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Preface

Activity Based Costing (ABC) is emerging as the manner in which business units analyze their operational expenses and track profitability. Not only has this discipline permeated commercial business sectors, it is gaining acceptance within various government agencies. The Department of Energy (DoE) has gone so far as to formulate guidelines on cost control systems for Activity Based Estimating and Activity Based Tracking. They have extensively reviewed successful commercial business methods and implemented those practices deemed applicable as adequate reporting disciplines for DoE contracts. The Department of Defense, on the other hand, is lagging in modernizing their management systems. There is evidence to suggest that DoD is attempting to find cost reporting methods that are commercially acceptable and provide information necessary to compile adequate cost and schedule data for major system acquisitions.

The problem with any government agency in determining the criteria for a good cost reporting system, is the exclusion of the fundamental driver that motivates entrepreneurs and business owners to provide goods and services to market in the first place. Until government agencies truly understand the concept and importance of “PROFIT” it will be impossible for any government body to derive system criterion that will prompt private enterprise to report technical progress and costs for free. Currently, company owners are saturated with finance management practices for expense reporting. Implementation of yet another expense reporting system will be costly and agencies that require vendors to comply with another set of prescribed rules should expect to pay the overhead burden of producing report output.

ABC did not evolve from government reporting practice, but was initiated within the private sector as owners attempted to understand the nature of their business on a goal oriented basis. Business units providing profitable products such as automobiles, buildings, cookies, and zippers are where ABC implementations are active. For the past five (5) years, even service oriented companies are adopting this discipline. In part, this ABC push stems from the accounting industry’s attempt to help private enterprise establish and track business goals, objectives, and profitability. Moreover, any system that management imposes on itself will provide insight into owner expectations on return on investment and compare those returns with the output capacity necessary to achieve the desired profitability targets. The primary purpose then of any management system is to provide insight into the following key business areas:

- Understand Business Processes to Produce and Sell Products
- Understand Cost Drivers Within Each Process
- Understand the Per Piece Costs within a Process
- Understand Profitable Product Pricing

An ABC implementation is initiated by identifying all resource consuming activities necessary to produce, sell, and track product performance in the field. Once all processes are defined, which is not an easy task for the ABC novice, it is possible for a company to plan the necessary resource capacity to execute these processes, and for management to define the expected technical output from the allocation of the company’s resources.

Costs are a fallout from the knowledge of understanding the operation. Most ABC proponents contend that the “cost” term in the ABC acronym is misleading and should be removed. ABC is

intended to provide insight into events that consume valuable resources, have expected outputs, and act as bottom line cost drivers. With this in mind, the purpose of this article is to explore the basic data requirements for the management costing functions of an Activity Based Costing System. Subsequent articles on ABC will describe how cost allocations change between ABC and general ledger accounting, and how ABC provides more insight into the day-to-day operations of a company.

The Basics

When attributing costs, it is assumed that an organization has defined discrete output processes as events that drive costs. These events are then categorized as either First or Second Stage Event Cost Drivers. A First Stage Event Cost Driver is one that is measured by its consumption of resources. The consumption of resources determines the event's costs as each resource will typically have a cost per unit. These events are only tracked by what they consume.

A Second Stage Event Cost Driver is one that is tracked by the event's output. Each piece, or item, produced within a process of events can have a per unit cost. The "per unit cost" includes resource consumption and the event is tracked via each piece produced as a result of the task. The ideal ABC system approach is to provide reporting capability on events or processes for both cost drivers. The key point here is that all costs are incurred based upon the event. Each event is linked, in some way, to the General Ledger so as not to conflict with the official book of record reported to owners, creditors, and governmental tax agencies. Thus, ABC is an extension of the traditional accounting system.

As events and resource consumption are time phased, costs are also time phased. It is important to note that the ABC system provides a methodology to allocate costs on the basis of actuals and projections into the future. ABC provides the ability to track and forecast both expenses and revenues.

Data Elements

The basic elements in the cost module for ABC address both Expense and Revenue cost accounting practices. The first key to a successful cost module is to provide a capability that enables organizations to set up a Resource Expense and Revenue Ledger. This ledger provides insight into the kinds of things an organization needs to fulfill its business objectives. A good starting point is to look at both an organization's payroll and accounts payable systems. Usually finance has a well-defined ledger that is highly detailed. The expense ledger is always geared to those items that are consumed by activities in terms of labor, equipment, materials, supplies, travel, and other direct charges. The purpose of the ABC system is to reduce the use of indirect overhead rates through a better understanding of operational processes, which identify those overhead costs that can be attributed to actual product cost. In most instances many companies start off with indirect rates to cover overhead. Overhead rates begin to diminish when a business unit begins to establish activity models that include overhead event cost drivers that apply directly to raw material to product conversion processes directly.

When first implementing ABC, there is a tendency to derive the Expense Ledger over time to prevent Expenses from being confused with an organization's events. The Expense Ledger should only be thought of as a list of consumables a company needs to produce a product or a service. It will have a direct cost rate that usually escalates over time. Coding of each expense item is key (as to support adequate reporting capability for planning and tracking). Each expense listed in the ledger should have a short name code, a description, unit of measure, and be associated with escalated rates for the purpose of Budgets, Actuals, Estimate-To-Complete (ETC) and Estimate-At-Complete (EAC) as each of these rates can vary with one another independently. Under directly from the traditional accounting system for each reporting period.

The Revenue Ledger can be combined with the expenses, provided that coding attributes enable these cost accounts to be segregated at the time of reporting. There must be a mechanism within the data structure to plan for revenues as they are actually collected. The Revenue Ledger requires coding considerations to ensure that data can be sorted, selected, and summarized to meet reporting needs. The key data elements for the Revenue Ledger include a revenue code,

description, unit of measure, and escalated at the same time. Usually, service oriented companies will ascribe rates to both labor expense and revenue accounts simultaneously. Product oriented business will have separate expense and revenue codes and rates.

Timephased Cost Data Points

Once the Expense and Revenue Ledgers have been defined with their corresponding rates, it is possible to consider time phasing expenses and income. Both Expense and Revenue codes are directly ascribed to an appropriate event cost driver. The codes, as indicated earlier, will be associated to unit cost rates. The amount of resource consumed, during any given period of performance, will determine the economic investment profile. Owners will have yield expectations from the monetary investments made to sustain the capacity of the organization. Within the competitive business model that competes in a global economic environment, all organizational components including technical staff, management, and owners will know their impact on cost effectiveness and their contribution to the bottom line.

The necessary Expense data points are:

BCWS: (PLANNED) The amount of money or resource necessary to fulfill the requirements of the event. The resource is measured in terms of its own based unit. The expense costs are derived by multiplying the amount of resource to be consumed by the cost per unit. Cost calculations must take into account any rate escalations that may be encountered. The total, cumulative value of BCWS represents the Budget-At-Complete, or BAC.

A Target or Baseline Budget represents the resource consumption and associated costs as originally planned. Resource consumption is timephased with a particular loading curve, which is preserved and constantly compared against the Latest Revised Estimate for any given reporting period.

ACWP: (ACTUALS) Represents the actual amount of resource used and the actual amount of costs as reported by the traditional accounting system. Sometimes Actuals are collected at a higher level of reporting than where budgets and actuals are reported on the same level for comparative analysis.

BCWP: (EARNED VALUE) Is a timephased representation that compares the way in which expenditures were planned to actuals (ACWP) incurred for production to determine the cost variance. In addition, the amount of expenditures planned in a timephased manner (BCWS) can be compared to the BCWP to calculate any schedule variance. In each comparison, BCWP is always calculated based on the economic basis of estimate to establish BCWS. When finished, the final value cannot exceed the total Budget-At-Complete, which represents the total summarized value of BCWS.

BCWS may not sway in time once it has been baselined. BCWP, however, can sway in time as it is earned. The difference between BCWP minus BCWS will produce a schedule variance that provides some insight into positive (ahead of schedule) or negative (behind schedule) slips.

BCWP is also compared to ACWP to produce a Cost Variance. A negative number resulting from subtracting ACWP from BCWP indicates a cost overage and a positive number indicates an under run condition.

ETC: (Estimate-To-Complete) Provides a timephased representation of the remaining cost of work to be completed. It is extrapolated from the ACWP line starting at time now forward. The Cumulative values of ACWP plus ETC produces a value known as the Estimate-At-Complete, or EAC.

There are three new components that are tracked in the ABC system. They represent Revenues or income and are described below.

Revenue Planned: (RP) Provides a timephased representation of the income planned. This value is typically compared to the BCWS for budgeting purposes enabling project profits to be projected

at any given time. In most ABC applications, Revenue Planned is taken at higher reporting levels than expense reporting when products are produced. When services are rendered, however, revenue tracking can be taken at the same level as expenses.

Revenue Collected To Date: (RCTD) Represents a timephased synopsis for all income as recorded by the traditional General Ledger Accounting System. This value is compared against the ACWP to determine profitability. The value is based upon actual entries from accounting.

Revenue Billed To Date: (RBTD) This value represents income billed, but not yet paid. The number can be timephased on either side of time now depending upon whether RBTD is recorded based upon invoice date or projected pay date. This time setting is typically prescribed by finance management. RBTD is derived from the job cost system and used to project cash flow analysis and help with any termination liabilities.

One anomaly that occurs with respect to the above data points and as depicted in Figure 1 below, is that revenues and expenses do not occur at the same time. Normally there is a shift to the right with regard to revenues. Expenses are incurred when vendors deliver products to customers. The customer will typically pay bills based upon their business cycle which causes cash flow deprivation until offsetting revenue is received. Our next article will discuss the analysis of ABC data in terms of assigning and tracking costs with respect to revenue, and how to analyze these data points.

Revenues Vs. Expense

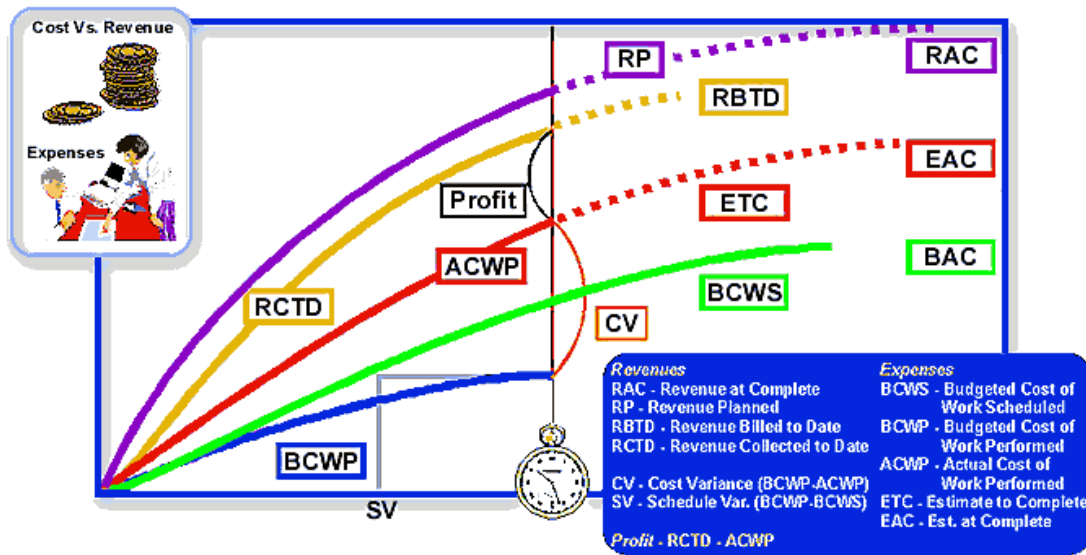


Figure 1: The data elements of C/SCSC with ABC. The lines are portrayed together for comparison only. An astute professional knows that these data points are not normally realized as illustrated. What is wrong with the graph?