

from

Essentials of Business Budgeting,
by Robert G. Finney
(New York: AMACOM, 1995)
pages 66-76 and 86-92

CHAPTER 8 GENERATING THE BUDGET NUMBERS

Even with good planning for next year, the company still needs numerical predictions of the revenue, costs, and cash flow that will result from all the planned actions.

The numbers that go into next year's budget are necessarily estimates. There is no way you can know exactly what revenues, costs, and other numbers will be next July or August.

THE KINDS OF NUMBERS

Company budgets ultimately predict amounts of:

- Profit
- Revenue
- Cash flow
- Two types of costs:
 - Expense, the day-to-day operating cost that goes into the profit and loss statement (P&L)
 - Capital expenditures, costs of investments—tools, equipment, computers, and the like—that are accumulated separately and charged to the P&L over a series of years.

Company policy and accounting rules determine the costs that are “capitalized” and “expensed.”

Unit managers, however, primarily budget costs (and accounting categorizes them into capital or expense). The things that make up their costs are man-hours of effort, all the various purchases needed, number of employees, and the like.

In addition, various unit managers deal with other kinds of numbers, mostly unit outputs, that eventually lead to profit and cash flow, such as:

- Sales managers: orders, revenue
- Manufacturing managers: assemblies, fabrications, tests, shipments, revenue
- Operations managers: transactions of all kinds, hours of operation, service calls, revenue
- Treasury managers: cash receipts

In some companies, unit managers budget these various elements in units of work: man-hours of effort, units assembled and shipped, units purchased, and the like. Accounting then converts these into dollar amounts. In other companies, unit managers do the translation themselves, their submitted budget numbers being dollars. Our discussion will always deal with dollars; estimating work units is always involved and included in that dollar prediction.

Additionally, all these kinds of numbers are usually required by product, project, work order number, and the like. Companies want to know the profitability and cash flow of their different products and activities. Therefore, one overall number for revenue, for example, is not enough; revenue by product usually has to be budgeted.

SOURCES OF BUDGET NUMBERS: DATA

To generate all these kinds of budget numbers, the first thing to look for is *data*: values of budget entries substantiated by specific, known information.

- If next year's work plan for a retail store calls for ten hours per day of operation with a given level of service for an anticipated number of customers, the store manager uses data from experience on things like the number of clerks: for example, required to carry out that plan.

Budget assumptions (Chapter 5) are used for all the sources of budget numbers for uncertain and uncontrollable factors, if reliable information is not available.

- Orders backlog (orders received but not yet sold) to be shipped next year is an example of valid data for a manager who has to predict revenue; these are specific sales that can be predicted with confidence.
- If you are required to predict the costs of 50 units of a given product, and all the material for those products is already in inventory (i.e., bought and paid for), you *know* what the material costs of building those 50 units will be.

Examples of budgeting items for which data can often be used directly in budgeting are:

- Revenue obtained from orders backlog
- Rent
- Salaries of personnel
- Costs of a mature product
- Costs of purchases that have firm quotations
- Costs of doing things that have been done before
- Interest income from fixed investments

Data do not have to be certain to be used directly in the budget. Change the example of having to predict the material costs for building 50 units of a given product to the case in which the material must be bought, rather than just retrieved from inventory. Now you cannot be certain of the material costs. However, if known and trusted vendors say *prices will stay the same, you still have valid data: known current prices plus the vendors' statements*. You cannot be certain about material costs in this case, but direct data are still the best source of the budget number.

Misuse of Data

When valid and used appropriately, data are the best source of numerical predictions for the budget. The most common misuse is stretching data beyond the time in which they are meaningful. In that same example of predicting material costs for 50 units, now take the case where purchase prices for these materials are unstable and you do not know the

vendor. You still have data on current material costs for the product, but those data are not reliable for next year. In this case, a budget assumption must be made for next year's prices, based on the best information and analysis you can find. *In general, current and past data should not be used when uncontrollable outside factors are involved.*

Another example of stretching data is the way that some people labor to put specific customer names and dates on orders expected during next year's fourth quarter. If the order cycle (from initial expression of interest to signing the order) is six months, you cannot possibly know the specific identity of customers who will place orders a year from now. It is better to use trends or equations (perhaps including assumptions) involving such things as market size, known prospects, and number of sales calls.

Being able to fill out your budget forms entirely with data is rare. Many budget numbers are usually generated from either trends or equations.

SOURCES OF BUDGET NUMBERS: TRENDS

If data are not valid for direct use, *trends* are another source. A trend is the rate of change of an item over a period of time. If a particular product had sales of 40, 80, and 120 units, respectively, in the last three years, the trend is an increase of 40 units per year. Applying that trend to budgeting, it predicts that next year's sales will be 160 units.

Learning curves in a factory or any repetitive operation are examples of the use of trends; it is expected that people will complete tasks faster, and thus cheaper, as they become more experienced in doing them.

Seasonal trends are also a source of budget information. Toy and ice cream businesses have obvious seasonal characteristics; many other businesses have seasonal variations just as valid. Since performance against the budget is reviewed and

It is easier for a boss to see that you are not following a trend than to understand that a trend is invalid. Be particularly prepared to justify your conclusion to disregard an established trend.

measured monthly, seasonal characteristics must be correctly reflected.

Precision in trend evaluation is not necessary in budgeting. It is sufficient to estimate a trend by averaging or by plotting the points and visually fitting a straight or curved line to them. If purchase prices for a certain material have increased 4 percent, 7 percent, 6 percent, 3 percent, and 7 percent in each of the last five years, it would be reasonable to say that the trend is a 5-5.5 percent increase per year. Since we are dealing with uncertainty, there is no value in doing the work required to define that trend precisely to a thousandth of a percent.

Always Question Trends

The use of trends to generate budget numbers carries an implicit assumption that the trend will continue. Therein lies the problem. Few trends of any kind last for years; the world changes too fast for conditions that defined the trend to stay the same. More than that, however, the formation of any trend carries no guarantee that it will continue, if changing conditions and uncontrollable factors are at work. Witness the stock market, which often seems to invalidate a trend almost as soon as there is enough data for it to be recognized.

The proper way to use trends in budgeting is always as questioned trends. If the number predicted by the trend is to be used in the budget, a deliberate conclusion must have been reached that the trend will continue. The opposite is also true: To ignore a trend, a deliberate conclusion must have been reached that the trend is no longer valid.

Orders and revenue trends are always suspicious. Cost trends are more reliable, but purchase prices are also uncontrollable, and management actions to change the way things are done invalidate trends. Seasonal trends are also subject to change if certain market characteristics change, or the market puts the products in question to different uses. If the item in question involves uncontrollable outside factors, a budget assumption should be included that either the trend will continue or change.

SOURCES OF BUDGET NUMBERS: EQUATIONS

Budgeting equations are algebraic descriptions of the relationship among budget items. They are built with information, knowledge, experience, or assumptions about elements of a total item of interest:

- If you know the cost of doing something once and there are no economies of scale involved, the cost of doing it ten times is simply ten times that unit cost.
- Assume that a sales manager says, "There are 1,000 customers for this product, and they generally replace their equipment every 5 years, so I believe that there will be 200 orders next year." Even if it is never written down, that sales manager has used an equation: next year's orders will equal market size divided by 5.

Budgeting equations must be used when the other sources cannot themselves generate a needed number. The equations are derived from work definition and planning and may use data, trends, and assumptions about both. Equations must also generally be used when budgeting new activities, for which data and trends do not exist. In this case, equations must be developed for outputs and costs from the design and analysis of the new activity. Then data and trends from related activities and general experience must be used in the equations.

Illustration: A Recruiting Unit

Consider a recruiting unit manager whose definition of work has yielded the conclusion that the unit's strongest cost driver is simply the number of positions to be filled, or new hires. This manager can use work planning to structure a simple budgeting equation:

$$\text{Unit cost} = (\text{a fixed amount}) + (\text{cost per new hire}) \\ \times (\text{number of new hires})$$

Data and trends yield a good estimate of the fixed amount and the costs per new hire. There are two sources of required new hires: expansion in the company, and turnover. In such a service organization, the manager must wait for next year's plans for the entire company before the personnel expansion number to use is known. Turnover must be anticipated from data and trends, questioned and analyzed for changing conditions. (This is a prime example of a unit's costs being determined by factors beyond the manager's control, and budget assumptions should be included for division personnel increases and turnover rates.)

Illustration: A Factory Assembly Unit

For a more extensive use of equations, consider a factory assembly unit manager budgeting direct labor costs for next year. The number of units of different products required is obtained from the production schedule (which is the output dictator in this case—if not available, it must be assumed). From knowledge, experience, and work planning, the manager has data on:

- The number of operations required to assemble each product and the time required for each. (These items may be predicted from the data or from the learning curve trend, whichever is appropriate.)
- The wages of the assemblers. (Next year's wage raises may be a budgeting instruction from human resources, or predicted by the manager from known current wages and the trend of previous year's wage raises.)

The direct labor costs per unit per product are then the product of time required for each and the wage costs per unit of time. That is,

$$\text{Labor cost per unit} = (\text{assembly time in hours}) \times (\text{wage cost per hour})$$

Then

$$\text{Labor cost per product} = (\text{labor cost per unit}) \times (\text{number of units})$$

and

$$\text{Total labor costs} = \text{the sum of the labor costs for each product}$$

The manager's task that surrounds these computations is to plan and lay out the work in the most effective and efficient manner, minimizing the idle time and maximizing output versus cost. This planning should be done before the computations and redone afterward, to see if the numbers point the way to improvements in the work plan. For a new product, the manager uses the same equations but must design the process to be used and apply operation timing data from similar products and experience.

Misuse of Equations

Misuse of equations in budgeting can be caused by using the wrong equations, of course—by not properly relating cause and effect. Truly understanding the drivers and dictators of outputs and costs through work definition and planning is the best antidote. There is no substitute for unit managers understanding their units' work. The other most prominent misuse is not using equations enough, that is, using direct data and trends beyond the time for which they are valid.

SUMMARY

There are three sources of numerical predictions in the budget: data, trends, and equations.

- Data should always be used when available and valid for the particular application.
- Trends should never be ignored, but they should always be questioned before use. If uncontrollable fac-

Stretching data, using invalid trends, taking more time, or striving for great precision won't take the uncertainty out of the future.

tors are involved, such trends should be treated with assumptions.

- *Equations* are used when the other sources cannot themselves generate a needed number. They also must be used when budgeting new activities for which data and trends do not exist.

OTHER POINTS ON NUMBER GENERATION

Some important points about budget number generation were made in Chapter 3 when you were getting your feet wet in filling out a budget form. To refresh your memory, these points are repeated here.

- Remember that precision is not accuracy. If all you can really predict about telephone costs next year is that they will be between \$2,000 and \$2,500, there is no value in putting \$2,378 in the budget. In fact, it is harmful, because the four figures mislead by implying more knowledge than you have. In such a case, please put \$2,400 in your budget.
- Use perspective on budget-line item entries. Major costs require extensive, intelligent analysis, because the impact of a mistake is large. If a particular line item is only 2 percent of your total budget, however, don't waste time on it. Even if you are wrong by half, it only causes a 1 percent error in your total budget. Future uncertainty does not allow your whole budget to be that accurate.
- To implement that perspective, categorize outputs and costs into major, minor, or in between (which we called "substantial").

- If *minor*, spend minimum time on them, possibly just using this year's number or a quick guess at next year's amount.
- If *substantial*, it depends on whether the unit's work is largely repetitive from year to year or changes radically (as illustrated in Chapter 7 regarding work planning). If next year's work will be:
 - Similar* to this year's, plan and analyze next year's work for changes and use those to modify this year's data
 - Different* from this year's, use work plans and appropriate analyses of data, trends, and equations to get the predicted numbers
- If *major*, do the best and most extensive analysis of work plans and different number sources, because the penalty for a bad prediction is large.

APPLICATION

Since costs constitute the great majority of budget number generation, Chapter 9 is devoted to budgeting costs.

Revenue budgeting varies greatly across different kinds of businesses:

- Many retail businesses, for example, are *cash businesses* in which revenue is made up of many small sales. Data on individual customers are meaningless. Data or trends on past and current month-by-month sales (revenue) may be useful, but their applicability must be questioned. (For example, the opening or closing of a large factory nearby is a new condition that changes the sales trend for many retail businesses.) Revenue is often predicted from equations or statistical models of the served market.

- *Businesses that respond to orders have a different revenue budgeting problem. An order is an agreement to buy something at a specified future time and price, and often implies that work must be done before delivery (for example, construction projects, military systems). For such businesses, backlog (orders received but not yet delivered) is confident data that can be used directly. Orders prospects are budgeting data if confidence in an eventual order is high. Beyond identified prospects, trends and equations (or market models) are usually the best sources.*

- *Businesses that rely on a few large orders (such as airplane or supercomputer manufacturers) have a particularly difficult time budgeting revenue, because single orders are so important. Trends and statistical models are no help, because so few prospects are involved. Data from backlog and confident orders prospects are useful in budgeting. Otherwise, budgeted revenue must come from analysis of a relatively small number of individual customers.*

Beyond costs and revenue, other budget numbers that have to be generated are primarily *unit outputs*: shipments, assemblies, transactions, service calls, and so on. If such outputs are directly customer driven (like bank loan closings or some kinds of customer service calls), they are predicted like revenue. If they are internally driven (like assemblies or shipments), numbers come from the work plans and all three number sources, as appropriate. For example:

- Shipments or cash receipts would be entered as data from production and revenue/collection plans.
- Numbers of assemblies could be obtained from learning curve trends.
- Assemblies could be obtained from equations involving number of assemblers, assembly operations, and time per operation.

CHAPTER 10

PUTTING IT ALL TOGETHER

Let's briefly review what has been said about the budget and the unit manager's work of budgeting:

- Company budgets are the financial expression of company plans for next year. They are the sum of all the budgets of company component organizations, suitably transformed by accounting into higher management and financial reporting terms.
- Unit budgets are not done, or approved, in a vacuum. They must reflect company strategies and plans, management priorities, and the needs and desires of interfacing organizations. Outputs to, and needs from, other organizations are defined in the process of planning the work and given value when generating the numbers.
- The planning work of budgeting:
 - Its goal is to define, for next year, the organization's outputs (which are usually inputs to other organizations), costs, and needs (inputs) from other organizations.
 - The timing and schedules of all these must be included.
 - The proper way to define the work is in terms of outputs, activities, and inputs, together with the things that dictate the outputs and drive the costs.
 - Next year's outputs and inputs are never fully known at budget time. The planning must reflect that uncertainty with estimates from the best information available and explicit assumptions for those things that are uncontrollable.

- Generating the budget numbers:
 - Unit budgeters primarily predict costs, but some also budget revenue and various kinds of outputs.
 - The budget numbers flow directly from the unit work plan: the outputs, costs, needs from other organizations, and schedules.
 - The sources of budget numbers in all prediction areas are data, trends, and equations.
 - Explicit assumptions should supply the numbers for uncontrollable items for which none of the sources is available.
 - Personnel costs are predicted from work plans and wage and salary information. If possible, purchase costs are predicted from published prices and firm quotations. When that is impossible, the best data, trends, and knowledge must be used.

The key to getting all this budgeting work done is to *recognize the severe time pressure* inherent in most company budgeting processes. Once budgeting begins, budgeters can be overwhelmed by urgent information gathering and number crunching. Things like planning the work and learning company practices must be completed before that happens.

Therefore, before we get to the final element of budgeting work ("Getting the Right Budget Approved"—Chapter 11), ~~we need to discuss how to organize budget preparation~~ efficiently. We will discuss the unit budgeter's process in terms of:

- Work that should be done before company budgeting begins ("preparatory work")
- Work done during the company budgeting process ("budget generation")

A useful intermediate step, a preliminary budget, should also be included in the budgeter's process, and will be discussed.

If this preliminary work seems heavy, take consolation in the fact that every item will help you manage better, and all these preparatory tasks are major efforts only the first time they are done.

PREPARATORY WORK

To develop good budgets, unit managers should do the following before the company's budgeting process begins:

- Learn the company's budgeting process, forms, terminology, and relevant accounting usage. The best sources are accounting and your boss.
- Learn everything you can about your boss's priorities, company and division strategies and plans, accounting's priorities and points of emphasis, and the business environment and financial constraints in which the company expects to operate next year. This will never be found on one piece of paper, but must result from extensive reading and continuing discussions with bosses, accounting people, and marketing people.
- Define the organization's current work and known forthcoming changes, in terms of outputs, inputs, activities, output dictators, and cost drivers.
- Program your budget forms onto a spreadsheet program in your personal computer, for later ease of manipulation and modification.

The scheduling of this work depends on the situation. The important thing is to have it all completed when the company's budgeting process begins. If being done for the first time, ~~start at least a couple of months before budgeting~~ begins, given that this has to be a part-time activity.

THE PRELIMINARY BUDGET

A practice that unit managers will find quite useful is the preparation of a preliminary budget as soon as possible after budgeting begins, that is, *as soon as any requirement information and instructions are received*.

What exactly does a preliminary budget mean in the sense used here? It means a broad prediction of next year's outputs and costs, accurate to within 10 to 15 percent of the final

If budget forms have been programmed into your personal computer, the mechanics of generating preliminary budgets, plus analysis of alternatives, is easy.

budget. As opposed to the bottom-up numerical construction of the final budget, it is a top-down prediction based on experience, equations, and trends, without detailed analysis of all the different costs.

Some managers are uncomfortable making the approximations and broad estimates that such a preliminary budget requires. They want to know "everything" before putting pencil to paper. However, they must understand that (1) they cannot know "everything" during budget time, (2) they are smart enough to make broad estimates that are good enough for the purpose, and (3) the benefits of such a quick estimate outweigh the discomforts.

How to Do It

The idea is to make a quick prediction to see if the unit's plans are in the ballpark before doing all the number crunching. If your plans are way off (for example, not even close to accomplishing the required outputs, or apparently require a cost increase when a cost reduction has been dictated), time spent on detailed cost and output prediction would be wasted; your budget would be disapproved and all that work would have to be redone.

To do a preliminary budget, fill in all items on the budget form, but do it as follows:

- Use the output requirements and instructions that you have been given.
- Make the most informed guess you can about needed information not yet received.
- Predict achievable outputs and costs from experience and equations without doing detailed analysis.

The best way to do that last item depends on the nature of the unit's work and function:

- If the unit experiences little year-to-year variability (such as a payroll function in stable times), just use this year's actuals, plus a quick estimate of the effects of any known coming changes.

- For a function whose outputs and work change greatly from year to year (such as factory assembly), its basis has to be work definition and plans. Compare and contrast next year's requirements with this year and last year. Predict the budget numbers from experience where comparable, make an informed guess at work elements that are not comparable, and particularly highlight the latter for further analysis.

- Between these two extremes (units like purchasing or branch bank operations), a combination of this year's actuals plus a few equations can be used.

As an example of the latter, a purchasing manager may conclude, in defining the organization's work, that there is a steady level of activity plus a variable component that depends on the number of new products manufactured during a year. The relationship for the variable component may be something like

Variable man-hours = constant \times number of new products

This manager's preliminary budget would then be current year actual costs plus or minus amounts arising from the difference between the number of new products in the current year versus the next (budget) year.

Benefits

The first benefit of this preliminary budget was already noted above: You get early warning, before doing a lot of number crunching, of plans that lead to budgets that are going to be disapproved.

Other benefits are as follows:

- It quickly highlights budgeting problems, such as mismatches of resources and requirements, and allows budgeters to focus on such problems as budgeting proceeds.

- It indicates the information needed to complete the budget. Budgeters can then immediately concentrate on obtaining the missing information, rather than having to spend time in defining and understanding what is missing.
- It illuminates important areas for next year, those in which performance improvements and cost reductions will have large payoffs.
- It lets budgeters immediately begin informed communications with bosses and peers to resolve budgeting problems and "sell" their approach to the budget and their problem solutions.

BUDGET GENERATION

Most of the work during budget generation is predicting all the cost, revenue, and output numbers required. Initial concentration should be on:

- Obtaining missing information regarding required outputs and inputs
- Communicating with interfacing organizations concerning needs and desires back and forth
- Finalizing budget assumptions, when needed information on required outputs and inputs becomes available
- Communicating with the boss, accounting, and interfacing organizations every step of the way

The communication steps are extremely important. That the budget cannot be done in a vacuum bears repeating. For the company to succeed, all organization budgets must be consistent and complementary. The budget is worthless if top management strategy calls for equal emphasis on widgets and gadgets, sales budgets orders for 10,000 widgets and only 100 gadgets, and manufacturing plans to build 8,000 gadgets and 2,000 widgets. Most inconsistencies are not that obvious, but they do not have to be to have bad effects on company success.

If the preparatory work and the preliminary budget have been done well, budget generation will not be the onerous, time-consuming task that it usually is.

To discuss the actual generation of the budget numbers, it is appropriate to summarize this chapter briefly. The best way to generate the budget numbers is as follows:

- Before budgeting begins, define the unit's work and understand the important equations, output dictators, and cost drivers involved.
- As budgeting begins, use that information and data on current operations to prepare a preliminary budget, based on early information about next year's required outputs and available inputs.
- Then, as work is done and information is developed, appropriately use data, questioned trends, equations, assumptions, knowledge, and experience to generate the numbers that will be submitted, as discussed in Chapters 8 and 9.

This process uses data where possible, trends where valid, and equations and assumptions for the rest of the predictions. It uses all pertinent information about the company, the organization, and next year as soon as it becomes available. The result will be a budget with the best possible prediction of next year's numbers, given the inherent uncertainty and uncontrollability of the future.