

A close-up photograph of the front of a vintage car, showing a heavily rusted headlight and grille. The car's body is dark and shows significant signs of age and wear. The text is overlaid on the upper left portion of the image.

Know your Worth
Eliminate obsolete cost systems and data

What if

profit \neq revenue - costs?

Assume you calculate a cost of \$25 to read this white paper. Would it imply that if you

did not read it, your profit would increase by \$25? If not, why not? Your costs should be lower since you did not incur the \$25.

Something is wrong if reducing costs doesn't improve profitability. Either the equation is wrong or there is something wrong with how it is calculated and interpreted.

This Business Dynamics & Research white paper takes on this very challenging issue. The purpose is to share why costing models fail to deliver on promises, and offers an alternate way to think about costs.

This is a controversial paper. It will challenge the math and relevance of costing and accounting data. Not everyone will understand it, like it, or buy in to the ideas. Those who do will benefit greatly.

Ultimately, the firm hopes you will find valuable insights that will help you run your business with more profit and less waste.

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President

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The objective

Businesses are started for many reasons, but there is one thing they must all do to sustain themselves; make money and generate cash. Profit, calculated from the profit equation, is the simplest way to determine if you are generating cash.

$$\text{profit} = \text{revenues} - \text{costs}$$

Companies often look first to cost reduction to improve their profit. Since this is a major area of interest, many tools have been developed to help understand and manage costs. Many approaches emphasize calculating costs for products, services, and activities. The hypothesis is that if you know what something costs to do or make, and if you can reduce this cost, you will become more profitable.

Although widely assumed true, is it?



The challenge

Remember the old days when you had a land line telephone? You bought local service for a flat rate, and that allowed you to make unlimited local calls. You also had long distance service. The company charged a rate, such as ten cents per minute, for each long distance call.

If someone asked you to calculate the cost of a long distance call, you would take your rate and multiply it by the length of the call. If you spoke for twenty minutes, you were charged two dollars.

How would you calculate the cost of a local call? When you made a long distance call, you were buying minutes of conversation. With the local service, you weren't buying call time, you were buying access, or the capacity to make calls. The access cost was the same no matter how you used it.

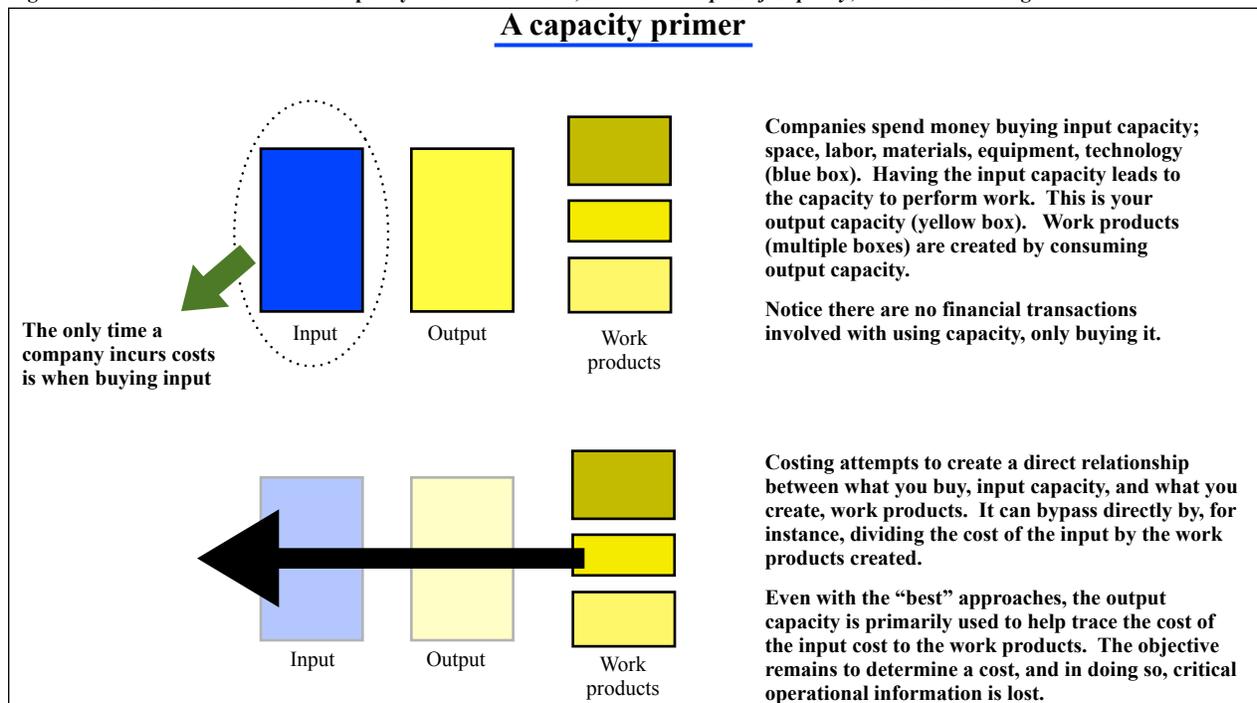
How does this relate to your company?

The largest cost that most companies have is input capacity, and it behaves like buying local telephone service. Input capacity, or input, is your space, people, materials, equipment, and technology. You buy it in discrete amounts and in anticipation of demand. Once bought, you have access to it to perform work and to create output.

The output created by your input capacity includes the products and services that you sell, and the activities you perform every day. These activities are similar to local phone calls. The amount of output you can create is your output capacity (Figure 1). If you buy 100 tires (input), you have the output capacity to support building twenty-five cars. If you were to damage one tire per car, you only have the capacity to build 20 cars.

The challenge organizations face, is that you'd like to create a cost for your output. However, creating this cost is the same as calculating the cost of a local phone call. You will find the same difficulties, but on a much larger scale.

Figure 1: This is an introduction to capacity. For more details, see *The Principles of Capacity*, found at bdrco.org.



Costing breaks down

Costs result from buying things. With local phone service, you bought access to unlimited local calls. With long distance service, you bought minutes. The situations are very different.

To calculate the cost of a local call, we have to assign the total cost of service, say \$25 per month, to the calls made. The easiest way to do this is to divide the service cost by the number of calls. Ten calls would result in cost of \$2.50 per call. You may decide to be more precise and suggest that the cost be tied to the length of the call or some other factor.

However you choose to do it, two things are consistent. First, the monthly \$25 access fee never changes. Second, every relationship between the access fee and the local call for costing purposes must be contrived.

How does this relate to your company?

When you buy input capacity such as hiring an hourly worker, the cost does not change with use (Figure 2). Why? Because you did not purchase output, you purchased capacity units; time in this case. Compare someone paid by the hour to someone who is paid by piecework or output. Figure 3 shows that the more output you buy, as with the more long distance minutes you use, the higher the cost. Costs from hourly wages only increase when you buy more hours, not when you create more output.

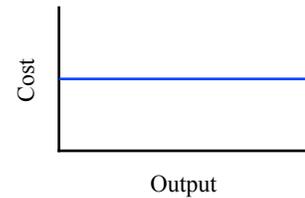


Figure 2: Buying an hour of time creates a cost to your company that does not change with output.

When you take a fixed number, such as an hourly wage and assign it to output, you create a curve like the one found in Figure 4. This is a misleading curve for a number of reasons:

- It gives the perception that costs change as output changes, even though clearly they do not (Figure 2).
- It offers the perception that costs decrease as you do more, even when output is independent of costs and the capacity cost doesn't change.
- It suggests that there is a causal relationship between the capacity you buy and the cost of the output it creates when there isn't.

Figure 4 can lead one to believe that changing what you do may influence costs. If you change costs, your profitability should change. This does not happen. The amount of money spent is the same. **If the profit equation is true, the costs you calculate for output cannot be true.**

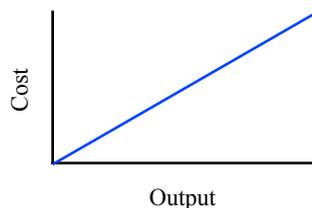


Figure 3: When buying piecework, your costs increase with the output you buy.

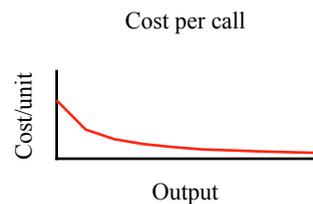


Figure 4: Dividing a fixed cost by output creates this curve. Although the cost does not change, the curve gives the impression that costs go down with increased output.

No right answer

On the previous page, the idea of calculating a cost per call was considered. The answer for a long distance call was straightforward.

$$\text{cost} = \text{rate} \times \text{time}$$

Local calls were not as clear. There is no natural or mathematical relationship between calls, time spent on the phone, and the access cost. But, a relationship *needs* to exist to calculate a cost for the call. So, costing techniques contrive them.

Cost allocation, assignment, or tracing, whatever one chooses to call it, are all attempts to create a relationship between the input you bought and what was created from it.

Two examples were mentioned previously. First, divide the access cost by the number of calls. The second attempted to be more specific by looking at the length of calls.

Consider the costs calculated. What do they truly mean? If each call truly costs \$2.50, does this mean that you would change the \$25 access by not making the call? No. Neither your cash flow, nor the access cost are affected by call volume or call length.

In the end, it does not really matter what number you calculate, because they are all contrived. Even more unsettling, as Figure 5 shows, the technique you choose will change your cost. One

more important consideration is, one technique cannot be proven wrong compared to another. One can only argue, perhaps, a more precise method of modeling, but not correctness.

The implications are:

- There is no cost to make a local phone call
- Calculated costs have no financial relevance and, therefore, should not be used for financial decision making.

How does this relate to your company?

Trying to cost the work products of your input capacity is exactly like determining a cost for a local call. To do so:

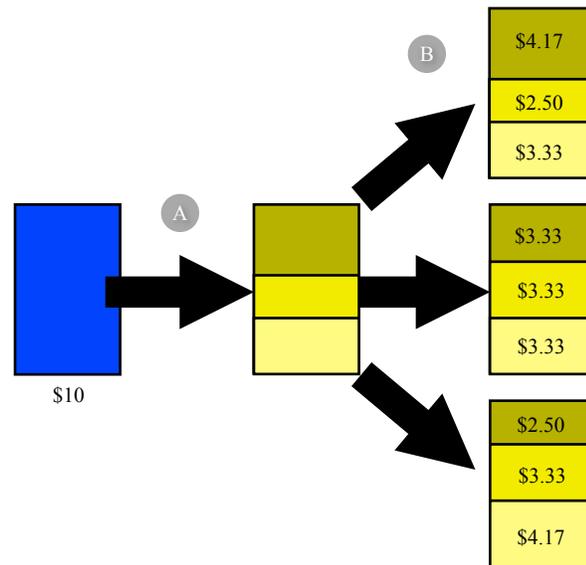
You will have to create false relationships,

You must live with the fact that another equally valid approach will calculate a different number, leaving confusion about which number is better

If a number is false, you don't understand what it means, multiple techniques create different answers from the same data, and they all violate the profit equation, it cannot be a valuable and meaningful number for your business.

Figure 5: You begin by buying input capacity for \$10.
 A. Work and activities during a period will use your capacity in one way only.
 B. From the one cost and one way of using your capacity, you can calculate multiple, legitimate costs.

The cost for the top item ranges from \$2.50 - \$4.17. If the market price were \$3.50, what would you do?



Costing logic is backward

The final area that is concerning when focusing on costing is that the logic is backwards. Relationships are not only contrived, they are the reverse of how things truly happen in your organization.

Costs result from nothing more than buying something. Hence, looking at costs is like looking at a smoking gun. The smoke is there because someone has already pulled the trigger. If you miss your target, looking at a fired gun will not help you. With costs, the trigger of management action has already been pulled. This is backward. If you wanted to manage costs, shouldn't you focus on that which created the cost? That which caused management to pull the trigger?

Another area where costing is both backward and not aligned with your capacity is with causal relationships. Costing assumes that there is a causal relationship between output and costs. Notice how costs, in Figure 4 change as output increases. Cost per unit is the dependent variable meaning its value changes, and is changed by, the level of output. This, too, is both backward, and the cause-effect relationship that costing proposes does not exist.

Costing does not acknowledge both the existence and interplay of causal and enabling relationships in capacity (Figure 6). There is a difference between the types of relationship. Gravity does not *cause* a plane to crash, it *enables* it to crash. There is usually an error or a malfunction that causes the plane to give way to gravity. Similarly, when you buy capacity, there is a cost; the causal relationship. When you have the capacity, you can perform work; the enabling relationship.

This information is important because it is the basis of how costs are created and how work gets done. How much capacity you have, what is using it, how efficiently it is being used, and what is being created are all important questions. The information you collect, and how you understand, interpret, and manage them, is influenced by whether or not the relationship is causal or enabling. Costing fails to model the situation and to provide reasonable information for decisions to be made.

If a model completely misrepresents reality and assumes cause and effect relationships that do not exist, how good and accurate of a model is it? And, how do you trust what it tells you?

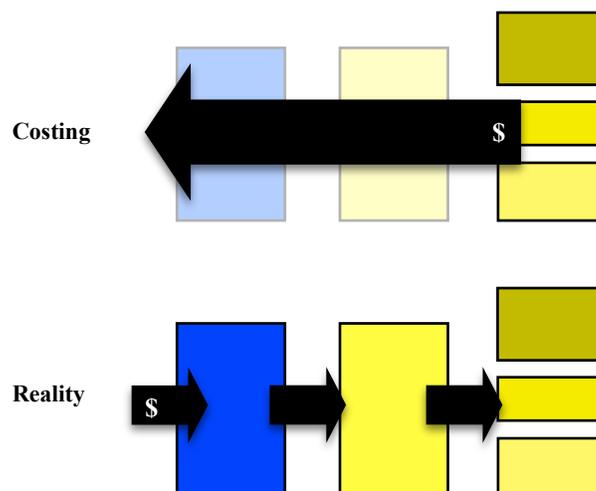


Figure 6: The top diagram shows a costing model that supposes output causes costs. The bottom shows a capacity approach where the cost comes from buying capacity, which enables output to be created.

What if the Emperor has no Clothes?

Costing data has been used for over a century. It is often assumed to be correct. However, business history is strewn with examples of companies making bad decisions by relying on costing data, destroying local economies, families, and lives.

What if there were something better? Simpler? What if something provided you with the data that you actually need to understand your company? That would align operations with finance and accounting? That would lead to better performance. Would you consider it, or use what you should now believe is wrong?

Consider Worth

In the white paper, *The Principles of Capacity*, Business Dynamics and Research proposed that companies should stop costing. The details demonstrating the weaknesses of costing were highlighted here. If you choose to stop costing, you will still need to make decisions that are tied to the financial and operational value of work you do.

You can still get this information and, in fact, more precise and informative data than costing affords. **The information you need is worth.**

Worth allows you to consider how much capacity you are using, the efficiency with which you are using it, and then impute a financial value to the capacity consumed when desired. It is not a cost because there is no financial transaction involved. Instead, it represents the value of the capacity that you use.

Worth is a more mathematically and logically sound approach than costing, does not violate the profit equation, and will help every individual in your company see and understand your company more clearly.

Worth provides the information you need to answer questions and to make decisions regarding your operations. It will address traditional questions about such things as the financial value of products you make, services you provide, and all work products created by your company. It can be used for pricing, budgeting, and budget transfers. It can also address capacity related issues such as:

Real estate - Should we buy new space? How well utilized is our current space?

Labor - When should we adjust employment levels? How efficient are our people?

Materials - Do we have too much inventory? Too little? When do we need to buy more?

Information technology - Do we have enough bandwidth? Storage? Computing power? When should we upgrade?.

Equipment and asset utilization - Do we have enough assets to deliver our products and services? Which are overloaded and are process constraints?

How important is Worth to us?

Business Dynamics & Research emphasizes identifying improvement opportunities that others cannot find and, conversely, debunking false opportunities that others create. Our Worth and Capacity Analysis (WACA) is the single most important tool that the firm uses to do this, regardless of the client problem, size, or industry. An effective WACA can not only recreate every cost companies currently use, it provides the operational data about the data to help companies manage more effectively.



Calculating worth

A healthcare executive once quoted a rate of \$8,000 per day for a patient to be in their hospital. If they could reduce the number of patient days by 100, the belief was that the hospital would save \$800,000. A WACA analysis suggested that, it wouldn't. Why? Because the \$8,000 represents the use of capacity; the space, beds, meds, equipment, docs, nurses, etc used for patient care. Since these are inputs, having a patient stay one, two, or 100 fewer days will not affect these costs.

WACA explains this step by step. When you buy input, you know how much you bought and its price; the beds, the nurse's salaries, the testing equipment, etc. Figure 7 shows this relationship in a hypothetical leased space transaction where you lease 10,000 square feet (sqft) for \$100,000 per month.

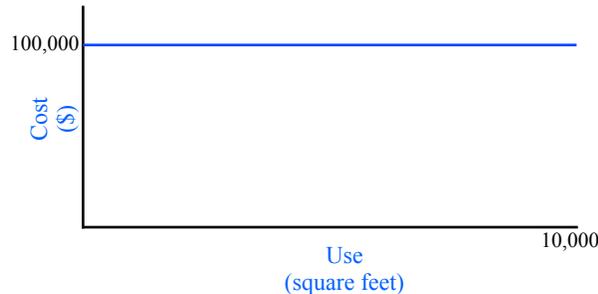


Figure 7: When you buy capacity, you pay to receive a given amount of it. For instance, \$100,000 buys you 10,000 square feet.

To understand use, compare consumption to total capacity using the same capacity units (CU) (Figure 8). For instance, a room may use 200 of the 10,000 sqft total. From this, we can project that fifty of such rooms could be made from the 10,000 sqft. Offices, hallways, storage spaces, and bathrooms may also use this 10,000 sqft. The more space they use, the less is available for patient rooms. Performing a WACA allows you to consider what-if scenarios so that you can model capacity use.

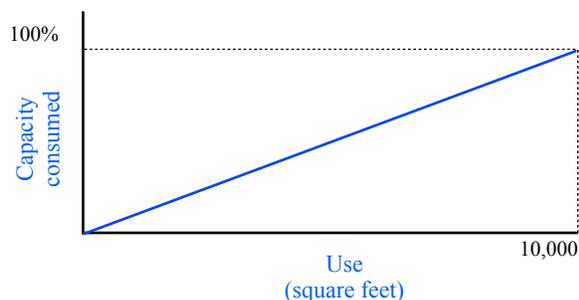


Figure 8: As you start using the capacity, you less of it becomes available until you reach the maximum of what you bought.

For instance, patient rooms generate revenue when they are occupied, so there will be trade-offs between the capacity used for staff, storage, and other reasons, and that used to generate revenue for the hospital.

For the 200 sqft room, a graph and data similar to that found in Figure 9 would show that the room consumed \$200 worth of the total space. Clear and unambiguous.

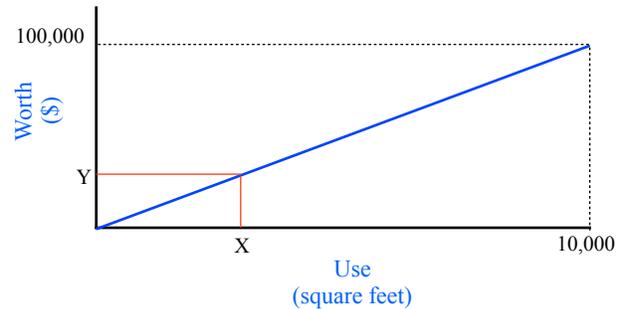


Figure 9: At any given level of use, a financial value can be assigned. Consider the amount of capacity that was used and a corresponding value will result.

Assigning a financial value of worth should not be your focus. Financial worth is only a representation of the capacity used and is *not a cost*. If this were a hospital and we were discussing a patient room, that cost would exist whether occupied or not.

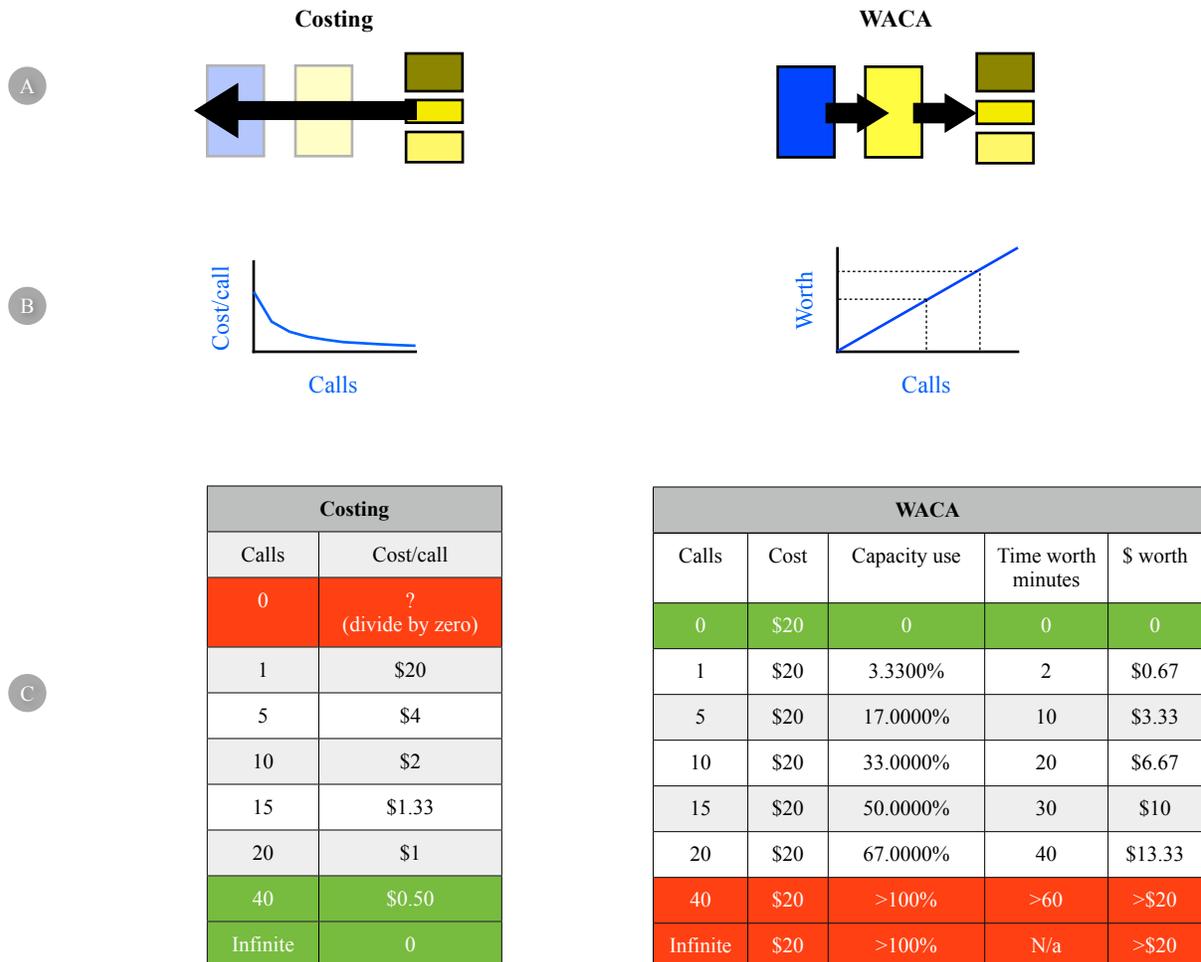
If you need a financial value representing capacity consumption, the \$200 may be used to help with pricing or chargebacks. **Note that, since worth is not a cost, charging \$180 for \$200 worth of space is not an unprofitable transaction.** If you are not using that capacity, you are not losing money if you take the \$180. This is a critical point. Revenue - worth \neq profit.

Similarly, reducing worth does not reduce costs. It is a reflection that you are consuming less capacity. Reducing patient rooms by 10 square feet will not change the cost of the overall leased space.

Your company should focus on understanding and managing capacity. Dollars, both worth and cost, are indicators of how much capacity you buy and how well you use it - the smoking guy. Do this effectively and your cost and worth values will improve.

A comparison

Consider the following comparison between a costing approach and the WACA approach. A company hires a customer service representative for \$20 an hour. His job is to answer phone calls. Assume, for the sake of simplicity, that each phone call takes two minutes. Here is a potential comparative analysis.



Analysis

A. The Costing model looks to create a causal relationship between output and costs. Output capacity is marginally used if at all. The WACA model documents causal and enabling relationships at each step.

B. The Costing model approach leads you to believe that costs change with output, and that costs go down as output increases. The WACA model suggests that more output consumes more output capacity. There is no affect on costs.

C. The Costing model focuses on costs and provides no operational details. Additionally, the model fails mathematically and provides nonsensical information when there are no calls (company incurs a cost but the model cannot calculate a cost), and when you exceed the physical limitations of the process. There are substantial differences in the numbers. For one call, the cost model suggests a \$20 cost. The WACA model suggests you've used \$0.67 of the \$20 worth that you paid for. At 20 calls, costing proposes each call costs \$1 while WACA tells you that \$13.33 of the \$20 purchased will be used, and your cost is still \$20. The WACA model, since it goes through the process step by step, demonstrates:

- Your costs remain the same regardless of output
- Capacity data help provide context for what the financial numbers are
- Worth and utilization increase with more use up to a physical maximum
- The financial value of your efforts increases with more work. More means more, not less.

Understanding improvement

Another benefit of the WACA is its clarity when defining improvements. When you improve how efficiently you use capacity with programs such as lean, and six sigma, the impact is not lower costs. The result is that you are able to get more output with the same capacity, as demonstrated in Figure 11. The approach also shows that at any given output level, there is less capacity required to create it (Figure 12).

These ideas are important. They explain how you position yourself to buy less input using the causal and enabling relationships that exist. By using capacity more efficiently, you can do more with what you have. A more fuel efficient car takes you farther on a gallon of gas. Efficiency delays and sometimes eliminates the need to buy more capacity.

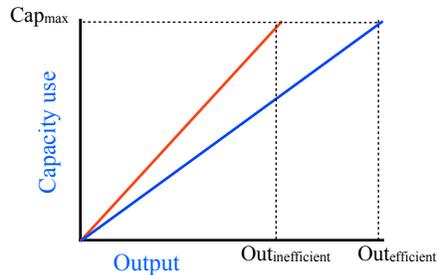


Figure 10: Being more efficient (blue) means you can get more output before consuming your maximum capacity.

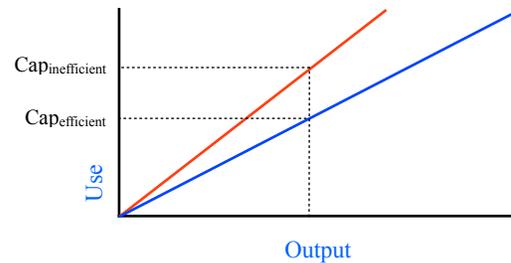


Figure 11: Being more efficient (blue) also means you use less capacity at any given level of output. This frees the capacity create more output.

Implications

Developing your own WACA will provide insights into your business most have never even conceived. When performing analyses, Business Dynamics & Research has found the WACA method to be far superior than cost-based approaches, and the implications are substantial. Here are just a few:

1. No more false saving. Whether you are buying consulting services or reviewing internal proposals, this approach clarifies what will and will not affect costs, and will reduce overstated benefit analyses.
2. Improved profit. Since work doesn't "cost" there is no profit associated with it. Turning down a potential opportunity because it is perceived to be unprofitable happen less frequently if at all, leading to greater revenue potential.
3. Finance and operations alignment. WACA has shown to be the conduit between operations and finance/accounting. For operations, it helps explain how what they do can affect finance directly. For finance, recommendations to operations about where to get financial improvements are more clear.
4. Improved decision making. Capacity and worth provide much more information about your business, it is accurate, and violates no laws of math or profit.
5. Improved employee effectiveness. WACA helps employees see and understand the impact of their work simply and immediately. By seeing the business better, they can act more effectively on the business's behalf.
6. No huge accounting cost and overhead. WACA does not require separate and substantial software modules and support processes. There is no need for staffs of individuals to keep track of the contrived relationships necessary to manage costs using costing based approaches. It's an awareness and a mindset with a few important techniques for employees to use.

This approach, as with all approaches developed at Business Dynamics & Research is not for everyone. If you do choose to go down this path and would like insights about how to do so, please send an e-mail to info@bdrco.org.

the Cash Flow Innovation Lab

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About the Cash Flow Innovation Lab

Managerial accounting is a 19th century tool solving 19th century problems. The basic approach has not changed. The business world has. Using managerial accounting is like fighting battles with muskets. It's time to upgrade. Through decades of R&D, the Cash Flow Innovation Lab, research arm of Business Dynamics & Research, Ltd, has become a source of providing 21st century tools, models, education and training. The Lab offers tools and information that can either turbocharge or replace your managerial accounting approach with absolutely no loss, but significant gains in financial data and information. It's like replacing your musket with laser-guided, precision machinery to help you fight the wars of the 21st, not 19th century. To learn more, visit www.cashinnovationlab.com.



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About Dr. Lee

Dr. Reginald Tomas Lee is a director for the Cash Flow Innovation Lab. In this role, he is involved with developing and sharing leading edge, cash flow modeling and management techniques. He is the creator of Explicit Cost Dynamics, a cash flow modeling tool that addresses the weaknesses of managerial accounting and provides companies with more accurate and informative operations and cash flow data. For more information on Dr. Lee, please visit his website at www.reginaldlee.org.