

Analyze Your Finances to Ensure Your Mission

Calculating trends can help you manage your money and turn deficits into surpluses.

BY H. BRECKENRIDGE LITTLE

You can build a top-down or bottom-up budget in several ways.¹ You can use a legal pad, an electronic spreadsheet, or networkable software. The tools you choose depend on the size of your organization and the level of detail you desire.

I recommend a mix of the bottom-up method with use of statistics. Ah, statistics. Memories of having a root canal may come to mind. But wait, adding statistics to the recipe is easy and enlightening. Statistical techniques can add a measure of confidence to your forecasts. Most important, these techniques reduce variances—and that means submitting fewer narratives to your board each month. Do I have your attention now?

Review Where You've Been

To begin, you need ample history on every revenue and expense. You can obtain this information from prior financial reports or download it from your accounting software in the form of an ASCII file to a spreadsheet. A minimum of three years of information is necessary to use trend analysis, the statistics of our recipe.

Use Trend Analysis to See Where You're Going

Trend analysis for budgeting purposes is simply regression analysis using time periods. It's as easy as eyeballing three years of revenue or expense history to gauge where you're going.

If you wish to spend a little more effort and be more precise, then sharpen your pencil (literally) and graph your organization's last three years of history. With dollars on the vertical axis and years on the horizontal axis, fit (as closely as you can) a

straight line through the three points on your graph. That's your trend line.

Now add a fourth year (2002) to the horizontal axis. Follow a line straight from 2002 to where it intersects with the trend line that you drew. Draw a point. Follow a straight line from that point to the vertical axis to determine the dollar amount projected for 2002. Congratulations, you just used statistics—in this case, trend analysis.

But can you actually bring in that revenue or afford that expenditure you just plotted? If you're a program manager, you won't know until you build your budget from the bottom up. For example, if the revenue item you plotted is \$3,500 in 2002 for workshop participants, does that equate to a manageable number of participants at a reasonable rate increase over 2001? If the \$3,500 revenue trend is much lower than the budget you build, you'll probably need a business plan. Business as usual won't get you there.

When you think about it, you're now in a much better position. Your knowledge about your budget has expanded. You realize what is achievable and what is not from the use of statistics or trending. Plus, you now have an idea where to focus your future management efforts.

Use the TREND Function

The same theory applies to larger organizations. The only difference is the volume of work necessary for trending. For example, to establish a

trend analysis on three years of workshop revenue, you would once again regress this information to the related time periods.² If 1999's revenue was \$15,000, 2000's revenue was \$20,000, and 2001 is projected to be \$25,000, what would be the trend in revenues for the year 2002? For a small organization, you could simply eyeball or plot it. But for a larger organization, with hundreds if not thousands of accounts, you need to use a different tool.

Using a Microsoft Excel (or Lotus 123) spreadsheet makes this a breeze. Simply create columns headed with the years and rows of the revenue information. (See Figure 1.) The trend formula will go in the revenue cell under the column headed 2002. The formula or function to paste is called TREND. Excel's definition of the TREND function is that it "returns values along a linear trend by fitting a straight line using the least squares method to the known values." That's right, in layman's terms, it's exactly what you did when you used trend analysis in the previous section—connecting the last three years with a straight line and extending it to the point of intersection with the year 2002.

Decide How Strong the Trend Is

Well, so far that's great! The TREND formula returns a value of \$30,000. We now can anticipate the workshop director submitting \$30,000 in budgeted revenues for the year 2002—given that no extraneous

Figure 1

	1999	2000	2001	2002
Workshop Participant Revenue	\$15,000	\$20,000	\$25,000	=TREND (B2:D2, B\$1:D\$1, E\$1)

	1999	2000	2001	2002
Workshop Participant Revenue	\$15,000	\$19,000	\$26,000	=RSQ (B2:D2, B\$1:D\$1)

factors come into play. But how reliable or strong is this trend?³ Suppose the revenue history is not linear—for example, \$15,000, 19,000, and \$26,000? How do we measure the strength of such a trend for the year 2002? Is it so weak that it will be materially different from the submission of the workshop director?

Using the TREND formula, the trend for 2002 now would be \$31,000. To establish the strength of the trend, we use the RSQ formula.⁴ What's important is the value the formula returns—the RSQ value is 0.98. (See Figure 2.) Guess what the prior RSQ was with the TREND of \$30,000? That's right, it was 1.00.

An RSQ of 1.00 means that all the data points are on a straight line. With a 0.98 RSQ, historical points may or may not be on this straight line. So, what RSQ value indicates that you should ignore the trend analysis? When do you pitch statistics out the window and go with your workshop director's submission? Several factors will contribute to the decision. Generally, I have faith with an RSQ of 0.75 or higher. That's a strong trend. Anything less probably points to something that has happened in the past few years that affected your workshops, such as a strong economy or a popular workshop leader. The closer to 1.00 the RSQ is, the more confidence you can have that your projection is accurate and the trend will continue.

Decide on an Acceptable Budget Range

With a 0.98 RSQ and a TREND of \$31,000 in workshop revenue, what is the acceptable range of a budget submission from your workshop director? Again it depends, but an excellent guide is materiality. Materiality

is defined as "beginning in the 5 to 10 percent variance ranges." Thus, your workshop director could submit anything in the range of \$29,450 to \$32,550 and the submission wouldn't be materially different from the TREND of \$31,000. Any submission beyond this range would require an explanation; for example, marketing efforts will be intensified, business plans will be adopted, or a community competitor has emerged.

So, with trend analysis and RSQ evaluation, you can manage your budget even as it is being constructed. With statistical confidence, you can evaluate budget submissions based on your predetermined trends and strengths.

Evaluate for Deficits Or Surpluses

Trending can also help you perform a quick, easy global examination of your finances. Such an examination is an annual must in order to be a good steward of your organization's funds and ensure your nonprofit's mission and programs for years to come.

Assuming you have at least three years' history for every revenue and expense line item in your budget, trend each one out and calculate a surplus or deficit for 2002. Disregard each line item's trend strength at this point and simply calculate your surplus or deficit. What conclusions should you draw? First compare the trended surplus or deficit to that of the prior year amounts. Is 2002 a surplus? A deficit? Is it materially different? Heck, run an RSQ on the surplus or deficit figures from 1999 to 2002. Is it a strong or weak trend?

If the trend from 1999 to 2002 is toward a deficit, you have a problem. Conversely, a progression to a surplus is golden. Regardless, you need

to investigate and drill down into why. For that deficit, lagging program revenues, compounding salary expenses, uncontrollable expenses and mature membership bases are typical culprits. Other usual suspects are unsound business practices and lack of internal controls.

For the Tuckahoe Family YMCA, a suburban Y with a \$6.75 million dollar budget, 40 full-time and 500 part-time staff serving a customer base of over 20,000, the 2000 trend (calculated in late 1999) pointed to a material deficit. After analysis, recommendations were implemented in key areas of management, budget, and internal controls. Those changes, coupled with the hard work and dedication of the staff, resulted in a complete financial turnaround. Instead of a deficit for 2000, this nonprofit had a surplus of \$262,000—the largest in its history! But for me, the true joy is knowing that this organization will be here for the little girl I just saw running down the hall—and for her children, too.

Footnotes

¹Budgeting is the documentation of revenues and expenses as they are to occur in the upcoming fiscal year or years. Upper management creates a top-down budget. Operational or program managers create a bottom-up budget.

²With larger organizations, you can be even more sophisticated and use marketing efforts instead of time periods.

³Remember, this is linear trending, not curvilinear. (Excel provides other formulas and variations with higher levels of required expertise. See "Project future values and perform regression analysis" in Excel.)

⁴According to Excel, RSQ "returns the square of the Pearson product moment correlation coefficient through the given data points." Yuck! Please give me Novocain! Yet, setting up this formula is simple and requires only the first two components of the TREND formula.

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