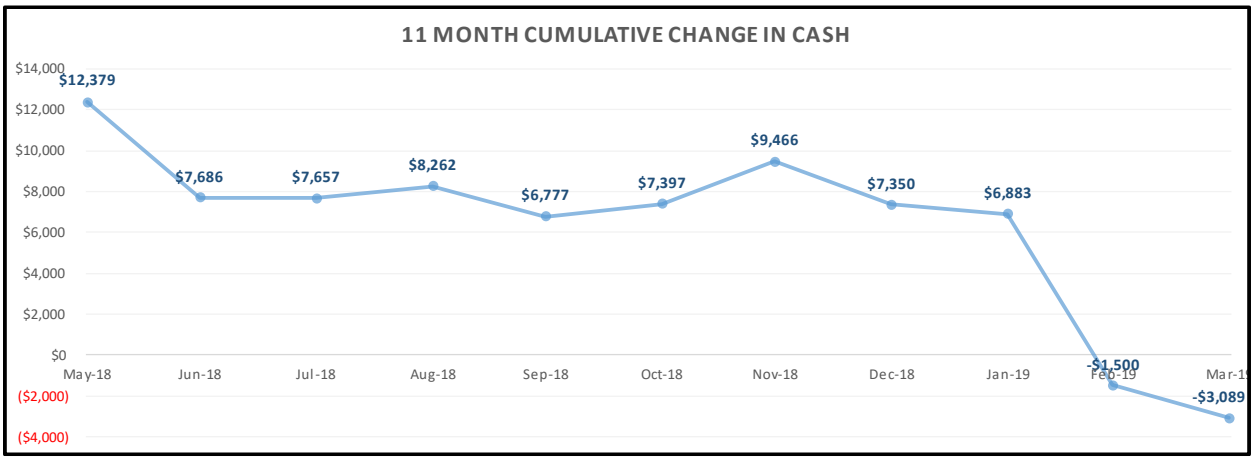
We begin our change in cash analyses by looking at the change in cash this month compared to last month. Here we see that the first asset on the balance sheet is the firm's total cash on hand. We see that this month's cash on hand is $1,589.11 less than last months. Below the cash on hand asset, we can see how this came about. For example, we see that the value of the ending inventory has increased by $2,544.78 over last month's ending inventory. Thus, that much cash has been converted into a larger investment in a non-cash asset. Under Current Liabilities we see that this month's accounts payable is $730.45 less than last months. Thus, that much cash has been consumed to reduce the firm's total debts. Following this chart is an identical presentation reflecting the change in cash this month compared to eleven months ago.

| Billy Bob's Barbecue | Apr-18 | Mar-19 | | |
|---|---|---|---|---|
| ASSETS | | | | |
| Current Assets | | | | Net Change |
| Total Cash Accounts & undposited funds | $53,533.24 | $50,444.59 | $3,088.65 | ($3,088.65) |
| Total Accounts Receivable | $0.00 | $0.00 | $0.00 | |
| Total Inventory | $17,000.00 | $21,124.88 | ($4,124.88) | |
| Total Pre-Paid Expenses | $0.00 | $0.00 | $0.00 | |
| Total Other Current Assets | $10,258.96 | $30,084.30 | ($19,825.34) | |
| Total Current assets | $80,792.20 | $101,653.77 | | |
| | $54,517.92 | | | |
| Fixed Assets | | | | |
| Furniture and Fixtures | $0.00 | $0.00 | $0.00 | |
| Office Equipment & Computers | $4,371.00 | $4,371.00 | $0.00 | |
| Machinery and Equipment | $164,834.00 | $174,834.00 | ($10,000.00) | |
| Vehicles | $25,600.00 | $25,600.00 | $0.00 | |
| Leasehold Improvements | $0.00 | $0.00 | $0.00 | |
| Owned Property Improvements | $0.00 | $0.00 | $0.00 | |
| Deposits | $15,000.00 | $15,000.00 | $0.00 | |
| Other Fixed Assets | $0.00 | $0.00 | $0.00 | |
| Accumulated Depreciation | -$85,951.22 | -$104,725.02 | $18,773.80 | |
| Total Fixed Assets | $123,853.78 | $115,079.98 | | |
| Total Assets | $204,645.98 | $216,733.75 | | |
| | | | | |
| LIABILITIES | | | | |
| Current Liabilities | | | | |
| Total Accounts Payable | $51,190.43 | $9,165.09 | ($42,025.34) | |
| Wages & Employer PR Taxes Payable | $21,500.00 | $21,982.38 | $482.38 | |
| | | | $0.00 | |
| | | | $0.00 | |
| Taxes Payable | $2,150.00 | $1,950.20 | ($199.80) | |
| Other Current Liabilities | $250.00 | $249.00 | ($1.00) | |
| Total Current Liabilities | $75,090.43 | $33,346.67 | | |
| | | | | |
| Long Term Liabilities | | | | |
| Total Long Term Liabilities | $50,000.00 | $54,766.91 | $4,766.91 | |
| Total Liabilities | $125,090.43 | $88,113.58 | | |
| | | | | |
| Equity | | | | |
| Paid-In Capital (Common Stock) | $70,000.00 | $70,000.00 | $0.00 | |
| Retained earnings prior Years | $3,214.22 | $55,195.87 | $51,981.65 | |
| Net Profit Year to Date | $5,841.33 | $2,924.30 | ($2,917.03) | |
| Treasury Stock | $0.00 | $0.00 | $0.00 | |
| Owner Draws (dividends) | $500.00 | $500.00 | $0.00 | |
| Other Equity | $0.00 | $0.00 | $0.00 | |
| Total Equity | $79,555.55 | $128,620.17 | ($3,088.65) | |
| Total Equity & Liabilities | $204,645.98 | $216,733.75 | Net Change | |

Next, is a Total Cash On Hand chart comparing the cash on hand on last month's balance sheet with this month's balance over the last eleven months. However, last month's cash on hand is redefined in this chart as 'cash on hand at the beginning of the month', the purpose being to make it this chart more user-friendly.




Next is an eleven-month cumulative change in cash chart. The formation of this chart is somewhat complex but it serves a useful purpose that will be demonstrated momentarily.




We begin the explanation of this chart by revisiting the previously presented Change in Cash comparison of April 2018 to March 2019.

| Billy Bob's Barbecue | Apr-18 | Mar-19 | | |
|---|---|---|---|---|
| ASSETS | | | | |
| Current Assets | | | | Net Change |
| Total Cash Accounts & undposited funds | $53,533.24 | $50,444.59 | $3,088.65 | ($3,088.65) |

Here we see that the change in cash in March 2019 over April 2018 is -$3,008.56 and is the amount reflected above in the eleven-month cumulative change in cash chart for March 2019.

Below, beginning at the right end of this table we see the change in cash for March 2019 compared to February 2019 is -$1,589 as presented previously.

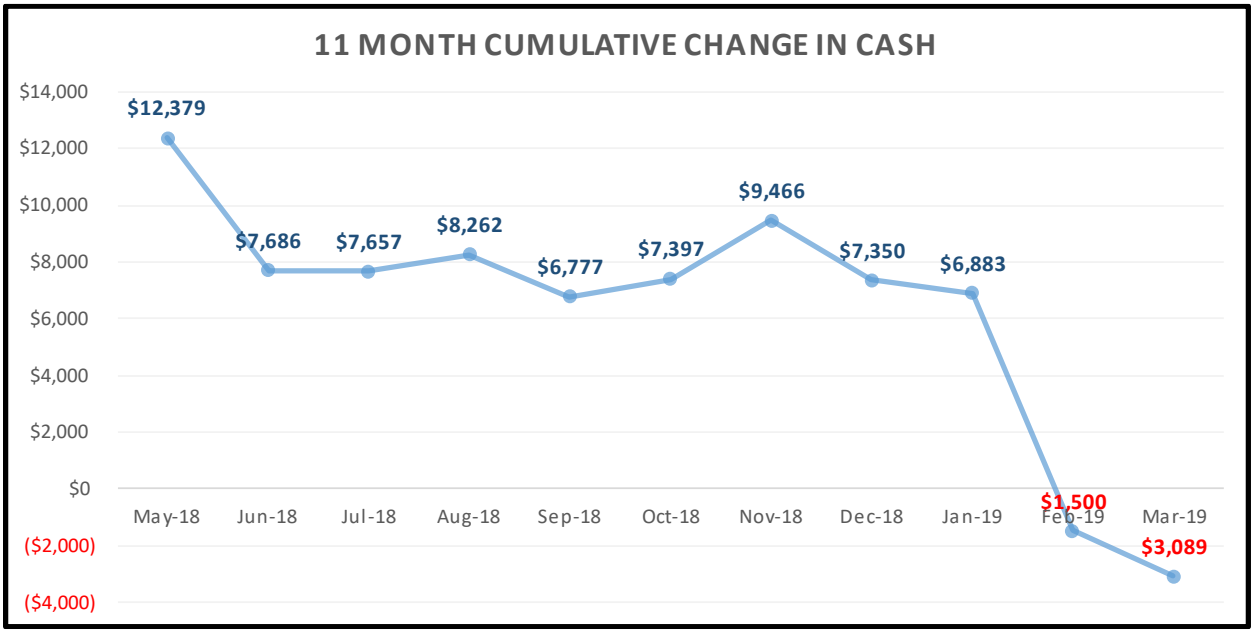
| May-18 | Jun-18 | Jul-18 | Aug-18 | Sep-18 | Oct-18 | Nov-18 | Dec-18 | Jan-19 | Feb-19 | Mar-19 |
|---|---|---|---|---|---|---|---|---|---|---|
| $12,379 | -$4,693 | -$29 | $605 | -$1,485 | $620 | $2,070 | -$2,117 | -$467 | -$8,383 | -$1,589 |

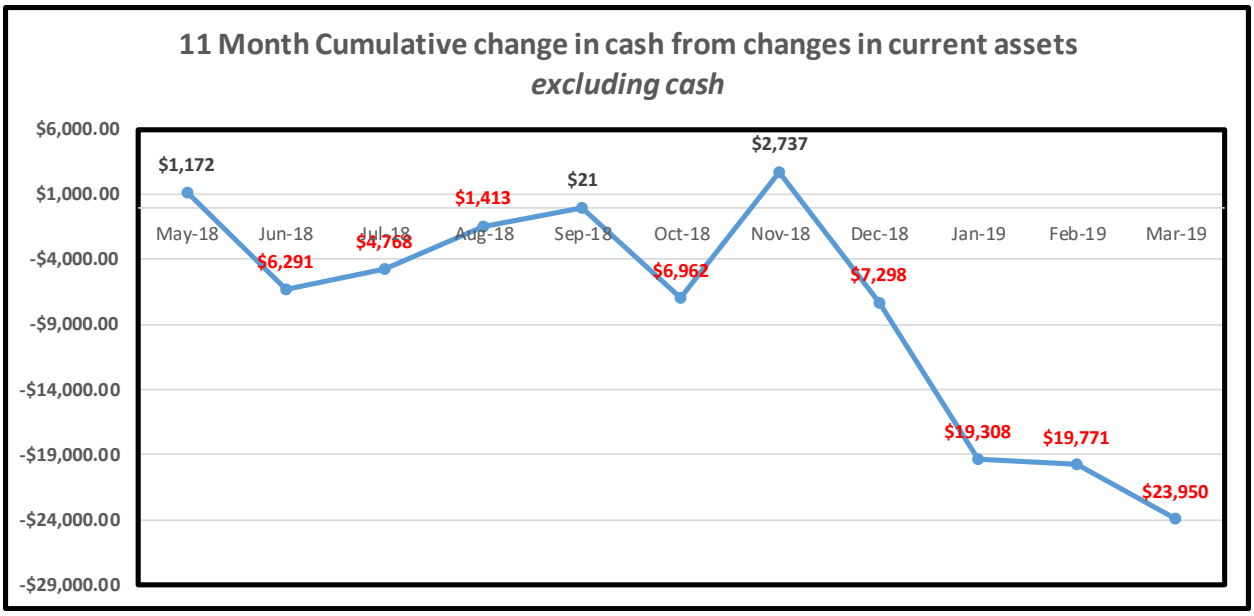
If we go back and look at last month's report, we would see that the change in cash in February compared to January was -$8,383 and so forth all the way back to May 2018. Now, add up this row of changes and the total is -$3,088.65. Thus, what we are looking at here beginning at the left end of the table is the sum of the change in May 2018 over April 2018 *plus* the change in June over May *plus* the change in July over June and so forth.

Now, with the table set, we can replicate the preceding presentation of the cumulative change in cash but do so in terms of the cumulative change in each of the individual elements that altogether produced the cumulative change in cash of -$3,008.56.

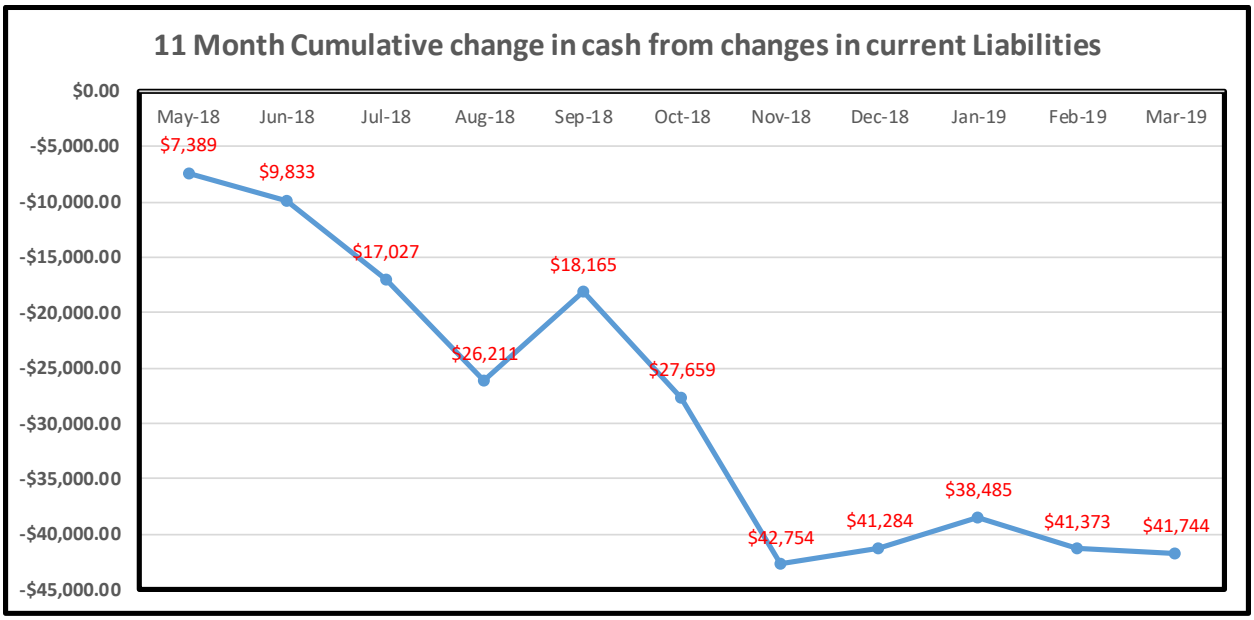
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Change in Current Assets except cash** | $53,533.24 | $12,379.47 | -$4,693.18 | -$29.46 | $604.99 | -$1,484.94 | $620.02 | $2,069.57 | -$2,116.65 | -$466.66 | -$8,382.69 | -$1,589.11 | |
| **Change in Net Fixed Assets exluding depreciation** | $27,258.96 | $1,171.96 | -$7,463.00 | $1,523.00 | $3,355.00 | $1,433.60 | -$6,982.60 | $9,699.22 | -$10,034.72 | -$12,010.57 | -$462.40 | -$4,179.71 | -$23,950.22 |
| **Change in Current Liabilities** | $209,805.00 | $0.00 | $0.00 | $0.00 | $0.00 | -$10,000.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | -$10,000.00 |
| **Change in long-term debt** | $75,090.43 | -$7,389.42 | -$2,443.10 | -$7,194.79 | -$9,184.05 | $8,046.78 | -$9,494.05 | -$15,095.00 | $1,469.77 | $2,798.37 | -$2,887.44 | -$370.82 | -$41,743.76 |
| **Change in Accumulated Depreciation** | $50,000.00 | -$500.00 | -$495.00 | -$490.05 | -$485.15 | -$480.30 | $9,524.50 | -$470.74 | -$466.03 | -$461.37 | -$456.76 | -$452.19 | $4,766.91 |
| **Change in Profit + Retained Earnings** | -$85,951.22 | $1,706.71 | $1,706.71 | $1,706.71 | $1,706.71 | $1,706.71 | $1,706.71 | $1,706.71 | $1,706.71 | $1,706.71 | $1,706.71 | $1,706.72 | $18,773.80 |
| **Net Equity excluding net profit** | $76,341.33 | $17,390.22 | $4,001.22 | $4,425.67 | $5,212.48 | -$2,191.73 | $5,865.46 | $6,229.38 | $5,207.63 | $7,500.21 | -$6,282.80 | $1,706.89 | $49,064.62 |
| | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | |
| | | | | | | | | | | | | | -$3,088.65 |

If you add up the values contained in all 77 fields the total is -$3,008.56. And finally, we can look at this data graphically and in so doing we get a real clear picture of how all seven changes individually contributed to the overall change on a month-by-month basis. These charts may at first be a little confusing for management, but over time—a few months or so—management will begin to get a handle on the dynamics of the firm's month-to-month sources and uses of cash.

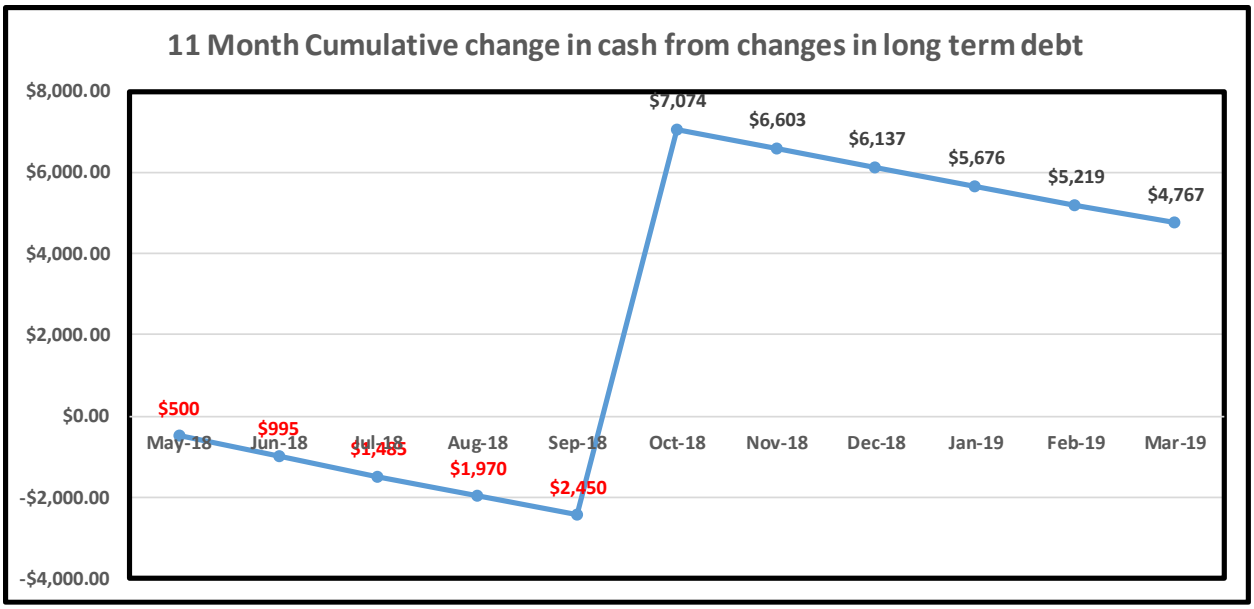




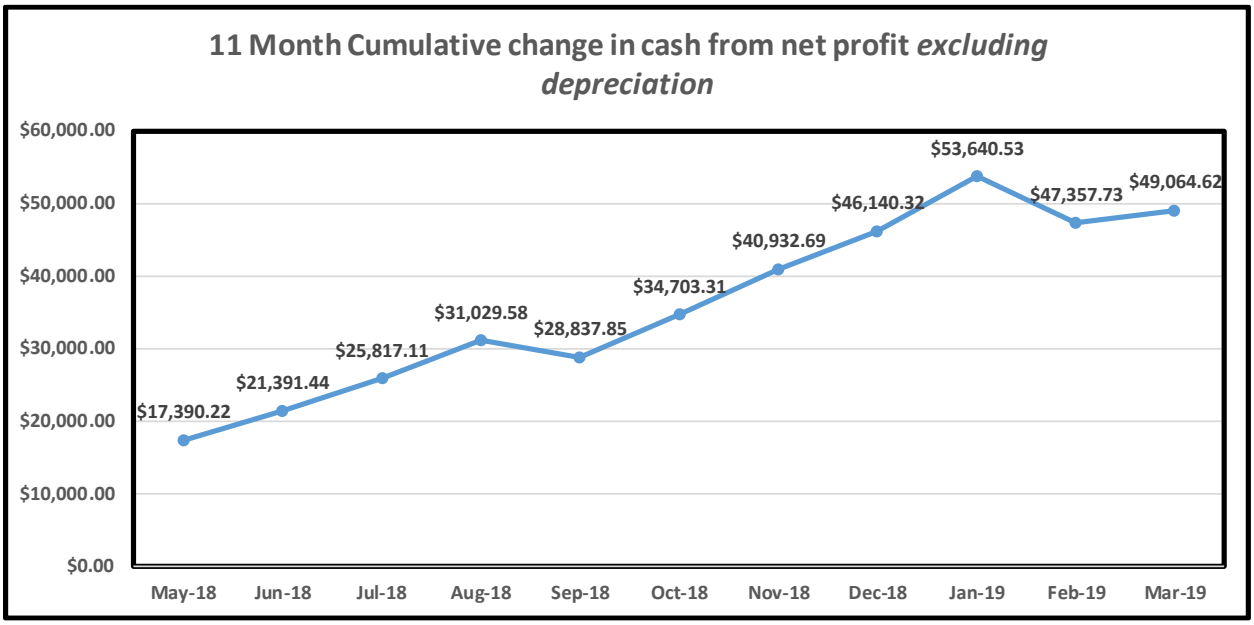

In April 2018 the company had $80,792 in current assets. In March it had $101,653 in current assets. As we see, over the last eleven months cash has been drawn down and converted to other tangible assets.



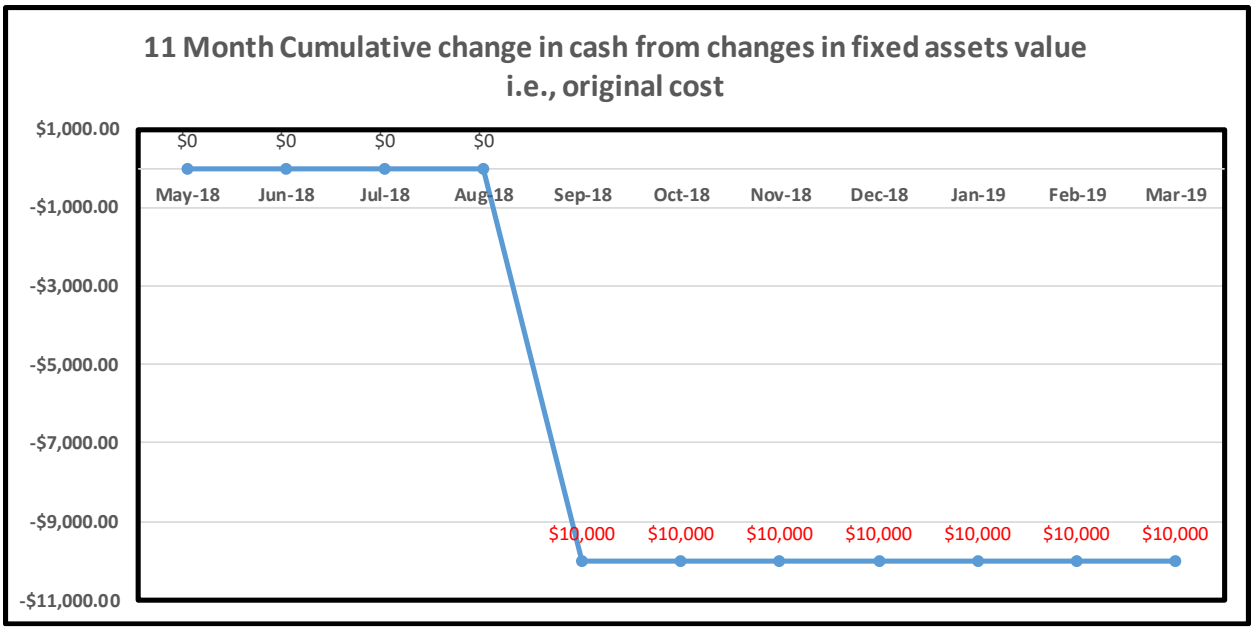

The company has reduced the amount it owes in current liabilities from $75,090 in April 2018 down to $33,346 in March 2019. Thus, the company used up $41,743 in cash to accomplish this.



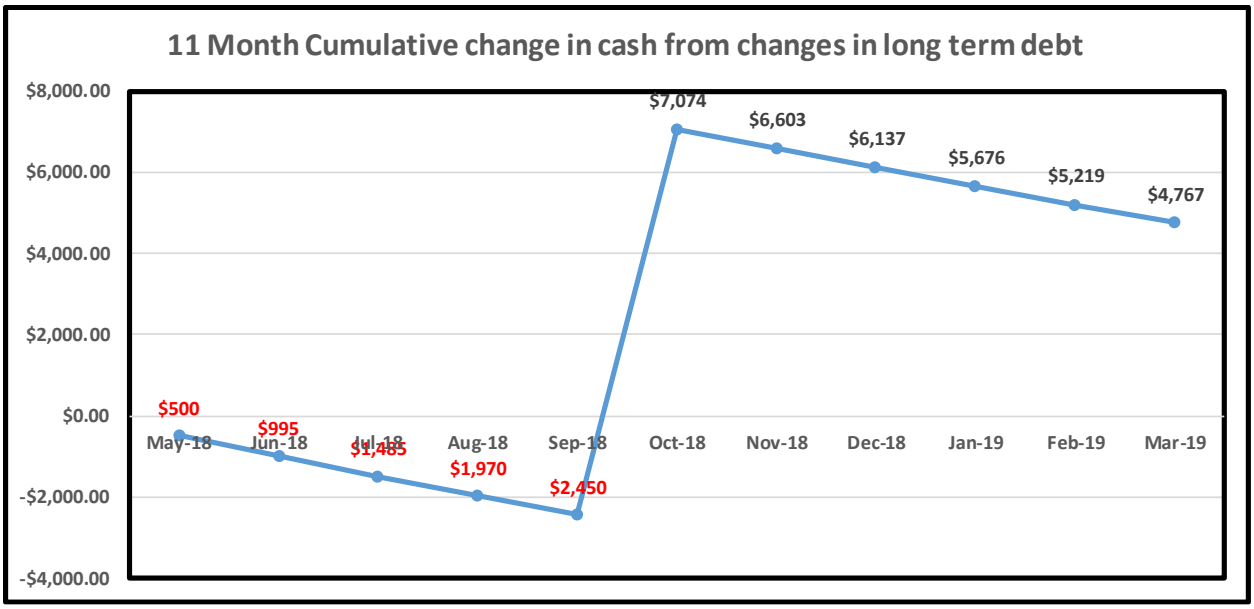

The company has been making principal payments on debt of $480 a month. However, in October the company borrowed an additional $10,000 which is reflected in the big one-time jump.



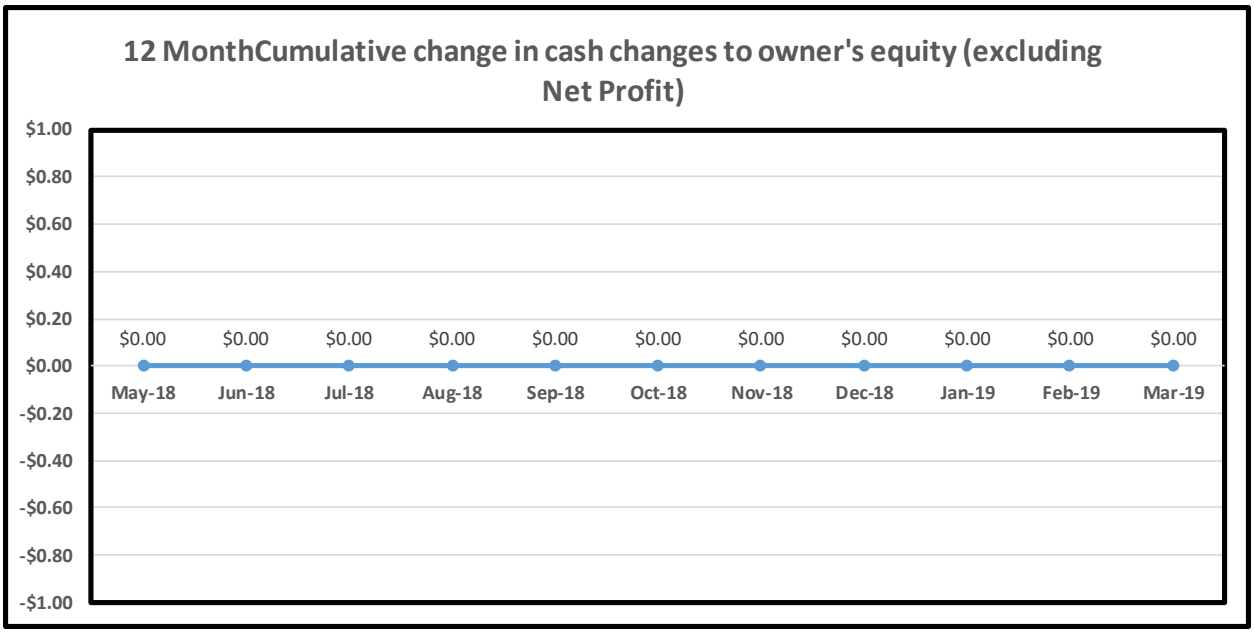

The company's principal source of additional cash is from its profitable operations.




The company paid $10,000 in cash to purchase new operating equipment in September




Principal payments on debt draws down cash. The company borrowed $10,000 in October




There were no changes to owner's equity excluding consideration for net profit

# Breakeven Analysis

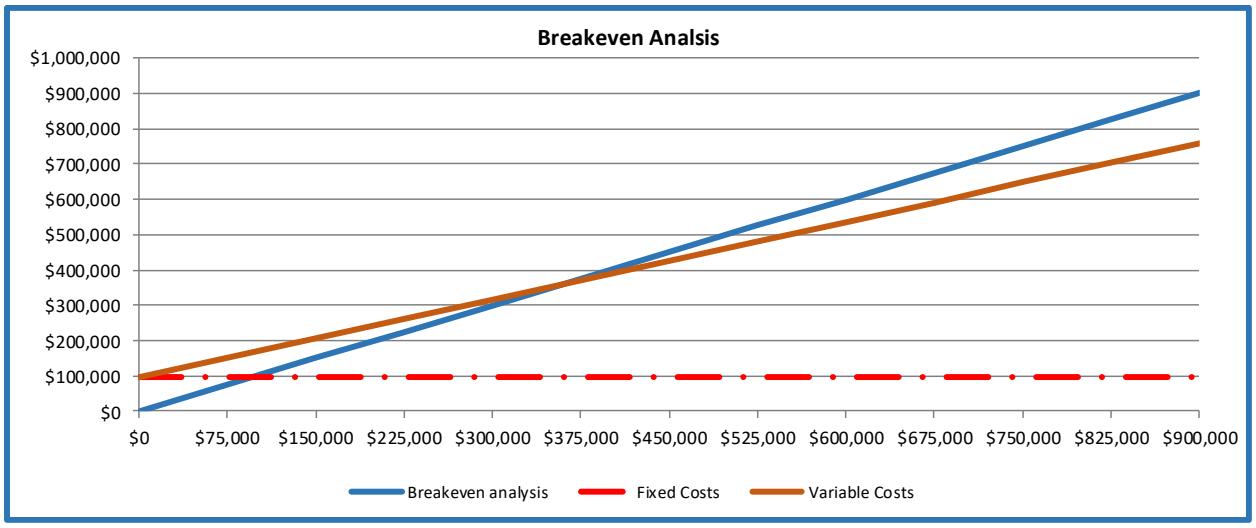
The next chart in this presentation is a *Breakeven Analysis.* The breakeven analysis is a superb financial planning tool for small businesses in particular but any business generally. However, this planning tool is only available to business owners who separate their fixed and variable costs on their P&L. Given this separation, the sales revenue at which a company's profit equals zero—i.e., the breakeven point can be determined by simply dividing its fixed costs by the *Contribution Margin's* percentage of sales revenue.

## Break Even Analysis

| Break Even Analysis Based On: | | |
|---|---|---|
| **Breakeven BEFORE Discretionary Costs** | | |
| Billy Bob's Barbecue | | |
| Sales Revenue Increments on Chart | $75,000 | <---use larger sales increments for high sales volume businesses |
| Contribution Margin's % of Sales Revenue | 26.62% | |
| Fixed costs BEFORE Discretionary Costs | $96,482 | |
| Sales Revenue | $945,146 | |
| **Break Even Sales =** | **$362,505** | |
| **Proof:** | | |
| Sales = | $362,504.75 | |
| Minus variable costs of | $266,022.92 | 73.38% |
| Minus Fixed Costs | $96,481.83 | 26.62% |
| Total | $0.00 | |

The top section of the breakeven chart shows Billy Bob's Barbecue's Contribution Margin's percent of sales revenue and Fixed Costs Before Owner Discretionary Costs in the current month's P&L.

Here we see the calculated breakeven sales which in this example is $362,505 along with proof of that calculation. Below is a graphic depiction of the breakeven analysis



| Breakeven Before Discretionary Costs | | | | |
|---|---|---|---|---|
| Fixed Costs | Contribution Margin % of Sales | Actual Sales | | Cash Flow before DC |
| $96,481.83 | 26.62% | $945,145.75 | | $155,071.82 |
| | **Current Sales Above Break Even =** | **$582,641.00** | **61.6%** | **16.41%** |

Below the breakeven chart, the company's current sales revenue above breakeven and Owner's Discretionary cash flow's percentage of sales have been calculated.

The breakeven analysis provides an opportunity for management to perform different "what if" analyses using the Breakeven After Discretionary Costs template. In this template the cells at the top of the chart containing the 'Contribution Margin's % of Sales Revenue,' 'Fixed Costs INCLUDING Discretionary Costs' and 'Sales Revenue' allow for user data input. Thus, you can play around with any hypothetical scenarios you want. There is a macro button to the right of this worksheet that will automatically replace the subject company's actual data once you are finished experimenting.

As a demonstration of how to explore alternative business model scenarios, let's say management has come up with an idea of how to reduce the firm's cost of goods sold by making some of the products that they are currently buying from a wholesaler. By doing this, they expect their cost of goods sold to decrease from 43.0% to 38.0% of *net* sales revenue (i.e., gross sales minus sales tax) and labor to increase by 3.0% of sales revenue for a net savings of 5.0% of net sales. However, they will have to purchase some manufacturing machinery which will require monthly payments of $2,000 for three years They will also have to increase the size of their physical facility by 5,000 square feet to house the manufacturing operation which will cost $3,000 a month for three years to pay for the construction costs. We will assume that monthly sales revenue remains the same.

Scenario 1 reflects a business model's current contribution margin percent of sales and fixed costs. Scenario 2 incorporates the expected changes in the contribution margin's percent of sales revenue and fixed costs (in this example for one month).

Scenario 1

| | |
|---|---|
| Sales Revenue Increments on Chart | $75,000 |
| Contribution Margin's % of Sales Revenue | 43.00% |
| Fixed costs AFTER Discretionary Costs | $25,000 |
| Sales Revenue | $100,000 |
| **Break Even Sales =** | **$58,140** |

Scenario 2

| | |
|---|---|
| Sales Revenue Increments on Chart | $75,000 |
| Contribution Margin's % of Sales Revenue | 48.00% |
| Fixed costs AFTER Discretionary Costs | $30,000 |
| Sales Revenue | $100,000 |

| | |
|---|---|
| **Break Even Sales =** | **$62,500** |

In this hypothetical scenario it is evident that this contemplated change in the company's business model is not viable if the cash outlays for the cost of the additional fixed assets is considered. However, if we only consider this contemplated change in terms of its effect on net profit, we see an increase in cash flow of $6,057. That is an annual return on the incremental investment in fixed assets of $180,000 of 40.4% ($72,648 ÷ $80,000). From this perspective, the contemplated change looks worthwhile doing.

Scenario 3

| | |
|---|---|
| Sales Revenue Increments on Chart | $75,000 |
| Contribution Margin's % of Sales Revenue | 48.00% |
| Fixed costs AFTER Discretionary Costs | $25,000 |
| Sales Revenue | $100,000 |

| | |
|---|---|
| **Break Even Sales =** | **$52,083** |

Scenario 4

| Fixed Costs | Contribution Margin % of Sales per | Sales | Cash Flow |
|---|---|---|---|
| $125,000.00 | 22.00% | $945,145.75 | $82,932.07 |

Scenario 4 provides another 'what if' exercise. In this case you can play around with different fixed costs, contribution margins and sales revenue and the right-most cell then indicates the resulting cash flow.

**Calibrating the breakeven chart**

The 'Sales Revenue Increments on Chart' requires the user to enter a value in cell E5 (indicating $75,000 illustrated here) that makes the blue line cross the brown line in approximately the middle of the chart. This is a trial-and-error process whereby you make your best guess then go from there to increase or decrease the value in cell E5 until the mission is accomplished.

| Break Even Analysis | | |
|---|---|---|
| Break Even Analysis Based On: | | |
| Breakeven BEFORE Discretionary Costs | | |
| Billy Bob's Barbecue | | |
| Sales Revenue Increments on Chart | $75,000 | <---use larger sales increments fo |
| Contribution Margin's % of Sales Revenue | 26.62% | high sales volume businesses |
| Fixed costs BEFORE Discretionary Costs | $96,482 | |
| Sales Revenue | $945,146 | |

# Benchmark Analyses

Next, the benchmark analyses compare some key operating costs and balance sheet ratios with industry averages. Generally, the differences at first glance will not appear to be significant. However apparent small differences can be quite large when measured against the company's profitability. For example, this company's Cost of Goods Sold is higher that its industry average by 2.59% and Direct Labor Cost is higher than its industry average by 4.26% for a combined difference of 6.85%. By dividing 6.86% by the Owner's Discretionary Cash Flow's ratio of 18.31% the result is 37.41%. Now, multiply the rolling 12-month total discretionary cash flow of $160,804.51 by .3741 which equals $60,156.97.

The balance sheet ratios also provide some insight regarding the company's efficiency when compared to industry averages, for example key operating costs, owner's discretionary cash follow and EBITDA. As another example, consider the number of days it takes to turn over the company's inventory. Considered by itself doesn't tell you much. However, when compared to the industry average, the ratio can tell you a lot. For example, if the subject company's ratio is higher than the industry average it *may* suggest that the company runs out of some inventory from time to time and therewith loses sales. On the other hand, a ratio lower than the industry average *may* suggest that the company is carrying too much inventory which can cause loses due to damage from improper storage, obsolescence, pilferage, etc.

| Industry Average Benchmarks | | | |
|---|---|---|---|
| | Rolling 12 | | Industry |
| Key Operating Costs | Mo. Avg | | Averages |
| Cost of Goods Sold | 43.66% | | 41.07% |
| Direct Labor | 22.46% | | 18.20% |
| Advertising | 4.07% | | 3.12% |
| Rent | 7.51% | | 6.97% |
| Interest Expense | 0.55% | | 1.00% |
| Owner's Discretionary Cash Flow | 18.88% | | 8.95% |
| | | | |
| Key Balance Sheet Ratios | | | |
| Total Inventory Turn in days | 11.66 | | 15.99 |
| Working Capital's % of Sales Revenue | 64.60% | | 0.03% |
| Annual Sales Revenue ÷ FMV Fixed Assets | 3.26 | | 2.99 |
| Annual Sales Revenue ÷ FMV Total Assets | 2.60 | | 2.25 |
| Current Ratio | 3.19 | | 1.33 |
| Quick Ratio | 2.62 | | 1.18 |
| Equity's % of Capital Structure (based on the FMV of Total Assets) | 61.00% | | 65.76% |

The value of fixed assets and total asset turnover ratios, i.e., sales revenue divided the asset values compared to industry averages *may* be an indication that the company has too much or too little invested in operating equipment and machinery. The significance of this situation is subtle. When it comes to valuing a business, the lower the investment in fixed assets required to produce a given cash flow, the more the company is worth. This is because net cash flow drives a business's value, not the value of its fixed assets, therefore the lower the amount of cash required for fixed asset replacements in future years, the greater will be the expected future net cash flow. So as to compare apples to apples, the value to employ in this comparison is the original cost of the fixed assets.

This chart can be expanded to present any of the client company's data for which industry comparable data is available in the *BizMiner* database which provides dozens of industry financial performance average ratios.

http://www.bizminer.com

# Altman Z Score

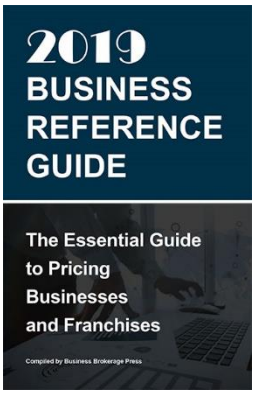
| Altman Z Score | |
|---|---|
| Is the subject company a manufacturer? Y or N | N |
| **Billy Bob's Barbecue** | 3.18 |
| Green Zone: Financially sound if greater than | 2.60 |
| Yellow Zone: Time to take serious action | 1.10 to 2.60 |
| Red Zone: Likelihood of bankruptcy if less than | 1.10 |

Here we see Billy Bob's Barbecue's Altman Z Score of 3.18. A company's z-score is a mathematical formula developed to predict the probability of a company filing for bankruptcy within the next two years. The most famous of the accounting-ratio-based models is the Altman z-score first published in 1968 and was developed via advanced statistical analysis techniques. In its initial test, the Altman Z-Score was found to be 72% accurate in predicting bankruptcy two years prior to the event, with a Type II error (false positives) of 6% (Altman, 1968). In a series of subsequent tests covering three different time periods over the next 31 years (up until 1999), the model was found to be approximately 80-90% accurate in predicting bankruptcy one year prior to the event, with a Type II error (classifying the firm as heading toward bankruptcy when it does not go bankrupt) of approximately 15-20%.

In this worksheet, the user must indicate whether the company is or is not a manufacturing company.

# The Company's Value & Most Reasonable Asking Price

| Billy Bob's Barbecue | |
|---|---|
| Owner's Discretionary Cash Flow | $154,953.18 |
| | |
| Minus Non-Owner CEO Annual Total Compensation | $65,000.00 |
| Earnings Before Interest, Taxes, Depreciation & Amortization | $89,953.18 |
| | |
| | |
| **Enter Desired Rule of Thumb: O for Owners DCF; E for EBITDA** | O |
| | |
| **Rules of Thumb Valuation Analysis Full Service Restaurants** | |
| Billy Bob's Barbecue | 12 Month Totals |
| Owner's Discretionary Cash Flow | $154,953.18 |
| | |
| Valuation Rule of Thumb Multiple Full Service Restaruants | |
| Low | 1.7 |
| Average | 2.1 |
| High | 2.5 |
| | |
| Most Probable Selling Price | |
| Low | $263,420.40 |
| Average | $325,401.67 |
| High | $387,382.95 |
| | |
| Current Assets Not Included In Selling Price | $74,261.80 |
| | |
| Enterprise Value | |
| Low | $337,682.20 |
| Average | $399,663.47 |
| High | $461,644.74 |
| | |
| Total Liabilities | $92,280.79 |
| | |
| Seller's Net Proceeds From Sale | |
| Low | $245,401.41 |
| Average | $307,382.68 |
| High | $369,363.95 |




We now come to the final and very useful bit of information that can be gleaned from our revised financial performance report. Here we see that the past twelve-month Owner's Discretionary Cash Flow was $154,953.

With the value of Owner's Discretionary Cash Flow in hand we can turn to the *Business Reference Guide*, the foremost authority on business value rules of thumb and get a *rule-of-thumb* estimate for the company's most reasonable asking price. In the 2019 edition we find that the selling prices for full-service restaurants are between 1.7-and-2.5 times owner's discretionary cash flow with an average value of 2.1 Thus, we know that the most reasonable asking price for Billy Bob's Barbecue *assuming* it is average in all respects is approximately $325,401. However, this is the midpoint of a fairly wide range which means that the degree to which Billy Bob's Barbecue is above or below average along a host of assessment characteristics allows a subjective but reasonable asking price higher or lower as the case may be for this restaurant. As my own rule of thumb, it is not advisable to expect to sell the company for an amount above the highest rule of thumb value, but this is not the case for the lowest rule of thumb value.

The business valuation template allows the user to value the business based on either Owner's Discretionary Cash Flow or Earnings Before Interest, Taxes, Depreciation and Amortization.

| Billy Bob's Barbecue | |
|---|---|
| Owner's Discretionary Cash Flow | $154,953.18 |
| | |
| Minus Non-Owner CEO Annual Total Compensation | $65,000.00 |
| Earnings Before Interest, Taxes, Depreciation & Amortization | $89,953.18 |
| | |
| | |
| **Enter Desired Rule of Thumb: O for Owners DCF; E for EBITDA** | O |

To toggle between the two different valuation methods, all one needs to do is enter either O for Owner's Discretionary Cash Flow or E for EBITDA.

# Printing the Report

A companion to the Excel *Financial Statement Analyses* workbook is a Microsoft Word report. All of the Excel charts are linked to a MS Word document. Actually, the charts are linked to several MS Word documents. The reason for linking to several separate documents is that the process of updating the documents requires a lot of RAM and it has been my experience that linking all of the charts to one document has caused the report updating process to crash.

Throughout the updating of the Excel workbook, keep Word documents closed. Once the Excel updating process is complete, keep the Excel workbook open and proceed to open the word documents, one document at a time. If it becomes necessary to make a revision to one of the Excel charts, close the companion Word document before making the revision.