



# Measurement for Contracting Driving Operational Performance

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## Overview

This is part of MRSI's series on measurement for small and mid-size businesses, which includes white papers on various aspects of measurement in a variety of industries. This paper is focused on measurement of contracting companies.

Measurement is vital to drive performance and, as the saying goes, "what gets measured gets managed." Measures should be selected carefully and then connected to positions in the organization structure through formal reporting relationships and performance evaluation mechanisms.

Contractors need to select a variety of measures. For most small and mid-size firms, key among these will be measures of bidding, estimating and scheduling accuracy, labor productivity and utilization, material controls and overhead allocation.

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## Why Measure Anything?

*“Measure what is measurable, and make measurable what is not so.”*  
- Galileo

Many managers in small and medium-sized businesses mistakenly believe that measuring is expensive and therefore only for large companies. Others are self-taught and have never had the opportunity to find out what it is possible to measure. Both types of managers can benefit from awareness that knowing how one is doing is a fundamental human need. One reason people enjoy professional sports is that everyone knows the rules and everyone knows the score. Measures provide a scorecard that people can use to strive to improve against. Measures also allow management to set clear expectations. Consider the difference between “keep the labor productive” and “Keep the labor utilized at 85% or better.” Clear expectations have repeatedly shown to improve performance.

Measuring is not just about making people work harder, it is also about making employees work smarter. With measures in place, people are also likely to get more creative and improve what they are doing. This works on two levels: First, expectations are set and people want to show that they can do better than the expectation, which usually requires working smarter as well as harder. Second, there is a reward for improvement; a significant improvement in process will show in the numbers that are posted, and the individuals responsible will know that what they did is having an impact. There is also the belief that this impact will be recognized by others.

Measures also help management with diagnosing problems. For example, management may know that labor costs are up. Do they know, however, that labor costs are up because of a problematic job where the estimator underestimated a phase and access issues were not addressed in both the initial job walk and the pre-construction meeting? While each manager may think the issue is a problem that is out of their hands, a clear set of checks and balances throughout the workflow will pre-empt any costly errors. Job costing reports allow management to target the problem and take action.

## Are Financial Measures Enough?

In short, no. In the era of cheap, small-business accounting systems, most companies have a reasonable idea of monthly and annual profitability. However, these figures are very high level and are focused on the overall



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outcome rather than the specific processes that may have caused the result. It is much like a football coach that focuses on whether they won or lost the game – the information isn't always actionable enough. The football coach is also going to want to know about passing yardage, fumbles, quarterback sacks, first downs, kick-off return yardage, and so on. These figures help the coach focus energy where it can best be utilized. If the problem is quarterback sacks, the coach knows to focus energy on the quarterback throwing more quickly, getting receivers open, or tightening the offensive line. Time spent with the place-kicker would be largely wasted.

### Team vs. Individual Measures

Generally speaking, individual measures are more effective in driving individual performance than team measures because the individual contribution is diluted in the numbers posted by the team. However, team measures are also effective in driving the performance of the individual. From the earliest times, humans have gathered in social groups. We all have a strong desire to please the other members of our team and to secure our social standing within the group. Peer pressure has a strong impact on performance.

It is also important to consider the dilutive effect as teams become larger. An installation team may be motivated to improve their productivity figures, but in a large contracting firm, the effects of individual effort would be difficult to see in company-wide productivity. Generally speaking, the effect starts to become negligible once it is covered by about 100 people. Of course, if those people report into, say, an Operations Manager, that manager can be held accountable as an individual.

In some instances, individual measures can lead people to perform less than optimally. If their performance requires a lot of group interaction and cooperation, it may be necessary to emphasize group measures or give them group measures exclusively. Most companies have experienced someone who focuses on getting their "real work" done, while ignoring their paperwork, creating problems for the next person in the in the process. In some instances, including that next person in the team's key measures can help refocus people on the broader impact of their actions.



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In summary, individual measures are best at driving individual performance if teamwork is not a major element of the position, but team measures can also be effective at driving individual performance.

### Accountability and Measures

It is crucial to identify which measures are important, but if employees do not accept accountability for performance against those measures, they can simply become an academic exercise. All staff should know who is accountable for performance against which measure, which should be done through the organization chart. These measures should then be reviewed regularly with senior management to create ongoing accountability. Regular informal reviews should then be augmented by a formal performance evaluation process that includes setting goals for performance against measures. At each review or each time processes are changed significantly, the goals should be reviewed. An organization that does this comes to be perceived as fair and objective, while at the same time improving its performance.

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### Do People Need Total Control Over Results?

No, they do not. However, it helps if they can at least see that they can influence the measure. Most people accept that foremen should be measured on on-time completion of projects. But even foremen do not have full control; they are impacted by bid selection, estimating, purchasing, customers, cash flow, and so on. People just need to see that the number is not completely outside of their control. Similarly, people must have the authority to take appropriate actions necessary for performance against the measure.

### Risks in Measurement

One problem with setting measurable targets is that if they are not designed well, they can become too effective at driving performance against the measure to the exclusion of other things that are important. In 1937, a paleo-anthropologist with the regal-sounding name Gustav Heinrich Ralph



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von Koenigswald was searching for the bones of early hominids in Java, present-day Indonesia. Since the bones are exceedingly rare (even now, the entirety of the bones of early man that have been found would barely fill the bed of a pickup truck) and because it is difficult to know where to look, he hit upon the idea of using low-paid locals to aid in the search and make his team able to cover a larger area. He offered 10 cents for each piece of bone they could bring him. To his horror, he found his labor force was smashing priceless bones into fragments in order to increase their incomes. Perhaps he could have paid per pound, or paid more for larger segments, or paid by the hour. Regardless, Koenigswald discovered how painful the results of measuring the wrong things can be.

In contracting, symptoms of getting it wrong are usually fairly evident. For example, estimates are created with what appears to be substantial margins but overhead is not properly allocated, material is not ordered on time because of poor cash flow and inefficient scheduling, change orders are not documented, and the customer is on a very tight budget.

The right measures attempt to capture all of the appropriate things that result in success in a given company's unique context.

Does that mean you cannot move ahead with measures even if you do not yet have all of the measures you want? No! Start with the most valuable measures and make sure everyone is aware of any unintended consequences. Ensure that people know that, even though there may not be a measure yet for, say, quality, it is still something that they are going to be evaluated on and that management is paying attention to it.

### Major Categories of Measure for Contracting

There are numerous measures that can be implemented in a contracting environment (a selection of these measures is shown in the next section). The importance of each individual measure will vary for a particular contractor. For example, if business is highly cyclical then it will be vital to measure how overhead is being shared on each project as well as cash flow and labor productivity during slower periods. In contracting projects that are highly customized, it may be more important to measure delivery schedules and quality installations.

*Start with the most valuable measures and make sure everyone is aware of any unintended consequences.*



### Using Standards to Drive Productivity

The era of time and materials is almost a thing of the past. Labor estimates can be “a shoot from the hip” method when the owner is the estimator, foreman and installer, but as contractors grow into small and medium sized entities, profit margins become more and more difficult to predict. Standard-setting was developed partly as a means of overcoming this problem.

A standard is the amount of time that management has determined is reasonable for a given activity. The standard can be determined through a time study or by using historical averages. Generally speaking, the standard should be broken down into time increments as far as is feasible. For example, it may be appropriate to have a standard to install a cabinet but not feasible to document the time it takes to screw in the hinges on the door. In some situations that may need to be a contingency factor in order to capture unique environmental factors such as additional customization and accessibility issues.

Some basic math on the productivity figure allows for relatively easy conversion of the productivity measure into an estimate of the impact on costs. If labor productivity were the number of standard hours of product produced divided by the number of labor hours worked, the financial impact can be determined with some accuracy. The formula is:

$$\text{Budgeted Productivity} = \text{Budgeted Standard Hours} / \text{Budgeted Total Hours}$$

$$\text{Cost} = \text{Budgeted Cost} \times (\text{Budgeted Productivity} / \text{Actual Productivity})$$

If total wages were budgeted to be \$1M at 80% productivity, increasing productivity to 95% would have the following impact on annual labor cost:

$$\text{Cost} = \$1,000,000 \times (80\% / 95\%) = \$842,105$$

That is almost a \$160k reduction. Reductions in productivity can be calculated similarly. With a reduction in productivity to 50%, the cost would be:

$$\text{Cost} = \$1,000,000 \times (80\% / 50\%) = \$1,600,000$$

Standards and estimates can also be used to determine the variance on a particular order. The “actual hours” on a job become the standard or



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estimated hours + the “variance” hours. Some firms use the following definition:

$$\text{Utilization} = \text{Actual Hours} / \text{Total Hours Worked}$$

Other uses of time frequently include “field time” and “unreported” time. Field time is time spent on activities unrelated to a job, which can include travel time, maintenance, and time when work crews start and finish the day. Unreported time results when the hours in the tracking system do not match the payroll system. In practice, MRSI has frequently been able to reduce this to zero by combining reporting for work orders with time cards. However, this is not always possible. Generally, field time and unreported time should be minimized, although there are times when field time should be higher or lower than normal, such as following seasonal fluctuations in demand or when internal improvement programs are being implemented.

Bidding activity indicates how productive the company is at either meeting the demands of the market and/or the ability to generate returns on customers obtained through the sales process. Measuring bidding activity across a number of variables including type, location, size and complexity provides management with insight into how to best leverage this process and make informed decisions based on historical trends.

Job costing is the practice of comparing estimated and actual costs associated with specific jobs or projects. The estimated costs are generated prior to starting a project and typically include labor, materials, sub-contractors, overhead allocation, and an expected profit percentage and dollars. Upon completion of the project, the actual revenue, costs and profit are compared to the estimated costs. Contractors that consistently integrate job costing practices into their operational mantra typically experience smaller variances in their estimating than contractors that do not job cost projects. Not knowing the variance is one thing, but for the contractors that do job cost, it may mean the difference between just breaking even and making a considerable profit.

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## Other Measures in Contracting

Up to now we have focused on measures that can be used to assess labor. The following is a high level list of the measures that are possible in contracting, and the details of how each one should be employed in a given



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company or industry varies, but the list is intended to give the reader an idea of what is possible.

Category	Description
Quality & Errors	What is the cost of rework on jobs?
Estimating Accuracy	How to measure the effectiveness of estimators?
Purchasing Effectiveness	Are materials sourced in a timely way with minimized expediting fees? What is the overall cost of quality working with your existing supplier network?
Winning Bid Ratios	Do you know what win rates are for competitive bids in different environments: private/public, large/small job, work type, etc?
Project Team Performance	Do you know who are your most successful teams (Sales, Estimator, Project Manager, Crew)?
Inventory Accuracy	Does the system show correct inventory figures for bulk purchased materials and paid unused materials?
Change Orders Accepted and Waived	Is customer service eroding margins and training customers in bad behavior by constantly waiving change orders and rush charges? In the name of customer service are you truly maintaining / building a solid working relationship or just eroding profit?



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The list excludes measures for factors such as inventory management in the warehouse. For more on measures in the warehouse, see our white paper on Measurement for Distribution.

### Implementation

There are numerous potential pitfalls with implementation of measures that can reduce their effectiveness or even lead to their complete failure. The first step in any such endeavor is to see that key staff understand why a measure is important to the business and its strategy. To reduce fear, they must also understand how management will use the information and how it will benefit them.

The method of capturing the data must be considered thoroughly. After implementation, expect hiccups as staff change the way they work in order to capture the data or to get in the habit of using reports. During this period, management usually needs to sustain its focus on the new measures, with more frequent reviews and requests for the data. It is important that staff actually see management using the data and don't believe that they are pointlessly doing work to produce data or reports that no one will ever view.

### Next Steps

Consider the following questions before embarking your endeavor to install new process measures in your contracting company.

- How will we prioritize the right measures?
- How will we deal with questions about what should be included in the numbers for our environment? For example, should foremen, estimators, job coordinators, and so on be included in the overall productivity measures for installations? Or should it just include field staff?
- How do we reduce the downtime at the beginning and end of the day?
- How will we reduce the variances in the estimates?
- How will we connect those variances to the sales and bidding functions?
- How do we know if it was an issue with the field or estimating staff?
- How do we decide if we should be bidding to this vertical?



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- Do we have the resources to proceed with this effort alone?
- What other barriers to implementation will we face?

## Resources

The Balanced Scorecard, Robert S. Kaplan and David P. Norton, Harvard Business School Press, Boston, Massachusetts

Associated Builders and Contractors: <http://www.abc.org/>

Associated General Contractors of America: <http://www.agc.org/index.wv>

National Association of Homebuilders: <http://www.nahb.org/>

Arizona Contractors Association: <http://www.azca.com>

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