

DECISION SUPPORT IN AN ADVANCED COST MANAGEMENT SYSTEM: THE CASE FOR RCA.

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EDITOR'S NOTE

This is the third article in a series on resource consumption accounting (RCA) by Anton van der Merwe and David E Keys. The introductory article “The Case for RCA: Excess and Idle Capacity,” appeared in the July/August 2001 issue of the *Journal of Cost Management* (Volume 14, Number 4). The second article “The Case for RCA: Understanding Resource Interrelationships,” appeared in the September/October 2001 issue of the *Journal of Cost Management* (Volume 14, Number 5).

In these first two articles, the authors build on their predecessors’ work in German cost accounting and seminal work by such leading industry theorists as Robert S. Kaplan and Robin Cooper. Kaplan and Cooper set the foundations for measuring and managing activities that consume an organization’s resources in several articles from 1990 to 1995 and in their 1998, book *Cost and Effect* (Boston: Harvard Business School Press).

The first two articles in this series highlighted seven out of eight shortfalls from an ABC (activity-based costing) view of resources and introduced RCA as the complementary solution that provides resource focus and more direct expression of the interrelationships between resource elements. The eight shortfalls of ABC are as follows:

1. Visibility of a homogeneous measure of capacity is not incorporated.
2. Interrelationships between resource elements (i.e., input and outputs) are only indirectly expressed.
3. The initial inherent nature of cost (i.e., the fixed and proportional characteristics of the costs given the capacity, skill, technology, etc. of the resources) is not reflected.
4. Excess and idle capacity is not properly accounted for.
5. Interrelationships between resource pools (resource pools are groupings of related resource elements) are only indirectly expressed.
6. The changing nature of cost (i.e., how the nature of cost changes through consumption relationships) is not reflected.
7. Fully burdened resource costs are not provided.
8. Inferior information is supplied for effective resource management and certain strategic decisions.

This third article addresses the eighth item on the list.

EXECUTIVE SUMMARY

1. *The first article in this series on resource consumption accounting (RCA) introduced the eight shortfalls of ABC (activity-based costing), providing in-depth analysis of the first four.*
2. *The second article discussed the characteristics of resource pool interrelationships and the demands they place on the cost management system, including an exploration of cost*

dynamics at the time of consumption and an evaluation of resource pool interrelationships from an ABC perspective.

- 3. In the third article in the series, the eighth ABC shortfall is addressed - that is ABC provides inferior information for effective resource management and certain strategic decisions.*

Using only an ABC view to manage resources results in inferior information for effective resource management. Certain strategic decisions are also handicapped under an ABC-only information framework. These information deficiencies comprise the eighth ABC shortfall related to effective resource consumption management. It is worth noting that the eighth shortfall is largely a consequence of the first seven.

Logic dictates that if interrelationships of resource pools are not reflected accurately before resources flow to activities, information will be lacking and the quality of decision support diminished. Apart from such structural deficiencies in most current ABC models, one other factor also contributes to this shortfall – the nature of cost from an ABC perspective.

Just as with traditional standard costing before it, managers using the ABC model have wrestled for more than a decade with accurately identifying fixed and variable costs. In most early ABC models, the variable nature of cost received attention, perhaps because ABC provided an improved method for examining cost assignment compared to traditional general ledger allocation systems. During the past five years, however, there has been a move within

the ABC community away from costs being considered variable to costs being predominantly fixed.¹ Perhaps this perspective evolved because ABC analysis often revealed that labor and overhead costs were not as variable as first assumed.

Many early ABC project failures resulted from the now infamous fixed-cost death spiral. The potential for the fixed-cost death spiral clearly dictates the need for proper insight into the behavior of costs. Understanding the nature of cost and the factors that influence it are key to an ultimate decision-support solution. Examining and understanding cost behavior at the point of consumption can greatly alleviate the uncertainty about cost behaviors.

EVALUATING ASSUMPTIONS REGARDING THE NATURE OF COST

This series of articles focuses on two concepts about the nature of cost: the initial inherent nature of cost (RCA Case 1 - see *Journal of Cost Management*, Volume 15, Number 4) and the changing nature of cost at the time of consumption (RCA Case 2 - see *Journal of Cost Management*, Volume 15, Number 5). Before these RCA-concepts can legitimately be presented as a superior management framework, as well as an ABC-enabling enhancement, five prevailing underlying assumptions regarding the nature of cost must be critically evaluated:

- Costs on processes are variable.²
- Costs are variable over the long term.³
- Almost all costs are fixed.⁴
- Decisions make costs variable.⁵
- Costs are potentially more variable during the budgeting cycle.⁶

The operational and decision support implications of these competing assumptions are examined below. The results of the analysis show that the inherent conflicts in these five assumptions can easily lead to inferior information for effective resource management and strategic decision-making.

ASSUMPTION 1: COSTS ON PROCESSES ARE VARIABLE

The correct view of the nature of cost on a process was presented in the first article (RCA Case 1). That is, in the first part of this series it was shown that the initial inherent nature of cost is transmitted by the resource output measure. The second article discussed the changing nature of cost at the time of consumption and illustrated that activities and processes have no influence on the nature of cost (RCA Case 2).

Similarly, it is not the dollar amount on a process that is 100% proportional/variable (as ABC models typically assume); rather, the variability occurs only in relation to the resource output quantities consumed. As the value chain is executed processes merely transmit value and the nature of cost, according to causal relationships between resources and final consumers. Logically, resources become the first objects of analysis rather than activities or processes.

ASSUMPTION 2: COSTS ARE VARIABLE OVER THE LONG TERM

This assumption has two potential interpretations: either all costs become variable over time or management is able to influence the variability of cost over time. The second interpretation is discussed under Assumption 4: Decisions make costs variable. The first interpretation seems to allude to the fact that resources are replaced or die and their costs disappear; hence costs

are variable over the long-term. For example, companies began doing away with manual ledgers for bookkeeping during the middle of the 20th century in favor of automated mainframe software. Eventually, the costs for keeping manual ledgers disappeared (i.e., became variable). Still, the question remains: Did the cost for bookkeeping disappear, or were they reassigned?

In considering the first interpretation of this assumption, implications emerge concerning effective decision support. Unless the terms fixed and variable can be clearly defined (see also Sidebar A in this regard), confusion is likely to reign on and for the following reasons:

- Costs that have disappeared are neither fixed nor variable - they are gone! The flip side of assumption two implies that all costs that have not disappeared (i.e., costs that remain on the books of record) are fixed.
- Unlike the theoretical construct, the actual passage of time does not make costs variable – if the passage of time actually changed the behavior of costs, companies that have been in operation for many years (e.g., Blancpain, a Swiss watch manufacturer and Beretta, one of the world’s leading manufacturers of sporting, military and personal defense firearms, which have been in business for 257 and 475 years, respectively) would have no fixed costs.
- This view of the nature of cost do not adequately consider the continuity of the enterprise apart from individual resource deterioration and obsolescence - manual ledgers may be a thing of the past but bookkeeping is still required, and its costs (given the computer assets involved) have not necessarily become more variable. Moreover, as organizations implement technology advancements considerable structural cost changes result, which

does not necessarily mean more variable costs. Significant cost reduction becomes challenging and requires high degrees of sophistication and creativity.

SIDEBAR A: THE IRONY OF COSTS BECOMING VARIABLE

Several of the prevailing assumptions about the nature of cost equate the variability of cost with the potential of the cost to disappear, as a result of decisions, budgetary actions or the passage of time. This characterization is unfortunate since it contributes to the confusion around the behavior of cost. For example, all costs have the potential to disappear, there is therefore no reason why all of it should not be considered variable. Ironically, the only time all costs would certainly disappear – become variable - would be if it is an enterprise's strategy to go out of business.

Another interpretation of the costs-are-variable assumption is that if the organization grows over time, even large fixed assets (e.g., buildings) increase (i.e., vary) to accommodate the firm's expansion. Although true, and a convenient logic for variability over time, this assumption rarely has practical application for managers.

Alternatively, in this series of articles, the concepts fixed and proportional were used to reflect the operating cost characteristics of the resources invested in. In expressing cost characteristics applicable to certain intervening events (e.g., corrective actions and management decisions, say, outsourcing) the terms sunk and incremental, and unavoidable and avoidable are considered more appropriate than fixed and variable.

From a strict time perspective the assumption that costs are variable over the long-term is a general statement about the transitory nature of resources. It fails to shed any light on the cost behaviors and characteristics that a company faces at any point in time as it strives to achieve its strategic objectives. In addition, the assumption provides no insight into cost behavior required for operational, tactical and strategic optimization. The framework for this assumption, taken to its logical conclusion, is most accurately expressed by paraphrasing a statement by Lord Keynes on the subject: “In the long run we are all dead, so why work, learn and live today?”⁷

In more practical terms, the confusion and inconsistencies surrounding cost variability obscure the decision-making information that managers need. As the changing nature of cost (RCA Case 2) illustrated, whether a cost is fixed or proportional/variable depends on the position, of the object under consideration, in the value chain; therefore managers need to know how their costs are affected at the specific time their activities consume resource output and in the specific way that their operations use fungible resources – even two or more relationships removed. A resource cost that is proportional to one manager may be fixed to another – depending on how the resource output is used and what function it serves in a given operation or activity.

ASSUMPTION 3: ALMOST ALL COSTS ARE FIXED

This assumption is typically held for one of two interpretations. The first is tightly tied to the short-term. The second loosely tied to time in general. Within the first interpretation the view is almost always fatalistic, because it is based on the belief that little can be done to reduce costs over the short-term. Practical limitations are seen as insurmountable barriers. Even if labor demand decreases for thirty days, for example, it is counter-productive to fire someone for one month, because his or her services will be needed again shortly. Hence the perceived nature of cost is defined by beliefs such as: I am stuck with it – it is a fixed cost I cannot get rid of or, I can get rid of it – it is a variable cost. It remains true, however, that certain variable costs (e.g., electricity cost used for production) will only totally disappear if the enterprise goes out of business. The first interpretation of assumption three clearly confuses decision related aspects of costs (avoidable and unavoidable) with the operating characteristics of costs.

The second interpretation of the assumption holds that costs are, in general, fixed regardless of time. This causes concerns in the following three areas:

- Whereas assumption two (all costs are variable over the long-term) errs in regard to structural cost changes in one direction, this assumption errs in the opposite direction. That is, the assumption that all costs are fixed fails to highlight the impact of structural changes adequately and in a timely manner. Such changes often come at huge expense.
- Some management models de-emphasize local efficiency – this is evident, for example, in the earlier applications of the theory of constraints (TOC).⁸ It is important to note that TOC’s more recent “systems thinking” clearly expresses an appreciation for both local and global efficiencies. Therefore just as with early adopters of ABC, TOC practitioners that have not kept current with Eli Goldratt’s evolving models are at decision-making risks. It is illogical to assume that a lack of emphasis on local efficiency advocates that the non-constraints can be as inefficient as they like. After all, a dollar of profit still results from every dollar of cost saved.
- The effects of changes in both the external environment and organizational cost structure is hidden in a large, not-totally variable cost pool - an intranet portal, for example, that allows employees to perform human resources queries on-line may result in internal service enhancement and cost savings. The question remains as to how the evaluation of the portal option’s benefits and cost savings will be supported under the assumption that all costs are fixed.

At every level in an organization, a need exists to measure and drive efficiency - whether in reacting to changes in the environment, adopting new technologies, or becoming leaner and more competitive. None of these scenarios and their needs are supported by the fixed cost assumption.

ASSUMPTION 4: COST MAY BE FIXED IN OPERATIONS BUT DECISIONS MAKE COSTS VARIABLE

A typical decision making process can have more than one potential outcome. The following are examples of potential outcomes affecting costs:

- A revised cost structure is introduced.
- All costs are eliminated (i.e., all or a portion of a business effort is abandonment).
- The current cost structure and nature of cost remain as is (i.e., status quo).

The first potential outcome (i.e., a revised costs structure is introduced) is touched on under the second assumption (i.e. costs are variable over the long-term). This first outcome refers to management's ability to change the enterprise's cost structure (e.g., by adopting new technologies). Organizations affect change to their cost structure within the framework of their overall strategy and the enterprise's current investment base. Hence, the advent of a new technology (mainframe computers, the Internet) is assessed and adopted (or rejected) within a decision framework that is cognizant of the impact on the nature of cost. In this regard the assumption that decisions make costs variable is misleading, because investing in new technology does not necessarily alter operating cost characteristics to less fixed costs and more proportional/variable costs. (Please refer to the previously cited bookkeeping example).

“All costs are eliminated”, the second potential outcome of the assumption that decisions make costs variable, is sometimes applied as if it were the result of specific abandonment decisions. Note that assumption four indicates that there are fixed costs before the decision is made to abandon all costs; therefore, the outcome advocates that managers should make the decision and all the costs will become variable - a classic example of a self-fulfilling prophecy.

Two types of abandonment decisions are typically used to prove that decisions make costs variable and, therefore, warrant further discussion. Selective abandonment or divestment decisions comprise the first type. With selective abandonment decisions certain fixed costs will always remain – refer the decision support scenario below – they do not become variable, the degree of mental gymnastics deployed in making the decision notwithstanding. Objective reality is not dictated to by subjective error.

Complete abandonment decisions comprise the second type of decision. An airline company, for example, fires its pilots after they take part in an illegal strike. Proponents, therefore, proclaim that the decision made all pilot salary costs variable. The statement made with regard to the second assumption applies in this case as well – that is, costs that have disappeared being neither fixed nor variable, but eliminated. Moreover, what often seems to completely escape proponents of this view is that the airline company would also be out of business if it fired all of its pilots. Complete abandonment results in all costs becoming obsolete; a need to classify costs or for management accounting itself, no longer exists. A complete abandonment decision is an exceptional event and one that seldom occurs during the life of a company.

Clearly this view of the nature of cost is not a premise that can serve as the basis for cost model and system design for decision support.

A need to delineate costs that are affected by decisions at different levels in management remains e.g., information required for operational decisions (such as, the incremental cost to produce one additional unit). This is a different situation compared to a tactical or strategic decision (e.g., which costs remain if a maintenance process is outsourced, and importantly, what new costs are added).

ASSUMPTION 5: COSTS ARE POTENTIALLY MORE VARIABLE DURING THE BUDGETING CYCLE

By implication, during the budgeting process decisions are more likely to be taken that will result in costs morphing to variable behavior. The constraint in this assumption, however, - compared to the other assumptions - is much more explicit. Strategy constrains the budget cycle from both an investment (i.e., capital budget) and an execution (i.e., operations budget) perspective. Managers are not regarded favorably if they rid the organization of 'variable costs' during the budgetary cycle, effectively torpedoing the organization's strategy. In reality, costs are no more 'variable' during a budgetary cycle than at any other point during the year. As long as a strategy remains in force, it dictates the same degree of constraint and allows similar levels of freedom, regardless of the point in time in the fiscal period.

If a cost can be eliminated during the budget cycle without detriment to operations, the cost should have been eliminated before the budget exercise. When the dynamics of the

environment dictate that adjustments or decisions be preemptive, managers should be called up short for missing cost saving opportunities. In any case, the trend in budget practice has been away from the static fiscal budget to a moving window and dynamic re-planning. A view of the nature of cost should, therefore, consistently reflect cost characteristics over the strategic timeline.

From the preceding discussion, it is clear that none of the prevailing views of the nature of cost supports a robust analysis or comprehensive insight that satisfies the full spectrum of organizational and decision support requirements. Consequently, an approach is clearly a need that:

- Correctly reflects the nature of cost on a process.
- Highlights the cost characteristics a company faces at any point in time to achieve its strategic objectives and provides insight into cost behavior required for operational, tactical and strategic optimization.
- Enables the measurement and driving of efficiency.
- Delineates costs that are affected by decisions at different levels in management.
- Consistently reflects cost characteristics over the strategic timeline.

A framework that aims to achieve all of these goals must be adaptable to changing resource functionality across business processes. The nuances of the nature of cost must be understood and incorporated in resource decisions. Perhaps most importantly, resource deployment and tracking need to be viewed within a valid strategic context.

ABC AND DECISION SUPPORT INFORMATION

Exhibit 1 provides an example of information that is typically provided by ABC to support an outsourcing decision. Only a process view of the information is possible because ABC does not provide detail on the resource view that would be available when using RCA.

In this exhibit the target for analysis is “machine run time”. The machine’s usage is determined by direct labor hours, here forecast at 10,000 hours for the time period to be analyzed. The ABC model has identified the resources used in this process and their related costs (far left and far right columns respectively). The total of these costs divided by the driver quantity yield the activity rate, \$38.55.

Exhibit 1: ABC Information for An Outsourcing Decision

Process: Run Machine		Process Driver: Labor Hours
		Driver Quantity: 10,000 hours
<u>Resources:</u>		<u>Variable Costs</u>
Technicians: Wages		\$270,000
Fringe Benefits		90,000
General Material		5,500
Protective Clothing		<u>20,000</u>
	Total Process Costs:	\$385,500
	Driver Rate:	\$38.55

Because this is a unit-related process all costs are considered variable.⁹ The pitfalls in this assumption have been previously explicated. In addition, the information does not satisfy any of the requirements regarding the nature of cost identified previously. Despite these limitations in ABC information, it is still being used for strategic decision-making. Organizations commonly use ABC information to discontinue products as well as outsource resources or

processes. This practice is referred to as burning the fixed-cost death spiral candle from both ends (see Sidebar B).

SIDEBAR B: BURN THE FIXED-COST DEATH SPIRAL CANDLE ON BOTH ENDS

The fixed-cost death spiral is typified by cutting unprofitable products in one month, just to find more unprofitable ones the next. Cutting of products that result in the death spiral is referred to as the output-side source of the death spiral. The death spiral, however, has a second source (i.e., cutting resources through other choices such as outsourcing). This is referred to as the input-side source of the death spiral. In this case, the death spiral results when a process or a function is outsourced without adequate insight into resource fixed costs.

Two potential input-side fixed-cost death spiral scenarios are possible. First, a resource is outsourced without insight into all its attributable costs, as could be the case with ABC information. Second, resources are outsourced with the view that all attributable costs will disappear, when they do not. In both cases, hidden costs remain after outsourcing. Under a typical ABC analysis, remaining resources appear costly and are also outsourced. If not checked and corrected through organizational redesign, this can potentially continue until all resources are outsourced.

RCA AND DECISION SUPPORT INFORMATION

The information RCA provides to support an outsourcing decision is illustrated in Exhibit 2. In this example, the plant maintenance resource pool has an output measure of maintenance labor hours and a planned output quantity of 20,000 hours. Expressed as a proportional amount, the primary cost for technician wages is \$600,000. Supervisor salaries are planned as fixed (i.e., \$48,000). General material cost is planned as fixed and proportional. The fixed portion (i.e., \$855) is for material to maintain equipment in the maintenance workshop. Proportional cost (i.e., \$100,000) is for general materials consumed during maintenance tasks. Finally, depreciation for equipment and tools results in fixed cost of \$50,000.

Exhibit 2: RCA Information for An Outsourcing Decision

Resource Pool: Plant Maintenance				Output Measure: Maintenance Labor Hours	
				Output Quantity: 20,000 hours	
<u>Primary Costs:</u>				<u>Fixed \$'s</u>	<u>Proportional \$'s</u>
Technicians Wages				\$ 0	\$600,000
Supervisory Salaries				48,000	0
General Material				855	100,000
Depreciation: Job Shop Equipment				<u>50,000</u>	<u>0</u>
				\$98,855	\$700,000
<u>Secondary Costs:</u>					
<u>Resource Pool</u>	<u>Output</u>	<u>Fixed Qty</u>	<u>Proportional Qty</u>		
Utilities	Megawatt-hrs	0	200	\$0	\$30,000
<u>Activity/Process</u>	<u>Driver</u>	<u>Fixed Qty</u>	<u>Proportional</u>		
HR: Benefits Adjust.	# Adjustments	20	0	\$1,000	\$0
Purchase: Gen. Material	# Purchase Orders	10	200	<u>1,145</u>	<u>4,000</u>
				\$2,145	\$34,000
Total Resource Pool Costs:				<u>\$101,000</u>	<u>\$734,000</u>
Unit Cost Rates:				\$5.05	\$36.70

Secondary costs are separated into those charged directly from other resource pools and those charged through an activity. Utilities – that is, 200 Megawatt-hours (MwH's) - are charged directly and result in \$30,000 (\$150 x 200) proportional secondary costs. The secondary costs charged through activities are for human resources and purchasing. A fixed quantity of 20 units of the human resources activity - benefits adjustments - result in secondary fixed costs of \$1,000. From procurement, the procure-general-material activity is consumed as partially fixed and partially proportional (i.e. 10 units and 200 units respectively). This results in fixed costs of \$1,145 [(10 x \$4.50) + (10 x \$20) + (200 x \$4.50)] and proportional costs of \$4,000

(i.e., $200 \times \$20$). The net result is fully burdened resource costs for the plant maintenance resource pool and an output rate of $\$41.75 - (\$5.05 \text{ fixed}; \$36.70 \text{ proportional})$.

Clearly, both ABC and RCA analysis can become complex. Both viewpoints are subject to changes in planned output, and both are subject to the vagaries of depreciation costs. True cost is constantly changing, and the cost of tracking it is prohibitive. The practical concern is which analysis more accurately reflects the reality of current operations and the actual consumption of resources by various activities. Practitioners must decide for themselves which of the two analyses is more accurate for their specific needs. The decision can range from ABC only, to a blended use of ABC and RCA, to reliance only on RCA. Each organization must customize to its own requirements.

ILLUSTRATIONS OF OUTSOURCING

Given the resource focus of this series of articles and the emphasis placed on the input-side fixed cost death spiral, the following two outsourcing scenarios serve to illustrate RCA's selective abandonment or divestment decision support:

- Outsourcing an entire resource pool.
- Outsourcing a process.

Each scenario is discussed in detail in the following sections.

SUPPORTING A DECISION TO OUTSOURCE A RESOURCE POOL

Consider an example in which an organization has an opportunity to outsource its entire plant maintenance function. An external provider agrees to perform the services for \$40 per hour. At first glance, with an internal rate of \$41.75 per maintenance hour – the outsourcing option seems attractive - that is, it offers a potential annual savings of \$35,000 [(\$41.75 – \$40) x 20,000 hours]. On closer examination of Exhibit 2, however, it appears that some caution is warranted. The total primary costs (i.e., the primary fixed and proportional costs equal \$798,855) and proportional electricity cost (i.e., \$30,000) are avoidable (i.e., total costs of \$828,855). For the other secondary resources consumed (i.e., human resources and procurement), however, excess capacity results. These functions require further analysis to realize cost savings.

The avoidable costs for the alternative to outsource translate into \$41.44 per hour (i.e., \$828,855/20,000 hours). A manager may conclude that an immediate savings of \$1.44 per hour (i.e., \$41.44 – \$40) or \$28,855 annually is possible. From a cash flow perspective, however, a different picture emerges.

Assume the maintenance equipment was purchased for cash (i.e., there is no long-term loan to settle) and that no buyer can be attracted for the equipment. In this case, cash outflow reduction would be \$778,855 (i.e., \$828,855 – \$50,000) or \$38.94 per hour. Compared to the \$40 per hour cost of the external provider, all of which will be cash outflow, it is clear that plant maintenance should not be outsourced if the equipment cannot be sold. Conversely, if a

buyer can be attracted for the equipment, it would have to be sold for at least the net present value of the increase in cash outflows (\$40 - \$38.94 per hour) for the contract period with the external provider – such a period ideally approximating the remaining economic life of the equipment. Knowing how and when resources are actually consumed, when they remain idle, and when they can be sold all lead to significant differences.

SUPPORTING A DECISION TO OUTSOURCE A PROCESS

Consider an example in which an opportunity presents itself to outsource the preventative maintenance process for a machine, that requires 500 hours of maintenance annually (see Sidebar C for more details). The original equipment manufacturer (OEM) proposes to do the work for \$31/hour. The OEM provides general materials, but uses the electricity on site. The current annual cost to perform the maintenance is \$20,875 (i.e., 500 hours x \$41.75). The OEM agrees to do the work for \$15,500 annually (i.e., \$31 per hour) - a potential saving of \$5,375.

SIDEBAR C: ARE WE OUTSOURCING A PROCESS OR A RESOURCE?

The question is often raised whether it is the process or the resource that is outsourced? This is to a large degree, a matter of semantics. A process defines what a resource does. Outsourcing a process is in essence outsourcing a discrete portion of a resource pool's output.

As indicated in the first article in this series (see Volume 15, Number 4), activities do not cause resource pool costs, therefore these costs remain unless the resources are reduced or eliminated. This principle is now well understood by most ABC practitioners. Only the resource analysis, however, can reveal loss or gain of functionality. With accurate resource data in place, activity analysis complements these insights with scrutiny of how resources are applied.

Moreover given the potential for many-to-one relationships between cost centers and processes,

having detailed insights into the effects of the process outsourcing decision becomes paramount. This is illustrated in application of resource consumption accounting information to strategic decision support (e.g., outsourcing maintenance activities). The marked differences in cost savings between outsourcing an entire resource pool and outsourcing a process should be noted.

The 500-hour (i.e., 0.25 person) reduction in labor demand will result in excess capacity in plant maintenance labor unless an employee can be terminated, in which case two options exist to address the terminated person's remaining productive hours i.e., 1500 hours or 0.75 of a person. Other resources can provide the output in regular time. This is not likely to happen. Alternately, the 1500 hours can be worked on overtime. Clearly, both options have drawbacks. (Because overtime is paid at 1.5 times regular time, however, this option is more expensive - assume zero fringe benefit costs. Work quality is of equal concern for the first option – that is, can the remaining employees really effectively absorb 1,500 hours?)

As far as secondary costs are concerned, the following has relevance. First, since the OEM performs the work on-site, proportional electricity cost will not decrease. Second, the number of proportional purchase orders required decreases, but no immediate savings are realized, since excess capacity will result in procurement. Unless procurement workforce reduction can be accomplished, which is unlikely given the relatively insignificant effort required to provide purchasing support to the particular preventative maintenance process.

The proposal to outsource the preventative maintenance process should not be favorably considered. The organization can only benefit if the excess capacity in the supporting resource pools can be translated into savings. In RCA the recognition of this ripple effect of excess

capacity through the organization is the reason why so much emphasis is placed on correctly accounting for excess capacity, even in traditional white-collar areas (see “The Case for RCA: Excess and Idle Capacity,” *Journal of Cost Management*, Volume 15, Number 4).

Outsourcing a process typically results in diminished returns when compared to outsourcing the resource pool, since the resource output consumed by the process results in excess capacity. Moreover, not only are the secondary costs (i.e., fixed and proportional) on the resource pool difficult to convert into savings, the primary fixed costs are also difficult to reduce. Hence the unavoidable cost for an alternative to outsource a process is typically higher than that for outsourcing the corresponding resource pool.

RCA AND THE EIGHTH SHORTFALL

The two scenarios above serve to highlight the use of resource consumption accounting information in outsourcing decisions. The abundance of detailed decision support information stands in stark contrast to the information typically provided by ABC for an outsourcing decision (compare Exhibits 1 and 2). When presented with the alternatives afforded by RCA the CFO for a jet engine overhaul facility in Texas exclaimed, “I am like a kid in a candy store, I don’t know what to take and what to leave.”

In addressing the eighth shortfall, assumptions about the nature of cost are key. In the RCA model, the premise is that a strategy is expressed in a plan (i.e., a business or strategic plan) and an investment in resources is subsequently made. This invested resource base determines

the initial inherent nature of cost as well as how the nature of cost changes at the time of consumption. In addition, the RCA model reflects the variations and alterations in how an invested resource is used. With these principles as the foundation, more accurate costs flow through the value chain and processes more accurately transmit value and the nature of cost to final consumers.

The approach further unambiguously ties the view of time, as it relates to strategy and the nature of cost together. When the use of resource change to reflect strategic intent, RCA reflects the cost shifts. Conversely, as long as the plan remains in force, the nature of cost does not change just because time has elapsed. Certain adjustments can be made to the plan that influence the nature of cost (e.g., investing in new technologies). Within the overall strategic framework, decisions - whether for budgeting purposes or as corrective actions - are adjustments to the larger plan and, therefore, incremental. RCA accommodates these alterations and their effects by presenting information on the initial inherent nature of cost and the changing nature of cost at the time of consumption for effective decision support.

EXCESS CAPACITY MANAGEMENT

As illustrated, excess capacity costs are to be considered fixed costs and require explicit management intervention in order to be reduced. This is a key differentiator for resource consumption accounting because more often than not, fixed costs will demand management attention (i.e., they must be reduced to realize savings). Although ABC recognizes the importance of these capacity issues, it often lacks sufficient detail for a fully informed decision.

The objective is to measure and drive efficiency and effectively evaluate resource replacement. This view is diametrically opposed to the TOC view that the bulk of costs are generally not totally variable or the “it is fixed, I am stuck with it” view.

ENABLING STRATEGIC INTENT

The primary purpose of the cost system is to support the achievement of strategic objectives by leveraging the inherent characteristics of the invested resource base. Two examples, from an operational perspective, where an effective cost system needs to support strategic intent are:

- Operational and process optimization based on an accurate understanding of the nature of cost.
- Cost involved to produce incremental units of output, whether resource, product or service.

Change is inevitable. Therefore, tactical and strategic decisions can also benefit from insights revealed through analysis of primary and secondary cost classifications to delineate different levels of cost behavior – that is, different costs for different purposes.

BRIDGING THE GAP

Resource consumption accounting effectively addresses all eight the shortfalls of the ABC perspectives on resources by:

- Providing the resource output measure as a consistent and uniform measure of resource capacity.

- Reflecting resource element interrelationships in homogeneous resource pools.
- Consistently accommodating the initial inherent nature of cost in primary cost elements and resource output cost rates and correctly reflecting the nature of cost within a process.
- Accurately accounting for short- to medium-term fluctuations in capacity use and delineating the excess and idle capacity variance where it is visible and actionable by management.
- Accurately expressing resource interrelationships by reflecting causal relationships in resource output quantities.
- Accommodating the changing nature of cost at the time of consumption in secondary cost elements and in a quantity based simultaneous model.
- Providing fully burdened resources costs that are superior in product cost accuracy and in decision support for making outsourcing decisions.
- Unambiguously tying the nature of cost to the strategic timeframe and objectives of the enterprise and accommodating the different demands for operational, tactical and strategic decision support effectively through a single source of information.

The four stages of ABC systems clearly imply a progression from a stand-alone strategic system to an integrated operational system.¹⁰ In the market place, ABC software went from laptops and floppy disks to client server applications and Enterprise Resource Planning (ERP) systems. Consequently, ABC has inexorably been drawn into the operational fray. In this series of articles, the goal is to demonstrate that the view adopted for ABC with regard to

resources needs to be revised if ABC is to evolve to its full potential in the operational world and in the software systems that support it. Moreover, not only is the use of RCA (with its quantity-based approach to ABC) able to bridge this gap methodologically, it also provides superior information for strategic, tactical and operational decision making that reflects and adapts to strategic intent.

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3. C. T. Horngren and G. Foster. *Cost Accounting – A Managerial Emphasis.* 6th Edition. Prentice Hall. 1987. p.68. “Similarly, many managers believe that in the long run all cost are variable.”
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8. T. Corbett. *Throughput Accounting.* Great Barrington, MA. North River Press, 1998. p. 105.
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