Demystify Project Estimating with Three Simple Steps

How many times have you been asked the question “It’s going to take you how long?” when you present an estimate of time and effort for a given project? Regardless of whether it is your customer or a fellow manager, the conversation is often the same. As the expert, you expect the project will require a significant amount of work and a variety of specific tasks to be performed. From the perspective of the other party – the non-expert – the tendency is to oversimplify the effort down to about 30% of your initial numbers.

Preparing an estimate for a new business proposal can be complex and risky if not done correctly. Since your customers will always seek faster and cheaper, a modest estimate is preferred. Your business runs the risk of losing money, though, if you underestimate the effort. Alternatively, should you present a highly conservative and risk adverse estimate, you may simply price yourself out of the deal.

Ultimately the goal of any proposal is to win the business, and ensure that it is profitable. The key to bringing these two extremes together is to use data to formulate an estimate that is comprehensive and thorough based on past experience.

What is Project Estimating?

When presented with a new opportunity, a business will establish the level of effort (LOE) necessary to perform a given scope. Typically, the LOE is comprised of a roll-up of required labor applied to the effort, non-recurring charges such as raw material, software or other one-time expenses, and any travel and coordination expenses incurred to ensure the project goes well.

Once the costs are understood, profit and related fees are added to determine a notional price. Most businesses will then create the business model by computing the net present value (NPV) or internal rate of return (IRR) to determine how valuable the project is to the company. When combined with other strategic decisions, the NPV or IRR are frequently used to decide whether or not to pursue a project.

Where Does the Problem Occur?

Given this process by which businesses go about evaluating new projects and opportunities, the initial estimate of labor, non-recurring costs and other expenses is extremely important. If one produces a very cursory estimate which may omit some expenses, an artificially low cost and high project value will result. In contrast, by adding in every detail and factoring in extensive risk, one generates an extremely high cost and low profit margin, making the opportunity less attractive.

Marrying these two extremes presents managers and business leaders with a challenge. Further, scrutiny is always levied on estimates by both customers as well as other managers. Customers expect
less effort, lower cost and shorter delivery time. A project manager wants higher estimates to ensure he or she has sufficient budget to deliver the end results. Thus, there exists a fine line between winning a contract and being overpriced. How much conservatism should you account for? Does it really take that long to do something? What amount of risk is appropriate?

**Separate Effort from Risk and Strategy**

The dilemma emerges when managers and businesses must decide how much risk they are willing to take themselves and how much they allocate in the estimate. If the customer is known to request frequent changes, for example, you may be inclined to add extra labor hours, or increase non-recurring costs to account for this. While evaluating different amounts of risk in an estimate is indeed a valued exercise, applying too much risk reserve may drive the price beyond what a customer is willing to pay.

You as the project estimator are therefore faced with balancing three basic perspectives (See Figure 1):

**The Business Perspective** – New business creates sales, and sales create profit. You want the new project to help grow the firm, but the opportunity has to be profitable, regardless of the project.

**The Risk Aversion Perspective** – You want the new business, but you do not want to incur any risk by doing the project. Therefore you want to allocate as much risk reserve as possible to accommodate any scope changes and delays.

**The Strategic Perspective** – This is a new customer and you want to win some initial business to foster a relationship for future opportunities. You want to be aggressive on pricing and schedule to help motivate customer to select your business.

To accommodate such differences, it is advisable to simply *decouple* the risk and strategic aspects of the decision from the anticipated LOE. In other words, when compiling an estimate for a new business opportunity, remain as objective as possible with to accurately define what the project is likely and realistically to require. Ignore the risk and strategic considerations from your estimate, and revisit them after you have compiled the estimate. Based on your estimate of the actual project, you can later increase or decrease the price as risk reduction or for strategic reasons, as deemed appropriate.

**Producing an Accurate Estimate**

In order to produce a dependable financial model of costs, it is necessary to accurately predict the effort required. We recommend using a very simple sequence of 3 steps to help you generate more accurate and reasonable project estimates.
Step 1: The Gut Check – Once all requirements and deliverables are understood, the first step in the process is to make a high level guess of the effort you believe the project will require. For example, you may estimate that the project will demand four people for six month as a first estimate. Why is this guess important? The initial guess serves as a means of helping you determine how well you truly understand the project and deliverables. If you cannot come up with a reasonable explanation for what you expect the LOE to be due to a number of unknowns, you should go back and review the project goals and requirements.

Further, if you find yourself speculating over a variety of scenarios that may or may not occur, revisit the requirements to refine your understanding of what the customer wants. Speak with the customer if you need clarification. The value of the guess in Step 1 is not so much important as the confidence with which you feel your estimate is notionally correct.

Step 2: The Data – Data driven decision making is a project manager’s best friend. The underlying rule in estimating a project’s LOE is to recognize that a project is comprised of a series of tasks. By deconstructing the project into smaller tasks and the steps, a more accurate prediction of costs is possible.

The goal of this activity is to create a bottoms-up approach that forces you to systematically think through the required activities to help you can arrive at an estimate. As shown in Figure 2, list out all the various tasks and consider the amount of energy and costs each item will take. By summing the small pieces, a total cost can be computed.

As a simple example, consider a project for which you anticipated a required effort of 3,000 from Step 1. When presenting this basic number to a customer, for example, it can easily be challenged and questioned if there is minimal data to back up your number. As a result, you may settle on 2,000 hours based on some quick negotiation.

In contrast, if you create a simple yet comprehensive list of activities such as that shown in Figure 2, your estimate may arrive at 2,862 hours. When you meet with the customer in this scenario, you are
still likely to be challenged on your estimate. This time, however, presenting the data that substantiates
the LOE forces others to critique the effort for each individual task, and not the entire effort.

Continuing, a customer may take issue with 125 hours of work you estimate is required to create a final
project report. You may agree to get it done in 100 hours. In doing so, though, you are getting the
other party to acknowledge that the work is required and must be accounted for as part of the total
estimate. Focusing the discussion around the individual tasks as opposed to the project as a whole helps
all parties remain objective.

**Step 3: The Calibration** – The final step in putting together a sound project estimate is to calibrate the
effort and hours you compiled against historic examples of similar projects. Find an example of a
comparable project to which you can compare your estimate. Is your estimate reasonable? Can you
rationalize the differences?

To this end, even if you do not have a project that is close in magnitude, you can still calibrate the
estimate you have just created in Step 2. Consider the scope. If the effort you are planning is less in
hours and costs than what was actually required for the last project, you may want to verify that the
scope is in fact less than before. Conversely, if the previous project was significantly less in terms of
effort, verify that your estimate for the new project exceeds the prior effort.

Calibration is the activity where you use historical data from other projects as a means of grounding
your bottom-up estimate. It is typical for others to ask how this project compares to prior efforts, so it is
good practice to have already addressed the question yourself. Step 3 will ensure you are using a robust
data-driven decision making process for outlining the require LOE and costs with a new project. Once
you have completed all three steps, you can then return to other strategic and risk-based decisions
through your pricing strategy.

**Schedule Vs. People**

When it comes to business, there is often a tradeoff between resources and time. By creating a
thorough labor and cost estimate for a given project, you are able to better plan how the project will be
executed by adjusting the amount of people you will need. For example, while not an exact trade-off,
an estimated 2000 hour effort will likely consume a single person for a year or approximately two
people for six months. If a client needs the work completed in six months, you should plan to have more
than one resource working on the project.

A detailed estimate also helps you determine the type of staffing you need. As an example, if a given
project requires five people for just six months, you may want to consider outside resource as a
potential short term solution. Alternatively, if the project is likely to consume five people for three
years, you may want to look at hiring new full time employees. In short, having well defined data and
assumptions facilitates the genesis of a project resource plan and schedule.
Some Considerations:

There are many considerations to make when outlining a project work estimate. It is advisable to outline all the activities that your employees undertake to do their job, to ensure you include them in the estimate. For instance, many businesses forget to allocate costs and effort associated with internal processes – management reviews, project updates, financial reporting. Below is a list of activities that might be required by your business, which extend beyond the immediate project duties.

Meetings: If you have weekly team meetings that will typically require about an hour a week for 5 people, it will add up to approximately 250 labor hours in a year. This represents a significant labor cost. Managers often forget the time it takes for coordinate and non-project specific effort.

Internal Processes: In a similar fashion, if your business requires monthly executive or financial reviews, consider including some effort and hours associated with these events. While counting the hours of the executives or managers may not be necessary (they are likely considered in overhead), the employees working on the project will have to devote time towards preparing and presenting during the reviews. Accounting for these hours also ensures that you do not overcommit your organization on time scales since these are required duties of the employees assigned to the project. Even if you opt to leave all such effort out of the cost of the project, the appropriate time required by such activities should be reflected in the project schedule.

First Pass Success Rate: While being overly conservative is not advisable, it is important be realistic about the amount of iterations or negotiations that are likely to take place. If you are designing a new high rise office building or developing software, you are unlikely to have your initial designs accepted outright. Account for some back and forth with the customer in your estimates, based on your prior experience.

Who Does the Work: In the global business setting, many firms have staff in different regions of the world. If you have resources in low-cost regions like China and India, but will also have employees working out of your high cost offices in London or Tokyo, account for different billing rates to obtain a more accurate estimate.

Human Efficiency: Studies show that for the average worker spending 8 hours at work in a given day, the individual is only productive for 5.5 hours of that time. This is about a 63% efficiency rating for output per hours. This is not to say people are only working 63% of the time, but rather that distractions and interruptions occur. Consider human efficiency when compiling an estimate.

Create a Robust Estimate, Weigh the Risk

In closing, all businesses have a natural desire to pursue new opportunities. New opportunities, however, need to be beneficial to the business in terms of profit, reputation, or positioning for growth. This 3-step strategy for project estimating focuses on establishing an accurate estimate of costs, independent of other decisions and considerations.
Understanding what resources an opportunity will consume is important, not only for cost estimating purposes, but also for understanding the impact to the rest of the business. A project that is poorly estimated ends up consuming far more resources than initially planned, and can be disruptive to the broader business. Further, such a situation is likely to impact other customers when you draw in resources assigned to their projects.

The baseline estimate created by this 3-step process simply defines what it will take to do the job. From this baseline, firms can then begin to consider things like risks and benefits. From the baseline, a business can choose decrease risk by adding in additional financial reserve. If a business is seeking to break into a new market and build new relationships, it may want to take on more risk by lowering their price to secure the contract. Incurred a 2 million euro cost overrun is far easier to digest when you knew it was a possibility than when it was a surprised. Low pricing as a means of market entry is an approach that is used time and time again, particularly when entering a foreign market where a firm’s brand or reputation may not be very well known.

All things considered, though, without a sound and thorough basis of data from which they can make such decisions, firms are likely to be ill-prepared for fulfilling customer needs. By creating detailed bottoms-up and well-constructed estimates, managers and businesses can make educated decisions concerning risks, staffing and other resources.
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