

Strategic (and Revolutionary) Performance Measures

By Richard Harshaw

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Beginning in the late 1980s and early 1990s, accounting professionals began speaking more and more about a radical new concept: **strategic performance measures**. A review of the literature in the accounting press shows a nearly geometric growth in the number of articles addressing this issue.

This new concept is the realization that financial statements do not convey everything that is needed to run a company efficiently and profitably! And when you consider that this was being preached by the accountants themselves, it must be viewed as a radical departure from historical analysis trends!

Indeed, Joseph Fisher, writing in the *Journal of Cost Management* said:

"Conventional reports about the financial performance of a business... are much like the scoreboard at a baseball game. A scoreboard tells a player whether he is winning or losing the game, but it tells him little about what he is doing right or wrong about the fundamentals of baseball. A player who tries to play baseball by watching the scoreboard will not be successful."

Fisher goes on to say:

"... we can say that traditional accounting records have served the function of a scoreboard. Success in baseball, however, is a function of hitting, fielding, and pitching, for these determine what goes on the scoreboard.... As financial managers know, financial measures reflect the results of past decisions, not the actionable steps needed for surviving in today's competitive environment."

When we realize that about one-third of all HVAC businesses cease to exist (either due to sale, acquisition or closure) annually, this should cause us to sit up and take notice.

Time For a New Paradigm

I have come to believe, as Fisher and his colleagues state, that traditional financial reports, although of great value to the business manager, are of limited use in the day-to-day operation of an HVAC business. I always have been (and will continue to be) a strong advocate of financial health, proper reporting and accurate analysis. But for day-to-day operations, HVAC owners and managers need performance measures that just don't show up on the balance sheet and profit and loss statements.

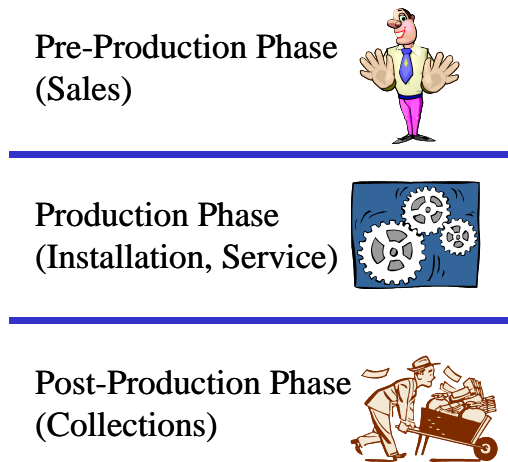
These new measures must focus on the core processes of our trade. Any measure, to be useful, must be quick and easy to make, easy to report, and easy to understand. If it does not touch on a core process, we can honestly ask, "Who needs it, then?"

I have come to believe that the one great truth around which success (and failure) in our trade is built is what I have come to call "The Principle of Throughput." First, let's define "throughput." Throughput is a term that was coined in the computer chip industry and was first used to describe how fast a chip could carry out instructions. The faster the chip, the higher the throughput.

Throughput, as applied to business (largely

through the pioneering work of Ehiyahu Goldratt in his classic book *The Goal*) means “the rate at which the business generates money through sales.”

It includes production, but it is more than that as the following diagram shows:



As you can see, the cycle begins with a Pre-Production Phase (sales lead) and ends with a Post-Production Phase (collecting the money for the work). ***Each step of the cycle takes time, and the more time each step takes, the lower will be the throughput.***

For instance, if your sales force is weak at closing sales, the Pre-Production portion of the chart will take longer than if they were stronger. Result? Throughput goes down.

Or because you have vague terms of sale and don't check credit, the Post-Production collection cycle takes months to complete. Result? Throughput goes down.

Or you have a haphazard production system so work must be done over and other delays enter the process. Result? Throughput goes down.

With this broad concept in mind, we can now state **the Principle of Throughput:**

**Labor creates the revenues;
Management creates the profits.**

In my seminars, some people object and say, “No, sales brings in the revenues!” This is true, but at what point does the revenue actually flow into the business? After the work has been done! Sales *starts* the process, but throughput hinges on what the direct labor in the field can do. Suppose a salesperson brings in \$100,000 worth of orders this week, but your crews can only install \$10,000 worth of them? The other \$90,000 will probably end up going to competitors. So what is your throughput — your rate of generating money through sales. \$100,000 or \$10,000?

The Principle of Throughput says that the only time your company can expect to earn revenues is when you have a mechanic on someone's property doing something to add value to that property (work for which you will be paid), whether it is a new equipment installation, a service call, or a warranty call (for which you presumably are being paid because you built in a reserve in the sale price to cover it).

But whether or not those revenues are enough to pay the bills and leave you a profit is up to you as a manager.

And for that, we'll need to develop a new set of measures to help you run your business day-to-day. Measures that are tied to the Principle of Throughput, tied to direct labor.

Several new measures are tied to the concept of “throughput.”

The Throughput Ratio (Production Ratio)

The Throughput Ratio is found by taking the company's total annual sales and dividing by the total number of employees:

$$\text{Throughput} = \frac{\text{Annual HVAC Sales}}{\text{Annual Number of Employees}}$$

If you had an employee for only part of the year, you would treat that person as a fraction. For example, if one employee worked for only five months of last year, that person is figured as 5/12 of an employee for calculation purposes. Thus, a company of seven full-time people and one person who worked five months would use 7-5/12 (or 7.417) as a divisor.

Getting annual sales is a little trickier. Of course, if you are looking at year-end data, it is a cinch, but what about looking at data seven months into the year?

The simple answer — multiply the year-to-date sales by 12 and divide by the number of months so far in the year — is the *wrong* one. ***You need to divide the year-to-date sales by the normal percentage of the year you have sold by then.***

An example might help. Suppose that by the end of the seventh month, your firm normally chalks up 77% of its annual sales volume. Furthermore, suppose that the year-to-date sales through the 7th month are \$800,000. Your projected annualized sales would then be \$800,000 divided by 0.77, or \$1,039,000.

If the year has not been typical — if, for instance, your first seven months of the year show substantial differences in the month-to-month pattern you normally experience — you may need to make an adjustment. The exact nature of the adjustment can be

very complex and will not be covered here, but you should be aware of the fact that an unusual sales year can radically skew your projections.

Now, if you had 7-5/12 employees for that volume, your Throughput Ratio would work out to \$140,080 per employee, an astonishingly good ratio!

So what would a good Throughput Ratio be? Research¹ shows that a volume of **\$120,000 per employee** would be a decent standard to aim for, and if you are already over that, all the better for you! Obviously, there are regional differences in this number, some parts of the country having much higher averages and others lower. To adjust for regional differences, you can multiply \$120,000 by the ratio of your area's Median Household Income compared to the average Median Household Income in the United States. Both sets of numbers are available at the U. S. Census Bureau's web site (www.census.gov).

Here is an example: the Median Household Income in 2002 for Tarrant County Texas was \$46,179, compared to a US Average of \$41,994. The ratio of Tarrant County to the USA is \$46,179 / \$41,994, or 1.10. The average throughput for Tarrant County Texas then should be around \$120,000 x 1.10 = \$132,000 per employee.

There are also some differences due to business mix — commercial (tends to run higher) versus residential new construction (higher) versus residential add-on and replacement (a little lower), and service (considerably lower).

¹ Based on the U. S. Census Bureau's report, "Economic Survey", published every five years, for the construction trades. The Throughput Ratio standard used in this article is based on the HVAC sub-report and adjusted from 1997 (year of publication) to 2003 dollars.

Fixing Weak Throughput

What happens if your throughput ratio is less than \$120,000? There can only be two reasons (other than regional forces): not enough sales dollars for the number of employees, or too many people for the work you are doing. This leads us to the next strategic performance measure.

The Staffing Ratio

The Staffing Ratio is defined by this statement:

$$\text{Staffing Ratio} = \frac{\text{Direct Labor Employees}}{\text{Non - Direct Labor Employees}}$$

For Direct Labor Employees, count all employees whose time is directly billed to jobs. This includes installers, service techs, sheet metal workers, pipe fitters, steamfitters, boiler makers, and so on. For Non-Direct Labor Employees, count all other employees, including managers, office workers, sales people, warehouse workers, and others whose time is not charged directly to jobs.

Again, average staffing ratio values vary from region to region and with the type of work your business does but generally, you should aim for a ratio greater than 2.00. If you are strong in the **new construction markets (commercial or residential), you should be at 5.00 or higher**. A **replacement-oriented business should be able to work efficiently at a ratio of 3.00 to 4.00** (preferably towards the 4.00 end of that range). And if you are strong in the **service business a value on the low side of the 2.00 to 3.00** range is a realistic goal.

When you think about the staffing ratio and the Principle of Throughput, it should be obvious that the more direct labor people you have doing work on the customer's property, the more revenues you are going to bring in. But what is not so obvious is that the type of work you do may place unusual demands on the office help's time and talents. I have seen staffing ratios as high as 8.00, but I also noticed that the office staff was on the brink of meltdown! You must strike a careful balance between the number of hands turning wrenches and time number of hands doing the paperwork and scheduling!

Service Measures

If you are not in the service business, this section will be of little interest to you.

Let's begin with service revenues per service truck. If you divide your service department's annual sales by the number of trucks (or "partial trucks") that brought in those sales, you have the number. For **residentially-oriented service, the number should \$125,000 or more whereas for commercially-oriented service, aim for \$150,000 or more**.

The Service to Replacement Mix

Another key measure is how much service business you are doing in comparison to the replacement business you do. You make the computations by merely dividing the annual service sales volume by the annual replacement sales volume. I find that generally speaking, **service to replacement ratios in the 25% to 50% range** lead to highest throughputs. (If you are not in the

replacement business, this ratio is of no importance to your business.)

If you are heavily devoted to the replacement business and your service to replacement ratio is under 25%, you simply aren't running enough service calls to locate those broken units that need to be replaced.

If your ratio is over 50%, you are spending too many hours doing small ticket work and not enough installing the big-ticket, high profit dollar replacement sales.

Throughput-Eating Worms

In addition to the four measures given above, there are three small "holes" that can drain profits out of your throughput bucket. These are: (1) unbilled time, (2) service callbacks, and (3) warranty expenses.

Unbilled time is time you must pay your direct labor for, but you cannot charge it to a customer or a job. Obviously if the laborers are not engaged in revenue-producing work, throughput goes down.

Unbilled time should be under 10% of your direct labor payroll as a general rule, and under 5% if you want to consider your operation to be fairly efficient. (Of course, if you don't measure unbilled time —because you don't have any unbilled time codes on your daily time tickets — you would have 0% unbilled time! Clever delusion! You look very efficient while you may not be!)

A recent survey by a national trade association revealed that among its membership (who I would consider to be typical of good companies), the unbilled time in the installation department ran about 15% of the installation payroll, while for service it was a staggering 31%!

Callbacks for service work are like unbilled time: you must pay the mechanics for

their work, but you cannot (or should not) charge the customer for it. But you should measure callbacks as a special case of unbilled time because we want to reduce this expense as much as possible.

If your callback labor expense exceeds 2% of your service labor expense, you've got problems!

Finally, the **warranty expense** (counting parts and labor *before* manufacturer support and warranty programs) should not exceed 3% of your sales, and many contractors have numbers below 1% (at street rate).

Obviously, the measures here are generalities. The exact values of these ratios for your business can only be determined after extensive analysis and research. Nor is this list in any way complete.

Cures for Low Throughput

The Throughput Ratio should be around \$120,000 per employee (after adjustments for local Median Household Income). If your company's ratio is less than this (or lower than the number you want), there can be only two major causes: **inadequate sales volume or an excess of people**.

Let's consider the second alternative first, since it is easiest to deal with. Suppose your annual HVAC sales volume is \$1,200,000 and you have 12 people. Your Throughput Ratio is only \$100,000.

If you wanted an average of \$120,000 per employee, you would need to reduce the head count to 10 people, thus letting two people go. That could be traumatic, to say nothing about the effect on the morale of the survivors!

Before you cut heads, run a Staffing Ratio test first. Suppose this ratio is low — let's say it is 2.0, due to 8 field employees supported by 4 non-field people. Your Staffing Ratio should be higher— say 3.00 or 4.00. With a head count of 12 people, this would imply nine field people to three non-field people (3.00 ratio). So maybe you should consider a personnel shift. If you could move one of the non-field people back out into the field (i.e., by having a full-time service manager who oversees only two techs go back out into the field and serve as a “lead tech” or having a job foreman go back into the field serving as a “lead installer”), you would have your 3.00 ratio without cutting anyone.

You would also have an extra pair of hands out there bringing in revenues. If the revenue gain is average for your field people (and in this case, we find it is \$1,200,000 divided by 8 field people, or \$150,000 per field employee), moving this office person back into the field should bring in around \$150,000 more in revenues, giving you a total sales of \$1,350,000 for 12 employees, making your throughput ratio 112,500, a much better number than it was!

There is a catch, however. You must generate enough work to keep nine field people busy. Going from eight to nine field people means your sales would have to increase 13% just to keep them busy. That is a significant improvement for a first-year plan and is probably about as far as you could be expected to go in only one year. The big question that must be answered now is: Can you sell \$150,000 more in work?

In dire cases, it will be necessary to reduce head count. When you do, remember this: when you reduce field head count, you reduce the number of hands that let you generate revenues.

Increasing Sales Volume

The other reason for low throughput, inadequate sales volume, can be addressed in several ways.

First, **review your pricing**. In some markets it may not be possible to increase prices, but it is surprising how many markets will allow a price increase. In our sample case, raising throughput to \$120,000 per employee requires an increase in sales of \$240,000, or 20%. No one can pull off a 20% price increase, but a small increase would mean that other paths would not be as difficult.

What would happen if you **adopted flat rate pricing for your service operation?** My studies show that when a contractor adopts flat rate pricing for service, service revenues increase sharply— often more than 25%. If \$250,000 of your \$1,200,000 was service, going to flat rate pricing could boost sales by \$62,500 or more (5% more sales overall) with the same number of service calls. If you combined flat rate with an aggressive service marketing plan, you might be able to increase service sales by 50%, taking your net sales to \$1,670,000, a 39% increase just with service!

Likewise, using flat rate installation pricing (“**cook hook**” pricing) could not only give you better control of market pricing, but better margins as well.

The Profit Rocket

A pleasantly surprising outcome of increasing throughput is that net profits rise even faster. In other words, just doing more volume with a given overhead is the same thing as a price increase, because most overhead is fixed. It does not vary with volume over wide ranges. If you sell more with the same overhead, your net margin increases sharply — in essence, amounting

to a sharp price increase if you compare the new volume to the new overhead and calculate the mark-up needed to get there.

For example, suppose that your \$1,200,000 in sales was at an average gross margin of 36% with a net profit of 4%. This implies an overhead of 32%. If your new sales were to rise to \$1,694,000 (due to promoting service that is now on flat rate pricing, plus a 2% price increase), the jump in sales of \$494,000 would have no increase in fixed overhead. Since the average shop runs about 85 % of the overhead as fixed, this would mean that 85% of the 32% overhead would be fixed and not change. Only 15% of the 32% overhead would rise (in this case, 15% x 32% x \$1,200,000 = \$57,600). Raising prices 2% and going to flat rate pricing does **not** increase direct costs one cent. Aggressively promoting service might cost an additional \$20,000. So what are the net gains by selling \$494,000 more? Deducting the \$57,600 for extra overhead and \$20,000 for promotions, your gain would be \$494,000 - \$77,600 = \$416,400. Where does all that go? Right to the bottom line!

Do you realize that this little scenario is the equivalent of a price increase of 35% overall?

Review your sales process.

Anything that slows down sales cycle (the time from the initial customer call to the time money is collected) can decrease throughput. How efficient is your lead generation system? How many calls do you get for your advertising and promotional dollar? How many leads does your service department generate? How good are your sales people at turning a customer inquiry into an order? (Do you even *measure* your closing rates?) Are certain kinds of leads easier to

convert to sales than others, and if so, what are you doing to get more of those kinds of leads? Would it be wise to add a sales person? (At first, do this only if you have idle capacity². Later, as you increase productivity, you can add sales people while simultaneously adding production capacity, but don't add production capacity as you add sales people if your production system is inefficient!)

Review your production capacity.

If throughput is low, adding installers and service techs won't necessarily improve it. There is often too much inefficiency present to let the added revenue carry to the bottom line. Rather, work on improving the production process. Is it streamlined, or do you waste time and money doing things two or three times before they are right? Is communication between the sales people and installers good? Do installers understand the job requirements before they start the work, or do they make mistakes that eat up time and money? Are the crews efficiently dispatched? Is travel kept to a minimum? Are the best talents assigned to the tasks? Is inventory adequate? Is it fed to jobs efficiently?

How are unbilled time, callbacks and warranty expense? How are field people compensated —on an hourly rate that does not encourage higher throughput, or are they paid a bonus when they “beat the clock” without increasing callbacks and warranty?

Review your credit and collection policies and practices. Since the sale is not

² “Idle capacity” is installation capacity that is not utilized because there is not enough work to keep the installers busy full time. If you have lots of unbilled time or often need to send crews home early, you probably have an idle capacity problem.

consummated until the money is in your hands, poor credit and collection policies can drastically push out the time frame for being paid, thus reducing throughput (the rate at which you generate money through sales).

Other Moths in the Closet

Start with **unbilled time**. Look at your field employees — do they have time-saving, work-increasing accessories, like tool belts, radios and efficient tools? Are they given job parts (like ductwork) that fit the job? Or do they spend a lot of time running around picking up materials for the job?

Do employees load their own trucks first thing in the morning? If so, why? Why not have a lower-paid, part-time worker come in at 5 a.m. and preload installation trucks? Do service techs come to the shop first thing in the morning? Why not let them run their first calls from home?

Are installers paid by the hour, or do you provide bonuses any time they bring a job in under the allotted time? (If they are hourly, why should they beat the clock when to do so only means less pay?)

Look at **callbacks**. First, measure the problem. How many callbacks do you experience per quarter, and what sorts of problems are causing them? If there is a pattern, conduct some in-house training to raise the skills level. Make sure the techs' tools allow for quick and efficient repairs. (Do vacuum pumps pull 500 microns within 30 minutes, or do they take two hours to get to 25,000 microns and then level out?) Are technicians radio-dispatched? After you have done all you can do to improve performance, measure each tech's individual call-back rate and establish a maximum

acceptable level. If a tech cannot get below that level after a reasonable time, he must be reassigned or terminated.

Examine your **warranty expense**. To improve it, you must know what is causing it. Take 100 warranty calls at random and tally what caused each one. Are there patterns? Can they be fixed with in-house or outside training? Do you need to change suppliers for parts or equipment? Do you need to modify job designs?

Fixing Weak Service Throughput

If sales per truck are low, have you considered flat rate pricing? Or do you aggressively promote service agreements? Does your compensation plan encourage high throughput? (Most don't!)

Have you considered offering after-hours and weekend service at the same rate as normal hours? (You'll get more customers, hence more sales. You'll also make more profit, because the overhead burden your service techs must absorb is used to set a street rate that is based on a normal work day. After-hours calls have no additional overhead, except for fuel, so the overhead expense goes right to the bottom line!) Are service call-backs too high? You've already seen how to work that one!

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