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# Strategic Cost Transformation

Expanding the effectiveness of cost  
management programs

# Strategic Cost Transformation

## What is Strategic Cost Transformation?

Strategic cost transformation (SCT) shifts the scope and focus of cost analysis from traditional accounting-based cost management systems to a corporate wide system. This system, Business Domain Management (BDM) includes and models each of two organizational domains; the Accounting Domain and the Operations & Cash Domain (OC Domain). Traditional accounting information such as calculated costs and profit reside in the Accounting Domain.

We typically look to the Accounting Domain to provide information that will help us make cost management decisions. However, our companies need cash to sustain themselves. Cash, and calculated costs and profit, are very different.<sup>1</sup> Cash is money, a measure, and money is exact. Calculated costs and profit are reporting metrics that can be influenced by opinion and arbitrary assumptions. To improve cash, you must understand it by modeling cash and the factors that affect it. This happens in the OC Domain. A complete picture of your organization and its operational and financial performance cannot exist without modeling the OC Domain. BDM, combines the Accounting Domain and the OC Domain into one system, that provides a comprehensive view of all operations, cash, and accounting information (Exhibit 1).

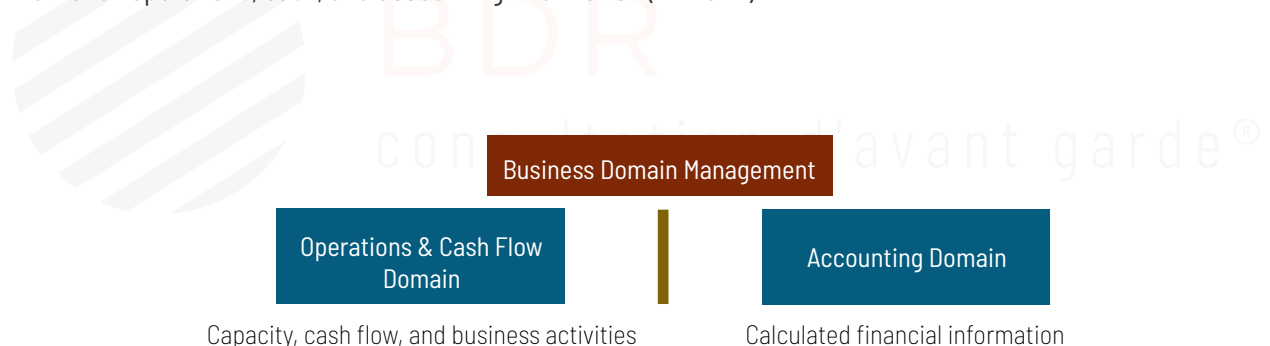


Exhibit 1: If the Accounting Domain is one dimension, the OC Domain is the second. Having a 2-D view of your organization will create greater clarity regarding what is happening in the organization, why, and what you can do to improve. This is the foundation of Business Domain Management, which is the target of SCT.

## Why is a transformation necessary?

To stay in business, companies must make money. Money, of course, is cash. We often use accounting information to help us understand whether, and to what extent our companies make money. We look at gross and contribution margins, for instance, to understand whether a particular product, service, or opportunity has made money. We look at cost information to identify targets for cost reductions. The issue is, accounting cost information doesn't represent money. Since it does not represent money, cash, it is limited in its ability to model cash. This means it cannot tell you whether you've made cash and it cannot offer precise information that guides you how to reduce cash costs. In fact the modeling can be so inaccurate, there are situations

<sup>1</sup> Lee, R. T. 2016. Why Profit doesn't Translate into Cash. *Journal of Corporate Accounting & Finance* (March-April): 63-66.

where cost accounting may show a cost reduction when, in fact, the situation would increase cash costs (see below in the Implications section).

If managing and reducing costs to make more money is the objective, cost accounting tools aren't enough. The Accounting Domain and cost accounting offer a one dimension (1-D) look at your business, but the business exists in a two-dimensional world. 1-D analyses are incapable of fully comprehending things that exist in a 2-D world. Consider, for example, the cost of a product. What does that number tell you about the size of your organization, your cash requirements, how efficiently you're operating, how much output you created, or how it was made?

The objective of SCT isn't to change accounting by creating a new costing approach or allocation schema. Instead, it is to expand the narrative by offering a different, accretive, dimension of data and information. It starts by using the OC Domain to create a second dimension to your analyses. The OC Domain adds a different perspective of business performance. For instance, the OC Domain answers questions such as:

- What are you spending on capacity?
- How much capacity do you have?
- How efficiently and productively is it being consumed?
- What is consuming it?
- What work/output is being created?
- Are you generating cash from the output?
- What products, services, and consumers consume capacity at greater or lesser rates?
- How do we project cash?

These data and the resulting information is ultimately fed into the Accounting Domain as inputs to answers based on accounting information and reporting requirements. This will help both those inside and outside accounting see where the numbers come from and how they can be used to manage cash performance.

### The Foundation

SCT begins by modeling cash. Imagine putting a box around an entire company and modeling  $\text{cash}_{\text{IN}}$ , the rate of cash coming into the box, and  $\text{cash}_{\text{OUT}}$ , the rate of cash leaving (Exhibit 2). Focusing on  $\text{cash}_{\text{OUT}}$  is of particular interest for SCT because it is the source of all costs.  $\text{cash}_{\text{OUT}}$  comes from paying for something you've bought, such as capacity and services, or paying obligations such as taxes or royalties.

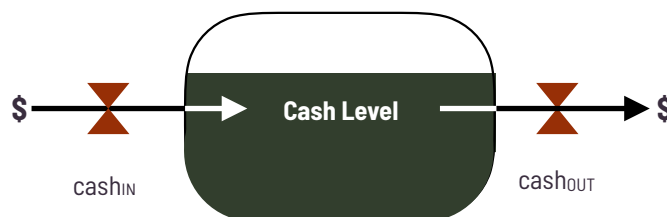


Exhibit 2: A box around the company (the  $\text{cash}_{\text{IN}}$   $\text{cash}_{\text{OUT}}$  or CiCo Border) helps define what does and doesn't affect cash. Whether you've made cash for a period is determined solely by considering what crossed the CiCo border over a specified period. Also, if an improvement does not reduce  $\text{cash}_{\text{OUT}}$ , there are no cash savings. Note, cost accounting and the income statement has no such discipline regarding costs and cash.

For most companies, the largest expenditure is capacity. Capacity is what a company buys in anticipation of demand or use. Typical types of capacity are space, labor, materials, and technology.<sup>2</sup> We consume this capacity for the purpose of doing work and creating output. While products and services provided to the market are types of output, they aren't the only types. Processed invoices, filed financial statements, R&D activities, planning budgets, and hired employees, too, are forms of output.

The entirety of these activities comprise the OC Domain. All business activities and cash transactions occur here (Exhibit 3). Data regarding whether your company has truly made money, the amount of capacity it purchased, how it was consumed, how efficiently and productively it was consumed, and what it created are all calculable in the OC Domain.

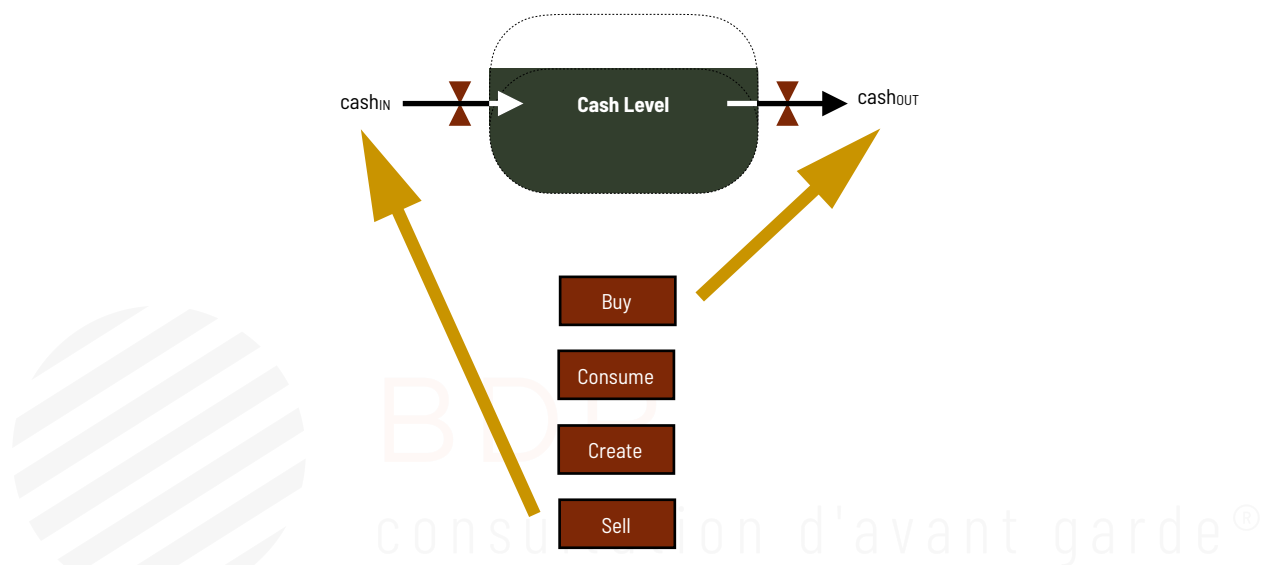


Exhibit 3: Operationally, we buy capacity, space, labor, equipment, materials, and as we pay for them, cash leaves the company. We then consume the capacity we bought to do work and create output. The output that is sold leads to revenue generation. This is the OC Domain.

When someone asks about the *cost of output*, this information is *not* available in the OC Domain. Answering that question requires both subjective and arbitrary inputs that transform the OC Domain data into a different form that is not native to the OC Domain. These transformed data create information that comprises the Accounting Domain. The Accounting Domain is where all accounting information about the business resides. Consider the following example.

Let's say you buy local phone service for \$25, and with it, you get one month of access with no limits to the number of local calls you can make. If you want to make a long distance call, however, it will cost 10¢ per minute. A ten minute long distance call will cost \$1. How much will a ten minute local call cost?

There is an inherent challenge to answering the question. The reason is, there is not relationship between what you bought, access, and how you use it, making calls. Ultimately, to calculate a cost, you will need to transform OC data - \$25 for access, ten minute call - into a cost per call metric, which is Accounting Domain information. To do this, there will be subjective and arbitrary components used to create the answer.

<sup>2</sup> See, for example, Yu-Lee, Reginald Tomas, *Essentials of Capacity Management* (New York: John Wiley and Sons, 2002).

### Subjective

To calculate a cost, you will have to figure out what data to include in the calculation. To calculate a cost per call, you will need to calculate a rate per minute based on the access cost. For instance, if you pay someone \$30 per hour and you want to determine a rate per minute, you could divide the \$30 by 60 minutes to create a 50¢ per minute cost rate. However, what do you include for calls? Every minute of the month? If so, how many days do you consider for each month; 28, 29, 30, 31, 30.4 or 30.5 days?<sup>3</sup> Do you only consider the amount of time you're awake to make phone calls? How do you determine this with a reasonable degree of accuracy or precision? Do you only consider the times you most likely make phone calls? Only the time you spend on the phone? These are just a few of many possible questions that need to be addressed before calculating a cost per minute. It should be apparent that the process begins with a significant amount of subjectivity.

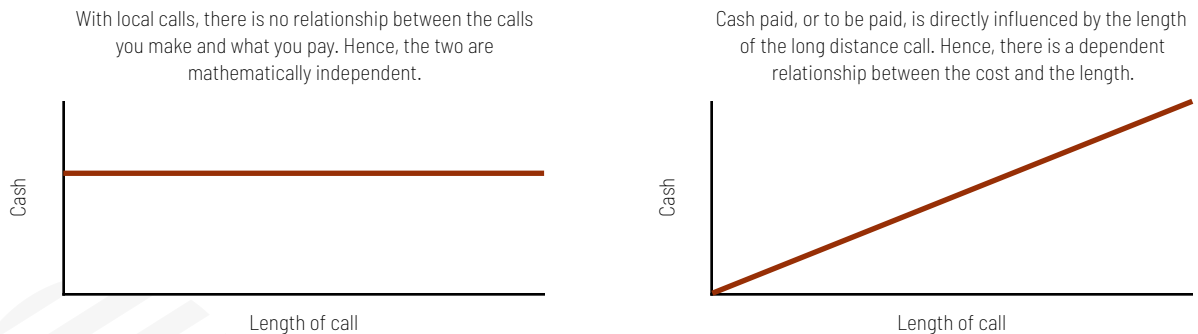


Exhibit 4: When you make a local call, no money leaves the CiCo Border. This means there are no cash costs involved. Organizational capacity behaves this way. Consuming space, labor, material, or equipment you have purchased does not change the rate of cash leaving your company, unless there is a cash use charge involved with the purchase. If the costs you calculate for using capacity don't leave the CiCo Border, they are not cash costs.

### Arbitrary

If you look at the cost of access in Exhibit 4, you will see that the cash cost, \$25, and how it is used, calls or minutes, are mathematically independent. Compare this to the curve for long distance where there is a relationship between what you bought, minutes, and what you paid. To create a cost for a ten minute call, you need a relationship between the access cost and how you use the access. No mathematical relationship exists, so to calculate a cost per call, you will need to make up a relationship. Since the relationship is made up and connects two mathematically independent concepts, it is arbitrary. The cost of access and the calls made are no more mathematically related than the number of people at a baseball game in New York and the temperature in Saigon. Any math relationship you create between two mathematically independent subjects is mathematically arbitrary.

### The Anatomy of the Transformation

To calculate a cost, we consider and capture relevant information from the OC Domain (scope) and create a way to assign or allocate what is essentially capacity cost and use data, to the output it creates. The process is captured in Exhibit 5. Remember, any assignment or allocation is arbitrary.

However, by changing the scope or the relationship (the assignment or allocation), you can create different images or costs as you can see in Exhibit 6.

<sup>3</sup> 30.4 is the average number of days in a non-leap year. 30.5 is the average during a leap year.

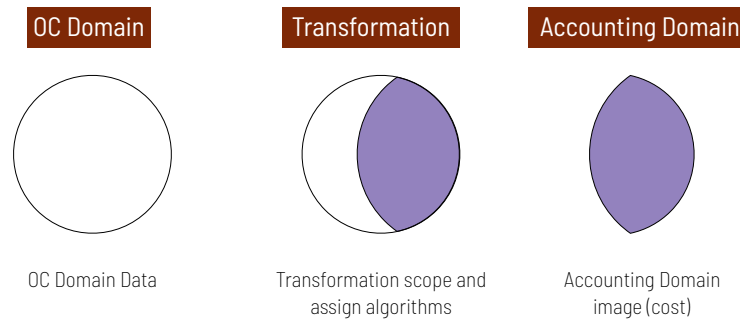


Exhibit 5: Creating Accounting Domain information is how cost accounting works. A subset of OC Domain data is taken and assigned or allocated to create an accounting image or cost. Notice, no new data come from this process. We are still using data available in the OC Domain. This process is a projection of what happens in the OC Domain into the Accounting Domain. By only having one dimension, the Accounting Domain, you're left with the task of projecting something that is 2-D into something that is 1-D. Doing so will often cause the loss of data and information.

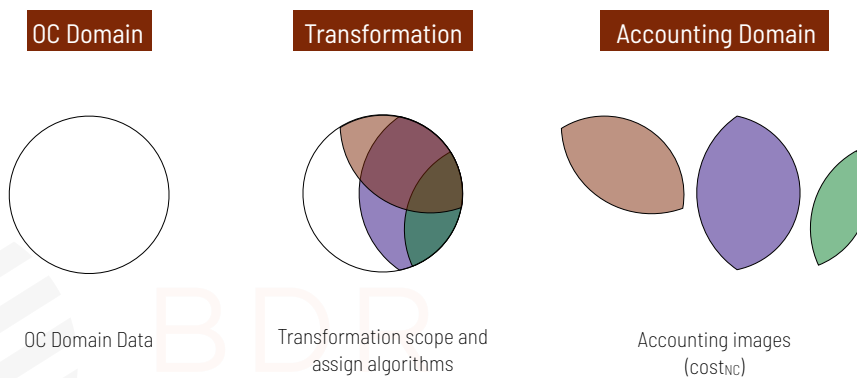


Exhibit 6: By changing what OC Domain data you will use and how you will transform it, you will create different images or costs. This suggests calculated accounting costs are subject to the opinions of those who seek to determine it.

This shows calculated costs are not absolute, they can be manipulated, and are subject to opinion. What scope should we use? How shall we assign costs? These are both questions where the answers rely on opinion. Hence, their output is based on opinion. Another attribute about this transformation is, the cost is no longer money. If calculated costs were money, we would see a cash transaction every time we make a phone call in this instance. If we calculate the cost of a local cost to be 5¢, for example, you do not spend 5¢ every time you make a ten minute call and you don't save 5¢ if you do not make the call. Also, depending on the transformation approach, this cost could be 5¢, 4¢, 6.5¢ 1.3¢ or \$5 (Exhibit 7). If the value were cash, this would not happen. How can cash change based on subjective criteria applied using arbitrary relationships? The \$25 you paid for access was clear, distinct, and does not change based on opinion.

This leads to a couple of important considerations. First, there are two types of costs, cash costs (cost<sub>C</sub>) and non-cash costs (cost<sub>NC</sub>). All calculated accounting costs are cost<sub>NC</sub>. The output of all costing approaches, whether standard, activity based, lean, or average, are all non-cash costs; they do not represent money. Second, calculated costs are not as bullet proof as we are led to believe. Part of the problem comes from the question itself, "What does it cost?" and expectations we have from the response. There is no cost of a local call that is equivalent, money-wise, to the cost of a long distance call although we expect them to be the same.

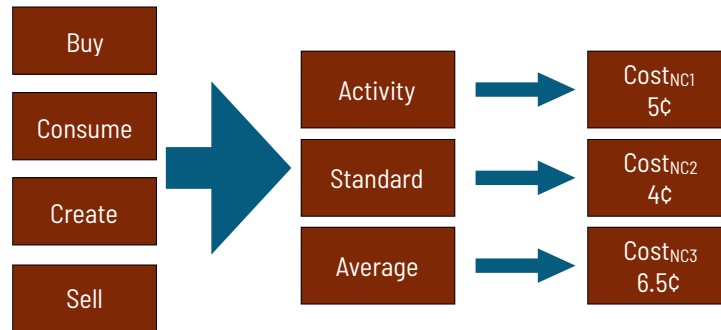


Exhibit 7: Costing methodologies are all just transformation algorithms. Mathematically, they are basically the same. They all take OC Domain data and transform them into accounting images or costs. While one may claim to be more accurate than others, they all rely on arbitrary relationships to calculate this cost.

The other part of the problem comes from the techniques used to answer the question, because the answer relies on subjective notions and mathematically arbitrary relationships when capacity is involved.

### Implications

Capacity, in your organization, is the same as buying local phone access. You buy space, you pay the rent, and it doesn't change with how you use it. You buy steel, you have it in inventory, and the cost, from a cash perspective, doesn't change with how you use it. The OC Domain houses this data along with the cash transactions associated with running the business. However, historically, we've looked to the Accounting Domain to provide this information. Ultimately, it cannot. As a result, there are several implications to consider.

#### Is your company making money?

Many look to gross margins and contribution margins to determine if they are making money from products and services. Cost plus pricing is one example. You calculate a cost, which is  $\text{cost}_{\text{NC}}$  by definition, set a margin above this cost, and calculate a price. The first problem is, the cost varies based on scope and transformation technique. Hence, that \$5.27 product cost your company holds in high regards could just as easily be \$6.83 or \$4.42. Second, the product cost is  $\text{cost}_{\text{NC}}$ . Hence, the margin calculation involves subtracting a value that is *not* cash from one that *is* cash. This equation is meaningless mathematically and, therefore, is not an equation that can assess whether money is being made.

Others argue the cash flow statements do the same thing. That's not completely true. Indirect cash flow statements use information from the income statement, which starts with  $\text{cost}_{\text{NC}}$  values used to calculate the gross margin. Additionally, the cash flow statements are limited in that they do not provide clear context into where the costs come from, just that they're there.

#### Artificial cost reductions

It is possible to reduce costs while having no affect on cash (Artificial Cost Reductions inset). Companies, through lean, Six-Sigma, IT, and other efforts find themselves with savings opportunities that are never realized from a financial perspective.

### Artificial Cost Reductions

One challenge of working with calculated costs in the Accounting Domain is the opportunity to create artificial cost savings. There are two ways costs are typically proposed to be reduced. The first is to increase output at a given input level; increase the number of widgets made or customer service calls answered by the same people. The other way is to consume less capacity to create the same output; reduce the time to make each widget or to answer each call. In both cases,  $\text{cost}_{\text{NC}}$  is reduced while  $\text{cost}_{\text{C}}$  remains the same.

#### Increased output

Consider the output of someone being paid \$30 per hour. Dividing the wage by output creates the average cost curve in Exhibit A. This is also an isocash or equal cash curve, as the cash spent on labor does not change. Notice, by going from point A to B on the curve, there is a cost reduction involved; from \$7.50 to \$3.75. However, the cash spent is still the same. This suggests there could be a cost reduction in the Accounting Domain that will not be reflected in cash.

Another situation to consider is one found in Exhibit B. Exhibit B shows two isocash curves, one for \$30 and one for \$20. With the \$20 isocash curve, it is clear you would be spending less money for the hour of work. However, this chart shows the cost per unit output is lower at B (\$3.75) than it is at A' (\$5). This may cause one to think they are better off spending \$30 and increasing their output than by moving to a cheaper, lower, isocash curve (\$20). Not understanding this will often cause overspending and maintaining higher capacity cash costs in the name of improving profit.

#### Reduced consumption

Consider the same \$30 and a task that takes ten minutes. Exhibit C suggests by reducing the time to eight minutes, the cost will go down. However, you're still on the same isocash curve, so money is not saved. As was suggested above, to reduce cash costs, you will have to move from A to a position on a lower isocash curve, such as A'. Exhibit D suggests cash savings only happen when you shift to a lower isocash curve, regardless of whether time has been taken out of the activity.

Exhibit A: Isocash output curve for \$30 per hour. Going from A to B involves accounting cost savings not cash savings.

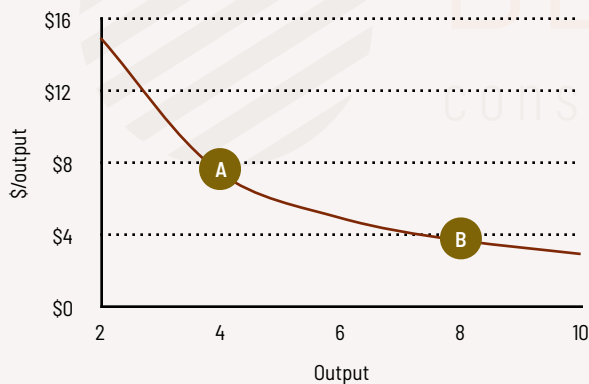


Exhibit B: Two isocash output curves, \$30 & \$20. Only when moving to another, lower isocash curve, such as moving from A to A', will you reduce cash costs

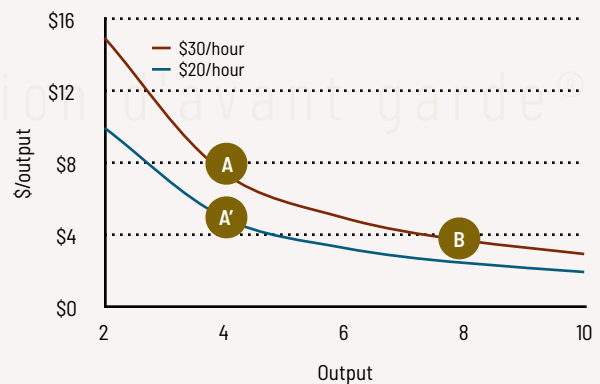


Exhibit C: Isocash capacity consumption curve. Although less capacity is consumed by reducing the time to create output, you're still on the same isocash curve.

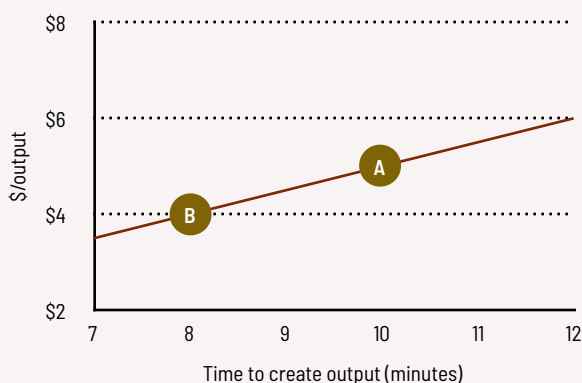
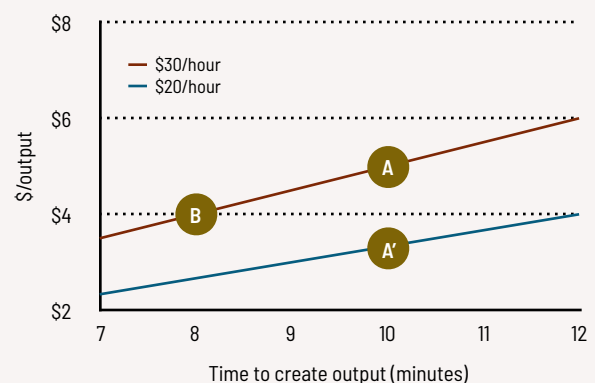


Exhibit D: Two isocash consumption curves \$30 & \$20. Only by moving to a lower isocash curve will money be saved.





### Misunderstanding profit

The profit equation is not mathematically sound. Calculated costs are opinions of the value of capacity used. They are opinions because of the subjective and arbitrary choices involved when defining scope and transformation technique. As you cannot subtract apples from oranges, you cannot subtract opinions of value from money. Hence, profit, including product, service, and customer profit, does not tell you whether you are making money.

### Improving accounting profit can suboptimize cash

When companies don't understand the differences between  $cost_C$  and  $cost_{NC}$  and they operate primarily in the Accounting Domain, there will likely be decisions that, in the name of improving profit, will compromise cash. Consider two situations.

*Situation 1: Improving margins with cheaper materials.* A customer that was focused on unit margins looked for the cheapest materials to maximize their gross margins. The suggestion made was that they would make more money buying *more expensive* materials. This suggestion highlights the difference between money and profit. To get the lowest unit cost, the company bought in large quantities, say, 1000 for \$1000 for a unit price of \$1. The less efficient route was 500 for \$800 for a unit price of \$1.60. From an accounting perspective, the former was the better deal because it led to higher margins. However, the company only sold 500 units. They were choosing to spend \$1000 for the ability to sell 500 units when they could have spent \$800.

*Situation 2: Improving margins through lean.* A company sought to improve margins by lowering its labor costs. The selling price before and after the improvement was the same. The cash spent on labor was the same. The situation is found on Exhibit C in the inset. By reducing the time to make products, the labor cost went down in the Accounting Domain. This led to higher margins and, therefore, higher taxable income. This led to a higher rate of cash going out.

### Poor product decisions - pricing & make vs buy

Another manifestation from making poor product related decisions. Two common areas are with pricing and with make vs buy/outsourcing.

#### Pricing

Many companies use cost plus pricing, which is described above. Neglecting the notion this is an undesirable pricing practice,<sup>4</sup> several things can go wrong. First, as suggested previously, margins don't represent cash. Second, the calculated price used in the analysis can vary based on scope and transformation technique. If the cost can be \$3, \$4, or \$5, how do you know a price of \$4 is good or bad? Third, this approach doesn't take into account the cash requirements of the business. Turning down the \$4 because it is perceived as being unprofitable in two scenarios means cash isn't coming into the business to offset the cash requirements the firm has whether they sell the opportunity or not. Some companies use contribution margins, price minus variable costs, as a proxy. However, contribution margins rely on accounting variable costs. An accounting

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See, for example, Baker, Ronald J., *Pricing on Purpose: Creating and Capturing Value* (New York: John Wiley & Sons, 2010). Baker argues cost-plus pricing does not capture the perceived value of the product to the consumer. This can lead to over and underpricing, both resulting in lost revenue opportunities. Additionally, price affects volume, which, in turn, affects calculated costs. The new cost would demand a new price. This creates an unending cycle where cost and price chase each other without an opportunity for resolution.

variable cost is a cost that varies with volume. Two common types are direct labor and materials to determine if they are generating cash. These costs do not vary in the OC Domain where cash is being measured.<sup>5</sup> This difference suggests contribution margins do not do an effective job of determining whether money was made.<sup>6</sup>

### Make-vs-buy

The other area where companies make bad decisions is when it comes to make-vs-buy. The idea is to compare the cost for your company to make something or perform a task to buying the same output from the outside. Make vs buy analyses are not effective for two reasons. First, the cost you are using is only one of many possible costs. As suggested previously with pricing, your cost can be \$3, \$4, or \$5, what do you do if the purchase price is \$4.25? In some cases, the answer would be to buy, and in other cases, the answer would be to make, but recall, the cost is based on subjective and arbitrary relationships. Second, the approach is comparing dissimilar values. There is a cash transaction,  $\text{cost}_c$ , when buying the output. The internal cost is  $\text{cash}_{\text{NC}}$ , and represents an opinion of the value of consumed capacity. Hence, the approach compares money to an opinion of value, which is not a true logical or mathematical comparison.<sup>7</sup>

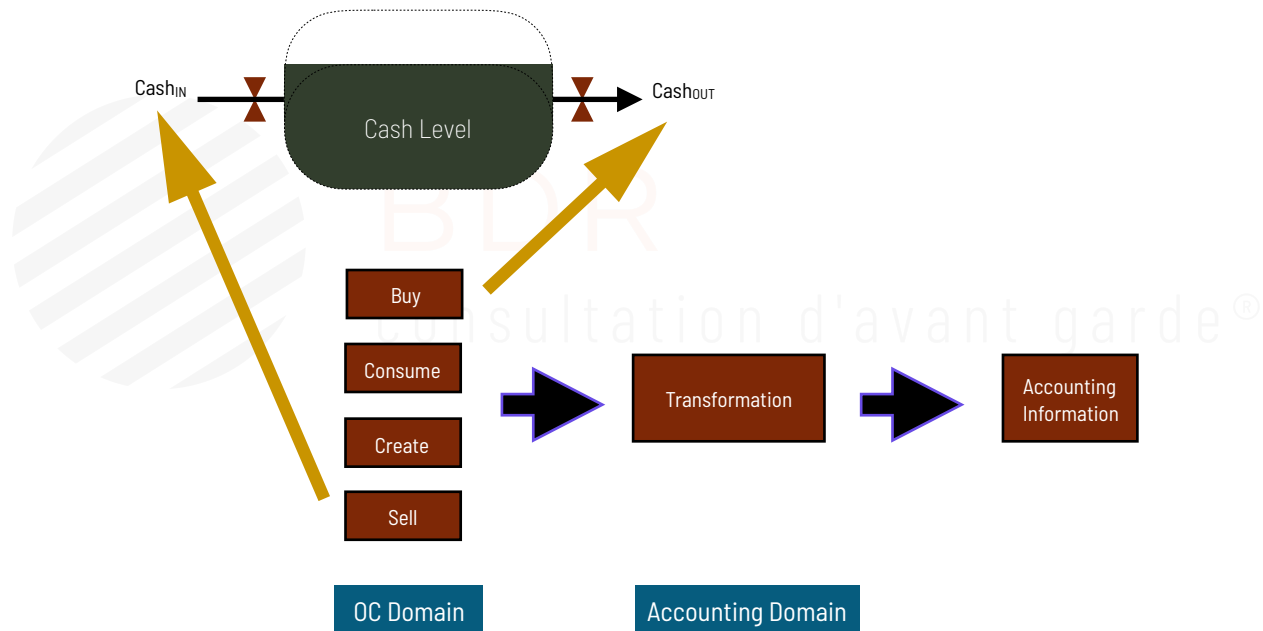


Exhibit 8: This is the Business Domain Management (BDM) framework. It is a model that represents the entire company and brings together both domains so that the relationship between the two can be understood and managed. The OC Domain represents all capacity and cash related activities. The Accounting Domain focuses on providing accounting information that should be used primarily for reporting.

### Recommendations

The Business Domain Management framework creates an effective alternative to analyses and cost management systems that solely rely on accounting information. By opening the analysis up to the entire

<sup>5</sup> Lee, R. T. 2016. Fixed and Variable Costs: When Accounting Is the Opposite of Cash Flow Reality. *Journal of Corporate Accounting & Finance* (May-June): 31-35.

<sup>6</sup> Lee, R.T. 2015. A method for aligning cash flow and contribution margins more effectively *Journal of Corporate Accounting & Finance* (March-April): 1-6.

<sup>7</sup> Lee, R. T. 2014. Making better offshoring and onshoring decisions. *Journal of Corporate Accounting & Finance* (September-October): 35-38.

organization and the activities that happen before costs are calculated, a more comprehensive picture of business performance and how to improve it emerges.

### Use BDM to model the entire company

The BDM model represents the entire organization (Exhibit 8). This creates a picture of all aspects of the organization including capacity levels, capacity consumption, and output created. It also creates insight into output that is sold and when money is received. The data from the OC Domain are then transformed into the accounting domain and used for reporting purposes.

### Models and highlights the environment that creates costs

When modeling the organization's OC Domain, you capture all the data in the organization that are used to calculate costs. You have the cost<sub>c</sub> of capacity, how much was purchased, and how it was used to create output. These are data that are native to the OC Domain. The cost transformation process uses a subset of these data with a particular allocation schema to calculate costs. Notice, no new data are created in the Accounting Domain. The Accounting Domain only uses OC Domain data that are transformed into accounting information.

There are a significant amount of data and information available in the OC Domain before a single cost is calculated. Exhibit 9 offers a snapshot of some of the information that is available before calculating costs in the Accounting Domain. This suggests that shifting data and information requirements to the OC Domain from the Accounting Domain, there will be no loss of data available. This results in the OC Domain being able to create a much more accurate corporate and cash models.

Data and Information available outside the Accounting Domain	
Spend	Revenue
Did we make money/cash profit?	Output/production rate
Capacity levels/capacity purchased	Efficiency
Utilization	Demand
Productivity	Over-productive
Capacity to meet demand	Excess capacity consumed
Excess capacity purchased	Target spend
Potential increase in cash profit	Product, service, customer capacity consumption

Exhibit 9. If data are the raw numbers, information is the answer to queries using the raw data. All business data are captured on the OC Domain before a single cost is ever calculated. This suggests that from a data perspective, the Accounting Domain provides nothing new. There is, therefore, little, if any risk shifting out of the Accounting Domain to the OC Domain to capture data and manage the company.

### Data not affected by accounting conventions

One of the benefits of this approach is the notion that OC Domain data are not affected by accounting convention. The data exist prior to being subjected to the rules tied to allocations, matching, or any other ways

to define or categorize activities and costs, hence, they cannot be manipulated by accounting techniques. Notice, one set of OC Domain data can create an infinite number of Accounting Domain representations. As such, it is often more effective to go to the source of the data for decision making rather than to one of many possible images that represents a transformation from OC Domain data.

#### **Helps describe and resolve conflicts between cash and accounting profit**

One thing the BDM framework will highlight is the difference between cash and accounting profit. Cash profit reflects how much money was made in a period using strict cash inputs and outputs within the period. This is different from accounting profit, which may use non-cash information and matching, both of which may, depending on the application, violate the rules of cash transactions.

As a result, there will be situations where improving cash may create the opposite effect in accounting and vice versa. Without a means to consider both, one may, for instance, improve accounting profit without realizing the negative cash implications of doing so. With proper insight, the implications of changes in both the OC Domain and the Accounting Domain can be considered and used as input to the final solution.

#### **Enables alignment between Finance and Accounting**

What the BDM framework ultimately does is create a comprehensive, organization—wide operations and cash model along that enables common understanding, language, and set of measures and metrics that can be used by both accounting and operations. This creates enhanced opportunities to align the two groups. This will lead to improved communication, improved strategizing about where, how, and what to improve and understanding the impact of the improvement from the perspectives of operations, cash, and accounting. Instead of discussing variances, the two groups understand the source of the negative accounting variance, what it means if anything from a cash perspective, and can talk about what operational changes need to occur and whether they will have a negative effect on cash even if accounting profit will improve.

#### **Conclusion**

Expanding the cost management narrative to include the OC Domain via Business Domain Management will do positive things for your organization. These positive implications include, but are not limited to:

- Having a holistic picture of the organization
- Not losing operational context when operating in the Accounting Domain.
- Having a foundation for alignment between accounting/finance and operations for both short and long term planning as well as budgeting
- Seeing the cash risks of accounting based decisions and vice versa. This additional context will help ensure no one makes decisions in the name of profit enhancement, for instance, and destroy cash in the process.

### About Business Dynamics & Research, Ltd

Business Dynamics & Research provides services that reflect our value proposition: ***you will make more money or we will refund your money.*** We provide advisory services (cash profit and process performance improvement, project profitability, improving cash ROI, cash projections), Business Domain Management models and analytics focusing on operations & cash flow data, and training on our models, frameworks, and management concepts.

### About the author

Reginald Tomas Lee, PhD, is an author, international and TEDx speaker, corporate advisor and trainer in the areas of cash flow profit/ROI and capacity management. He is the author of three books, including *Lies, Damned Lies, and Cost Accounting*, with two more, *Strategic Cost Transformation* and *Project Profitability*, scheduled for release in 2018. He has written over 40 articles and white papers, and was a feature writer for the Journal of Corporate Accounting and Finance. Reginald has advised many major companies, including as Bristol Myers Squibb, Dell, Disney, DuPont, Home Depot, Lockheed-Martin, Toyota, and UnitedHealth Group.

Professionally, Reginald has worked for GM, IBM, EY, has been a professor of both engineering and business, and currently teaches operations and supply chain at Miami University's Farmer School of Business. Reginald has a PhD in mechanical engineering from the University of Dayton.

### For more information:

Web: [www.bdrco.org](http://www.bdrco.org)

Phone: +1.513.800.9476

E-mail: [info@bdrco.org](mailto:info@bdrco.org)

