

Resource Consumption Accounting: Manager-Focused Management Accounting

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Management accounting is the discipline of accounting designed to provide managers the information they need to make decisions that will optimize the enterprise to meet the strategic, economic, and profit objectives set forth by the organization's leadership. If the strategies are correct for the marketplace, they create sustainable value in the form of jobs and increased pay for employees and dividends and increase the value of the business for the owners.

However, management accounting has suffered from a rash of methodologies such as the theory of constraints (TOC), activity-based costing (ABC), and lean accounting, to name a few, that have all contributed valuable insights, but have failed

This article presents resource consumption accounting (RCA), a management accounting methodology that focuses on the manager—not the external financial statement—as the primary user of its information. Based largely on German management accounting methods in use for at least 60 years, it incorporates the best insights of activity-based costing (ABC), the theory of constraints (TOC), and traditional management accounting thinking.

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to live up to their promise. The reason? None have incorporated the fundamental principles needed to support management accounting for managers seeking to optimize the enterprise. They can hardly be blamed; accounting academia has generally allowed management accounting to diminish to a single course focused on its contribution to external financial reports.

In 2003, the Institute of Management Accountants (IMA)

did a study on the state of cost management in practice¹:

- 80 percent of managers said cost data was very important to their decisions,
- 98 percent of those managers said their cost data was distorted,
- 80 percent used traditional standard costing,
- 77 percent were dissatisfied with their decision support information, but
- 80 percent said change wasn't a priority!

That set of findings can only be true if change is considered extremely risky. And, unfortunately, evidence shows management accounting solutions are risky—ABC, the most widely known solution, was highly promoted, tried fairly extensively,

and hasn't been sustained in practice. Adding to the risk, the level of knowledge of management accounting in the United States is very low, with few courses, limited research, and no existing standards to judge the competency of those offering solutions.

This article presents resource consumption accounting (RCA) and makes the argument that it is a credible management accounting solution:

- RCA is based on fundamental principles of management accounting to support managers' inductive thinking processes.
- RCA is focused on the manager, not the external financial statement, as the primary user of its information.
- RCA is largely based on German management accounting methods that have been in use for 60 years and are still used by over 3,000 companies, but are little known outside of German-speaking countries.
- It incorporates the best insights of ABC, TOC, and traditional management accounting thinking in a disciplined manner.

To understand resource consumption accounting, one must rethink management accounting. Forget costing for external financial statements, and think about the needs of managers throughout an organization who want to make correct economic decisions to optimize their operations support and direct production or service delivery. This article will start with some basics and build to a

discussion and description of RCA.

PURPOSE OF MANAGEMENT ACCOUNTING

The purpose of management accounting is to provide the information for managers to optimize their enterprise aligned with organizational strategic goals using objective logic based on solid data. These decisions basically have two components:

- Maximize revenue (or, in the public sector, mission outcomes).
- Minimize costs (or create flexibility to redeploy

Forget costing for external financial statements, and think about the needs of managers throughout an organization who want to make correct economic decisions to optimize their operations support and direct production or service delivery.

resources to higher-value activities).

Most decisions involve some change to the use of existing resources—the way they are employed, incremental increases or decreases to resources, and/or the addition of new capabilities to existing resources. While the decisions are forward-looking, the rules of logic dictate the best source of data is data based on the present performance of existing resources. Seldom are decisions made that start a new operation entirely from scratch; most decisions managers make throughout the organization are incremental or marginal. Enter-

prise optimization is not just about the big decisions of executives. As lean and Six Sigma have shown, it is essential to make the many smaller decisions correctly and in alignment with organizational strategy. Management accounting then must support a wide range of decisions by many levels of managers, and the overwhelming majority of those decisions are incremental or marginal changes to existing resources.

Management accounting provides information for decision support, planning, and control over the operations of the organization, direct production or service, as well as support operations. It does this by creating a model of an organization's operations and the costs associated with those operations. The objective is to allow the model to simulate the changes associated with various options and project future outcomes as managers do in their consideration of decision alternatives. This is possible because most decisions

involve (1) marginal or incremental changes in existing operations and (2) extrapolation of existing cause-and-effect relationships between outputs and their inputs. Managers use these insights (provided by management accounting) to infer and then select optimal outcomes for a decision.

WHAT CAUSES COSTS?

Costs are important to model since they are much more certain than revenues and typically must precede revenues. This leads to a fundamental and very basic question—what causes costs? However, in recent years, various

management accounting techniques have provided different answers—ABC focused on activities, TOC focused on constraints or chokepoints, and lean accounting focused on the production value stream.

The correct answer has often been recognized, but it hasn't been made the focus of any method or approach. Resources are the cause of all costs (and, of course, all revenues). As soon as resources are applied to an endeavor, costs are incurred—people, buildings, equipment, and the like. You can stop an activity and you will save no costs unless you eliminate or significantly redeploy the resources engaged in the activity; anything else simply shifts the cost of the resources elsewhere in the organization.

BASIC MODEL OF AN ORGANIZATION

Any decision support model must focus on modeling the flow of resources throughout the organization. Enterprises organize resources into relatively homogeneous workgroups or resource pools. Each resource pool applies its inputs to produce an output that supports

another organizational resource pool or produces a product or service for a customer.

In the simplest form, it looks as illustrated in Exhibit 1.

CRITICAL ROLE OF RESOURCES

Since costs are important for management decisions to optimize the enterprise, and resources are the cause of costs, it is vital to understand the nature of resources to model them effectively (i.e., their cause-and-effect relationships). In this regard, resources have three fundamental characteristics:

1. Capability,
2. Capacity, and
3. Cost structure or behavior.

Capability

Capabilities are the qualitative characteristics of the resource. How well trained are people? How well do they perform? What is the quality the machine is able to deliver? How versatile is the machine? These characteristics are very important, but normally don't directly factor into a model, though they may factor into decision making.

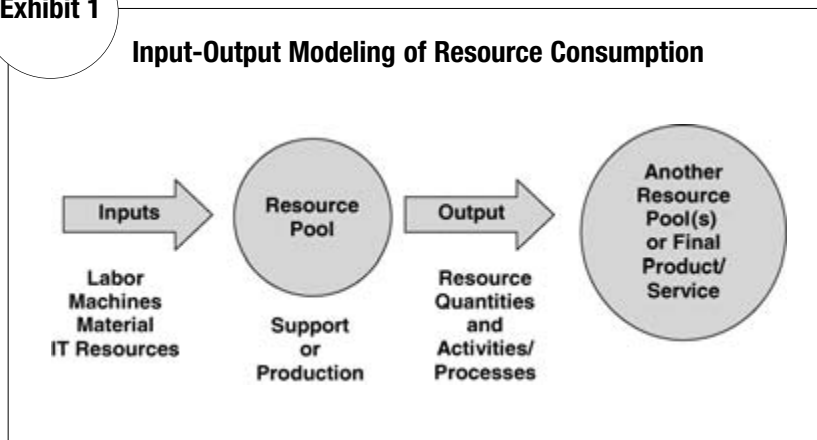
Capacity

The Institute of Management Accountants Statement of Management Accounting identifies 12 different capacity models.² Resource consumption accounting uses the Consortium for Advanced Manufacturing-International (CAM-I) model, which focuses on theoretical capacity of resources. Human resources are available based on the hours in their employment agreement. Physical resources, if owned or leased without restrictions, are available 24/7/365. Capacity is broken down into three categories:

1. Productive—The resource is producing or providing the services it was designed to accomplish.
2. Nonproductive—The resource is engaged in maintenance, set-up, planned standby, waste (poor-quality production), training, and necessary administrative activities (other than their primary work); broken down or ill; on paid vacation, and the like.
3. Idle—The resource is not employed in its primary activity because there is simply no work to do due to lack of demand or designed in excess capacity beyond current demand. This category also includes time that management decides or law/contractual agreements require that no work be done. For example, an office space is normally idle for 12–16 hours a day if only one shift works in each office or desk.³

The identification and proper allocation of responsibility for idle capacity is critically important to ensuring proper decision making. If you think about it, the most desirable

Exhibit 1



performance characteristic of a manager is to create idle capacity—to do more with less. Often managers are motivated by incentives or their bosses' behavior to "keep their people busy." The classic example is producing inventory for which no market exists. Lean production techniques clearly label these activities as waste.

Cost Structure and Cost Behavior

Resource costs are reflective of resource characteristics. Human resources have a pay rate, benefits, and vacation allowance. Machines require maintenance, operators, energy, floor space, and the like. Each resource pool or work unit combines the characteristics of their resources and produces a fairly homogeneous output that transfers those costs to other resource pools or final outputs for a customer.

Costs are fundamentally tied to the flow of resources and outputs of resource pools through the organization. If the operational resource flows are accurately modeled, the costs can be accurately modeled.

COST CONCEPTS

Two fundamental sets of concepts exist around costs and they are frequently subject to being "blended" (see Exhibit 2). *Blended* means variable is made synonymous with avoidable and fixed synonymous with unavoidable, which produces confusion for managers and illogical outcomes. The *relevant range* is a narrow range of outputs where the two sets of concepts appear to be very similar, like raw materials and purchased components in a production resource pool. The relevant range is, however, not a solid foundation for broader decision support.

Concept 1: The Operational Cost Concept

Costs are either fixed or variable based on their relationship to the output of their resource pool. (Note this does not say the final outputs of the organization.)

Example: A supervisor of seven employees is a fixed cost. The work could vary, causing an increase or decrease in employees without changing the number of

supervisors. What if you have no intention of reducing employees? Are they fixed? The answer is no. The quantity of idle time goes up if they become less busy, or overtime may be paid if they are marginally more busy.

Concept 2: The Decision Support Cost Concept

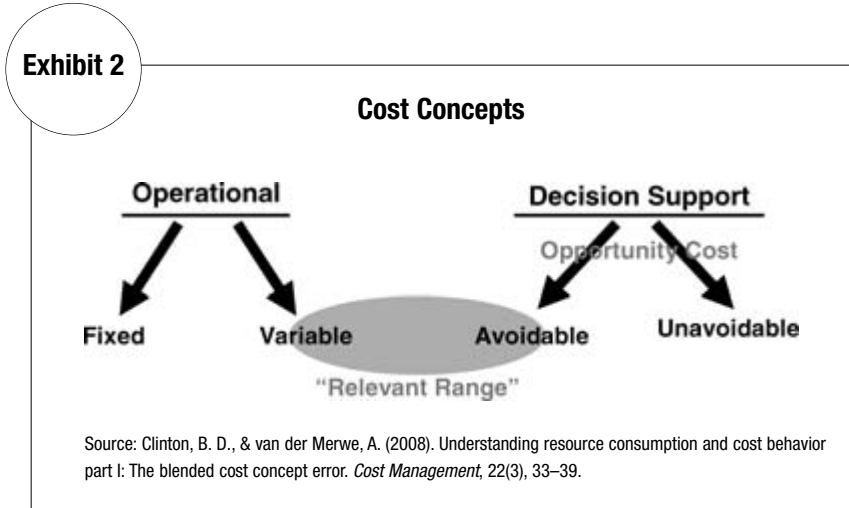
Costs are either avoidable or unavoidable as a result of a decision to change the status quo.

This has nothing to do with whether the cost is variable or fixed. If you eliminate a work unit, you will avoid the cost of a manager (fixed) and employees (variable). On the other hand, if you make a small process improvement and keep less busy employees in the same resource pool while waiting for more work, variable costs will not be avoided.

MODELING COSTS

As stated earlier, costs are fundamentally tied to the flow of resources and outputs of resource pools through the organization. If the operational resource flows are accurately modeled, the costs can be accurately modeled.

Operational reality is normally highly complex and subject to change. It is impossible to model resource flows and their costs based on the range of potential decisions managers throughout an organization may need to make. Costs cannot be practically tagged and identified by their relationship to the almost unknowable range of decision possibilities. The only option for modeling resource flows and their costs is the operational cost concept. Resources



do have a set fixed or proportional (RCA uses the term *proportional* rather than *variable* for reasons that will be explained shortly) relationship to the output of their resource pool. This relationship can be modeled effectively for insights into the status quo and used to experiment with the changing impacts of various decisions.

Modeling costs, based on resource flows between resource pools with costs articulated as fixed and proportional based on their relationship to the resource pool's output, provides a highly divisible model that accurately reflects the operations and intermediate outputs that managers deal with for most of their decisions. The concept of resource divisibility allows the two sets of cost concepts—operational and decision support—to be effectively related.⁴

PRINCIPLES FOR MODELING RESOURCE CONSUMPTION AND COSTS

With the correct modeling concept identified, the principles to be used within that concept must be established. The principles we apply must be consistent with our objective of providing managers the cause-and-effect information for enterprise optimization decisions. This means we will not consider the objective of meeting external financial reporting requirements, which would require we place generally accepted accounting principles in the forefront, ahead of the needs of managers.

The principles needed for managers to have a model that allows them to make correct decisions are causality, responsiveness, and work.

Causality

This is the most important concept because it provides rationality, logic, and responsibility to the model.⁵ This principle demands that resource flows and their associated costs be modeled to reflect cause-and-effect relationships. This means eliminating arbitrary allocations between resource pools. If a causal relationship cannot be established, a resource flow and its costs must be allocated to a higher level in the organization. The most typical example is excess capacity. If a work center has excess capacity, it should not be allocated to the product or service outputs of that work center. It should generally be allocated to a point in the

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organization where the responsibility for the excess capacity rests. For example, if sales are down, marketing or general management of that product line bears the responsibility for the excess capacity. It should never be reflected in higher product cost.

Causality demands resource flows and their costs be modeled from resources to consumers (support and direct) through the value chain on a strict cause-and-effect basis. If a resource pool does not require output from another resource pool, it will not incur any costs from that resource pool.

This means final products and services will not reflect full

cost as defined by generally accepted accounting principles. Full cost requires noncausal allocations of costs to the unit level of a product or service. The relevant term for a purely causal-based cost of a final unit of product or service is the *attributable cost*. The term was established in 1963 by Professor Gordon Shillinglaw as the closest you can get to full cost and still maintain cause-and-effect integrity.⁶

Attributable cost is the correct cost for management accounting focused on the objective of improving management decision making throughout the organization.

Responsiveness

The principle of responsiveness is introduced to ensure compliance with the principle of causality in modeling in resource consumption and cost behavior. Responsiveness governs the fixed and proportional relationships between resource pools. It also allows for the

unique characteristics of these more detailed relationships that significantly enhances effective decision support—for example, the fact that the nature of costs changes as inputs are consumed by resource pools throughout the organization, such as with electricity. Electricity comes into the organization as a resource procured completely proportionally, but as soon as it is consumed to heat or light a building it becomes a fixed cost. Some production equipment also requires a continuous flow of electricity when not in use. The principle traditionally used in consumption in cost modeling, which we call the principle of variability, assumes a relationship between

total cost and total volume. That is too high a level for accurate causal representation.

The best way to explain the differences between these two modeling principles, variability and responsiveness, is to contrast their respective assumptions with regard to cost behavior in relation to total output as reflected in Exhibits 3 and 4.

The principle of variability assumes a direct relationship between total volume and total cost (i.e., if total volume increases, total cost will similarly increase, and vice versa).

The problem with this assumption is that when all cost/resource flow relationships are tied only to a final, aggre-

gated output of many resource pools, a great deal of information is lost because the divisibility of resource and cost flows is hidden. Moreover, ABC showed that the assumption underlying variability is, in some cases, incorrect, such as when producing fewer more complex products. In these instances, total volume is less, but total cost may increase because of more smaller batches, more planning, and more inspection activities required by the complex products. The principle of variability in modeling is really only useful for small organizations where every activity is focused on the production of a very limited number of products or services.

It lends itself to the limited case of direct production resources in the near term.

With the principle of responsiveness, the integrity of an individual resource pool's resource/cost flows through the value chain is visible and maintained. This has a number of advantages:

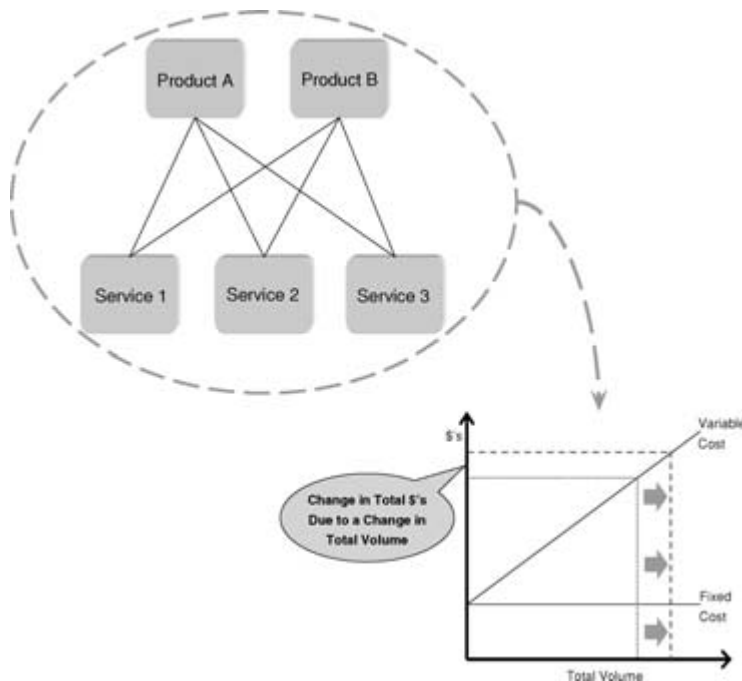
1. Allowing for an inverse relationship between total cost and total volume when manufacturing fewer more complex products,
2. Providing managers specific insights into resources as they relate to changes in product output as opposed to variability's broad assumption, and
3. Enabling the accurate modeling of an organization's economic flow of goods and services regardless of its complexity.

The resultant information allows managers to make optimization decisions throughout the organization and to align support and direct production resource pools in meeting organizational objectives. A model based on the principle of responsiveness also supports detailed planning, simulation, and forecasting since costs throughout the organization are responsive to changes in outputs that result from decisions.

The principle of responsiveness allows fixed and proportional resource flows to be modeled between all resource pools. The resource flows must be quantity-based, not percentages or allocations. Resource pools must be homogeneous—all resources producing a relatively discrete product or service for other resource pools. When these flows are modeled in a manner that reflects cause-and-effect

Exhibit 3

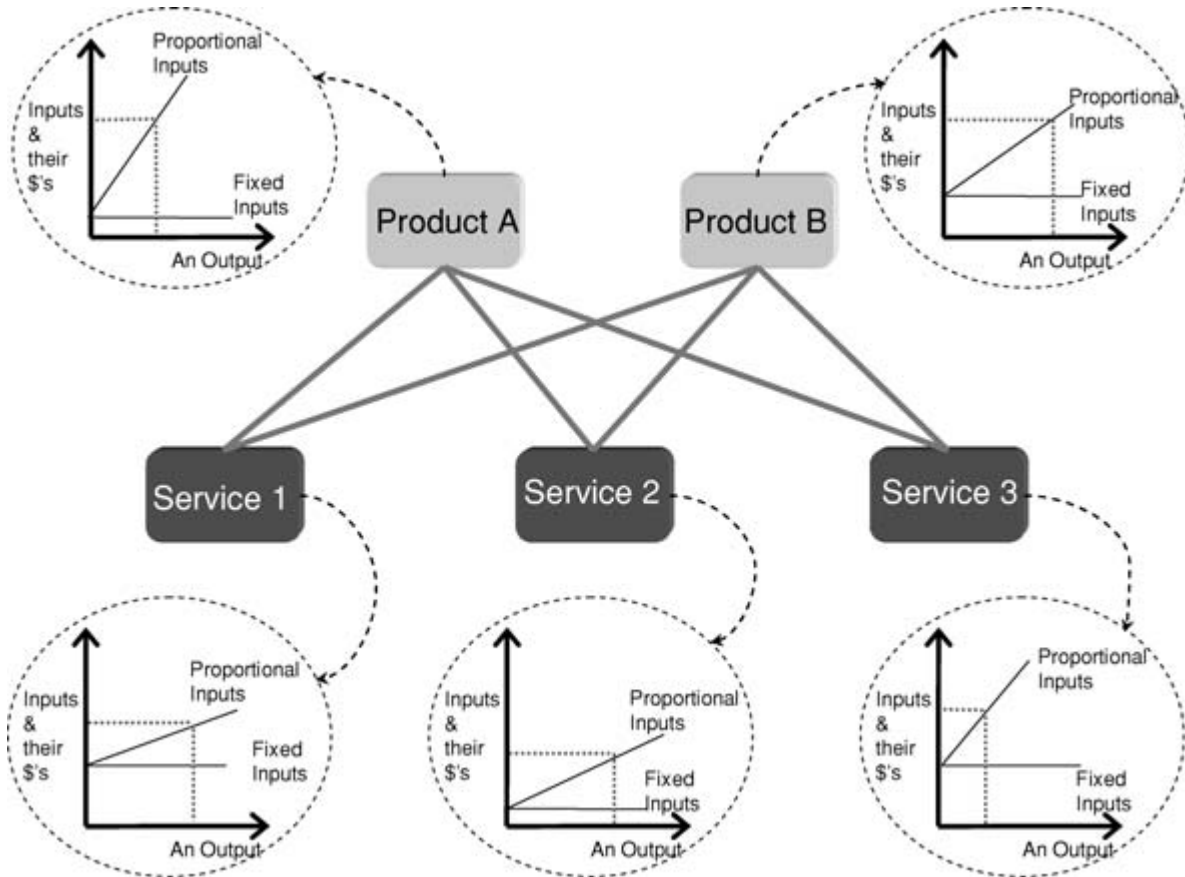
Variability—The Relation Between Total Cost and Total Volume



Source: van der Merwe, A. (in press). Debating the principles series III—ABC and its principle of work. *Cost Management*.

Exhibit 4

Responsiveness—Total Cost Is the Sum of Individual Relations



Source: van der Merwe, A. (in press). Debating the principles series III—ABC and its principle of work. *Cost Management*.

relationships, the flows will clearly provide highly divisible information on costs attributable to unit-level, batch-level, product- or service-line, and organizational-level costs. They will also be divisible along other dimensions such as customer, distribution channel, and many other dimensions in a manner that reflects the integrity of the underlying cause-and-effect relationships. The divisibility of cost achieved by applying the principles of causality and responsiveness supports an

extremely wide range of decision and planning scenarios.

Contribution Margin-Based Profit-and-Loss Information

Applying the principles of causality and responsiveness provides the type of information managers need most often—marginal or incremental information. As previously observed, it is relatively rare when existing organizational resources and processes don't serve as the basis for changes. Full cost is the correct cost figure only

when a new enterprise is started from the ground up or complete shutdown is evaluated.

Generally, therefore, the type of profit-and-loss (P&L) information needed to support optimization decisions is margin-based. The information provided by the standard income statement (see Exhibit 5) typically comprises little more than a gross margin for retail or manufacturing organizations.

However, a marginal P&L based on the principles of causality and responsiveness can

Exhibit 5

Traditional Income Statement

<i>Description</i>	<i>Amount</i>
+ Revenue	xxx,xxx
– Cost of Goods Sold	xx,xxx
= Gross Margin	xx,xxx
– G&A	x,xxx
– Depreciation	x,xxx
– Interest	xxx
= Net Income before Tax	x,xxx
– Taxes	xxx
= Net Income	x,xxx

provide decision-relevant margins at various decision levels, as illustrated in Exhibit 6. The information reflects organizational

fixed and proportional resource costs, as well as decision-relevant attributable costs. For example, customer service attributable

Exhibit 6

A Multiple-Margin P&L

<i>Item Description</i>	<i>Marginal Cost</i>	<i>Attributable Cost</i>
+ Revenue	xxx,xxx	xxx,xxx
– Product Costs	x,xxx	xx,xxx
= Product Margins	xxx,xxx	xx,xxx
– Distribution Channel Costs	x,xxx	xx,xxx
= Distribution Channel Margins	xx,xxx	x,xxx
– Customer Service Costs	x,xxx	x,xxx
– Customer Service Attributable Costs	–	xxx
= Customer Service Margins	xx,xxx	xxx
– Regional Attributable Costs	–	x,xxx
= Region Margins	xx,xxx	(xxx)
– Company-Level Attributable Costs	–	x,xxx
= Operating Result	xx,xxx	(x,xxx)

costs are not relevant for decisions that consider changes to individual products but are relevant to decisions that impact customer groups, such as a call center.

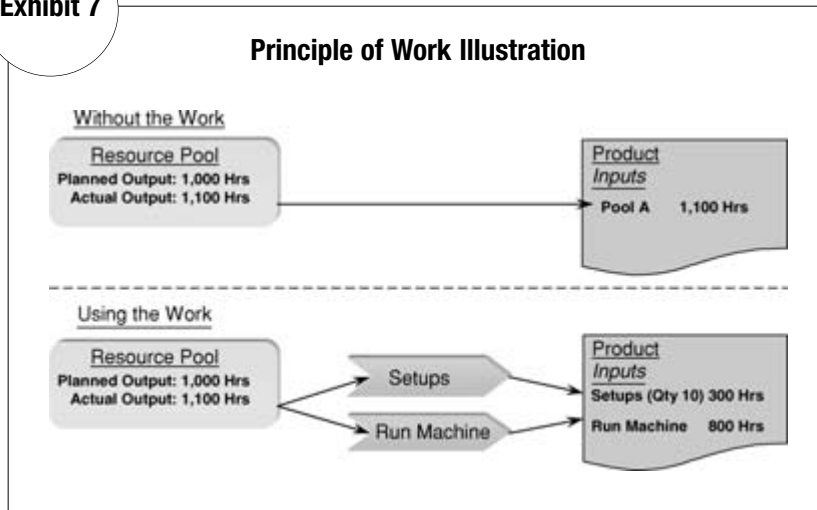
Work

The principle of work (see illustration in Exhibit 7) is not a universal principle like causality and responsiveness but is necessary, because sometimes tracing resource flows between cost objects does not yield sufficient information for managerial decisions. It is necessary, in some cases periodically and in some cases continuously, to know what activity is executed in the resource consumption between resource pools.

The principle of work was the guiding principle of activity-based costing, which always modeled activities and often produced highly complex models that were unsupportable in the long term. Resource consumption accounting applies the principle of work or activity modeling in a much more limited and highly disciplined manner. Activities are only included in a model when they add critical, ongoing information that managers need frequently. Activities must have quantity-based drivers that provide capacity information, not allocations or percentages, and they also consume inputs in a quantitative manner.

Direct resource flows will generally provide the information needed for decisions, and when a particular resource flow needs to be more closely examined for a process improvement, a targeted activity analysis can be established to collect relevant data to analyze a problem or monitor the improvement effort. Once the improvement is well

Exhibit 7



marginal planning cost accounting as a literal translation) have been growing in use in large German companies since it was developed in the late 1940s. GPK is currently used by over 3,000 German companies to “control” their organizations’ operations. The German function of “controller” has little similarity to the U.S. function. German controllers are entirely focused on creating insights into the organization’s operations and have no financial accounting responsibility. GPK recognizes that most management decisions are marginal or incremental decisions

under way or completed, monitoring the resource flow will confirm the success or provide an indication of problems.

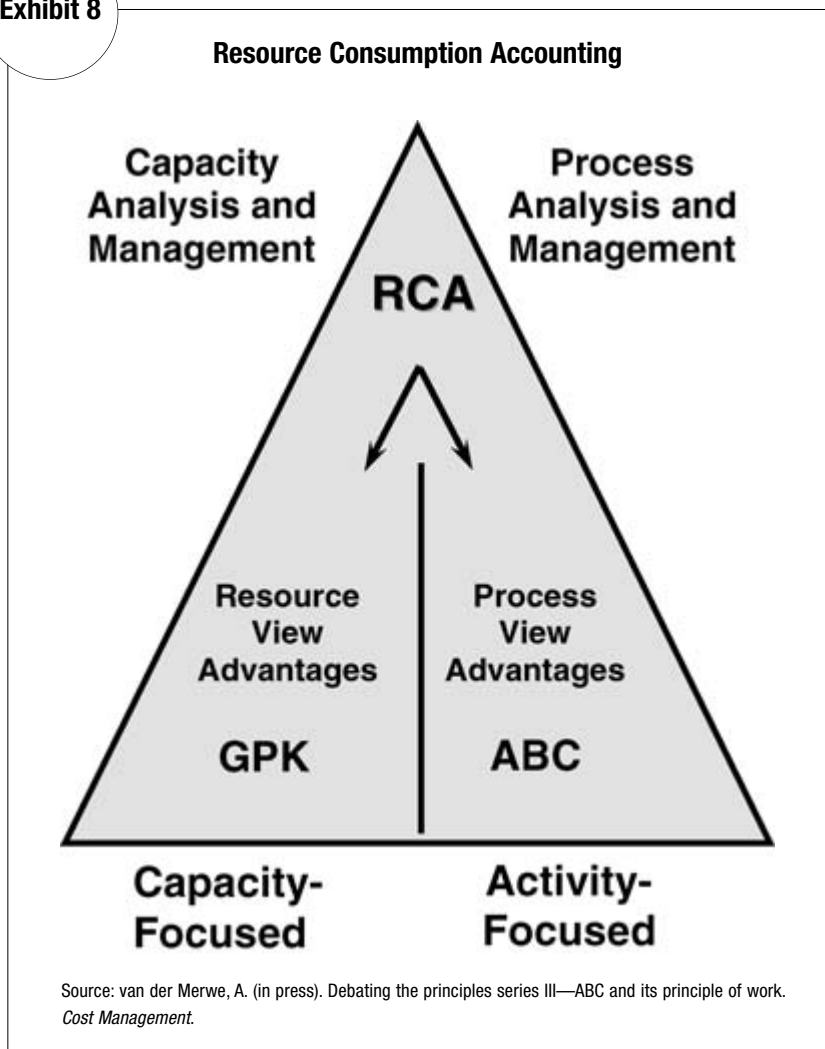
RESOURCE CONSUMPTION ACCOUNTING

Resource consumption accounting (Exhibit 8) is fundamentally a management accounting methodology that rigorously applies the principles discussed so far to create information managers throughout the organization can use to optimize their enterprise. The methodology is drawn from well-established practices but applied in a more comprehensive manner than the underlying techniques. It also involves a fundamentally different approach and information technology (IT) system concept for creating and capturing the information needed for effective management accounting.

Established Practices Incorporated Into RCA

German management accounting practices known as *Grenzplankostenrechnung*, or GPK, in U.S. literature (or

Exhibit 8



and creates a model to support that type of information with a great deal of rigor. RCA goes one step further by incorporating Shillinglaw's concept of attributable cost discussed in the discussion of the principle of causality and requires rigorous tracking of fixed and proportional costs to achieve cost divisibility as discussed in our look at the principle of responsiveness.

The question you may be asking is: If GPK is so successful, why hasn't anyone heard of it? This is an interesting question, but none of the textbooks have been translated into English, or any other language as far as we know. German companies operating overseas use GPK but primarily train local financial managers on how to generate the GPK information to transmit for internal corporate reporting. In fact, one article found that a U.S. plant of a German manufacturing company had put in place an entire traditional standard costing system for internal plant use and wasn't trained to use GPK until the plant had been in operation for a number of years, even though they had been transmitting GPK data to corporate since the plant was built.⁷ Research sponsored by the IMA has found GPK is extremely vital in German companies and achieves high satisfaction ratings—a great contrast to IMA research showing high dissatisfaction (98 percent said cost information was distorted) among U.S. managers.⁸

The second established practice incorporated in RCA is activity-based costing. These techniques allow incorporation of a process view, something that GPK never had. ABC techniques are

used as described in the section on the principle of work.

Value-Chain Integration

What makes RCA radically different from other management accounting techniques is the approach it takes to acquiring the operational and cost data needed to create management information. To explain the difference, it must be contrasted with other management accounting techniques. Techniques such as traditional standard costing, activity-based costing, throughput accounting, lean accounting, and every other technique all use the financial accounting general ledger as their starting point.

What makes RCA radically different from other management accounting techniques is the approach it takes to acquiring the operational and cost data needed to create management information.

They parse this information in various ways and tie it to operational data pulled from some other source.

RCA takes a different view. When information enters the organization, typically the quantity and the associated monetary amount are intimately connected—for example, on an invoice, goods receipt, or pay record. The accounting system gradually pulls this information apart until, in the general ledger, only a dollar value exists. RCA focuses on creating a logistics-centered management accounting model where the quantity and associated monetary amounts from source documents are never

separated. This eliminates the massive special efforts associated with reconnecting operational data to the general ledger dollars on the backend. Additionally, certain principles of generally accepted accounting principles do not reflect the reality of operational decisions (matching principle, depreciation conventions, etc.), and the logistics-centered data already in operations systems better incorporate information that reflects the decision-making needs of managers.

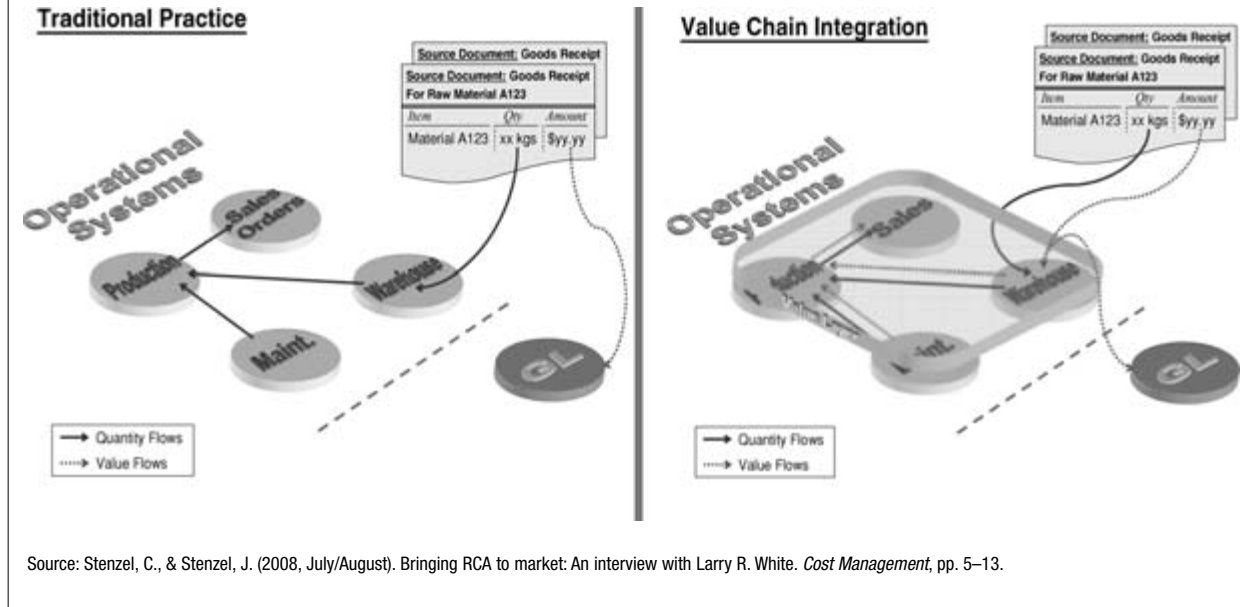
Exhibit 9 presents an illustration of value-chain integration.

RCA Modeling Approach

Creating a cost model that supports managers' decisions throughout the organization and aligns with the organization's enterprise optimization strategy means the model must start with a thorough understanding of the organization's strategy, competitive position, and organization. The next step is to understand the resource flows in the organization and how they interact to support each other and create the products or services for sale. Resource pools must be formally created, their outputs established, consumers (most frequently, internal) of those outputs identified, and quantity-based resource drivers identified. All this information typically already exists in the operations systems. RCA uses these operational quantitative relationships to establish its model. Based on the information needs of the organization, some resources will need to be driven with quantity-based activity drivers. Notice there has been no mention of cost yet! The model

Exhibit 9

Value-Chain Integration



must first be based on modeling resource flows. Costs will naturally follow the flow of resources since all costs emanate from resources.

This modeling approach is based on what we call the three pillars of RCA:

Pillar 1: Focus on Resources and Their Consumption

- Understand your resources and their consumption.
- Create a framework for resource capacity management.

Pillar 2: Quantity Structure for Resource Consumption

- Operational quantities (the flow of resources) drive costs.

- Model the operations and uses of resources, then apply cost.
- Enable resource capacity management.
- Demonstrate causality of value-chain relationships.

Pillar 3: Recognizing the Inherent and Changing Nature of Costs

- Resource pools start with an inherent cost structure.
- As resources are consumed, the nature of their costs changes. Costs that are initially proportional by nature can change from proportional to *fixed* based on consumption patterns.
- This enables value-chain modeling of

resource cost responsiveness.

Exhibit 10 is an illustration of a piece of an RCA model.

This model has four support departments and a production department (an extrusion line) that create the final product.

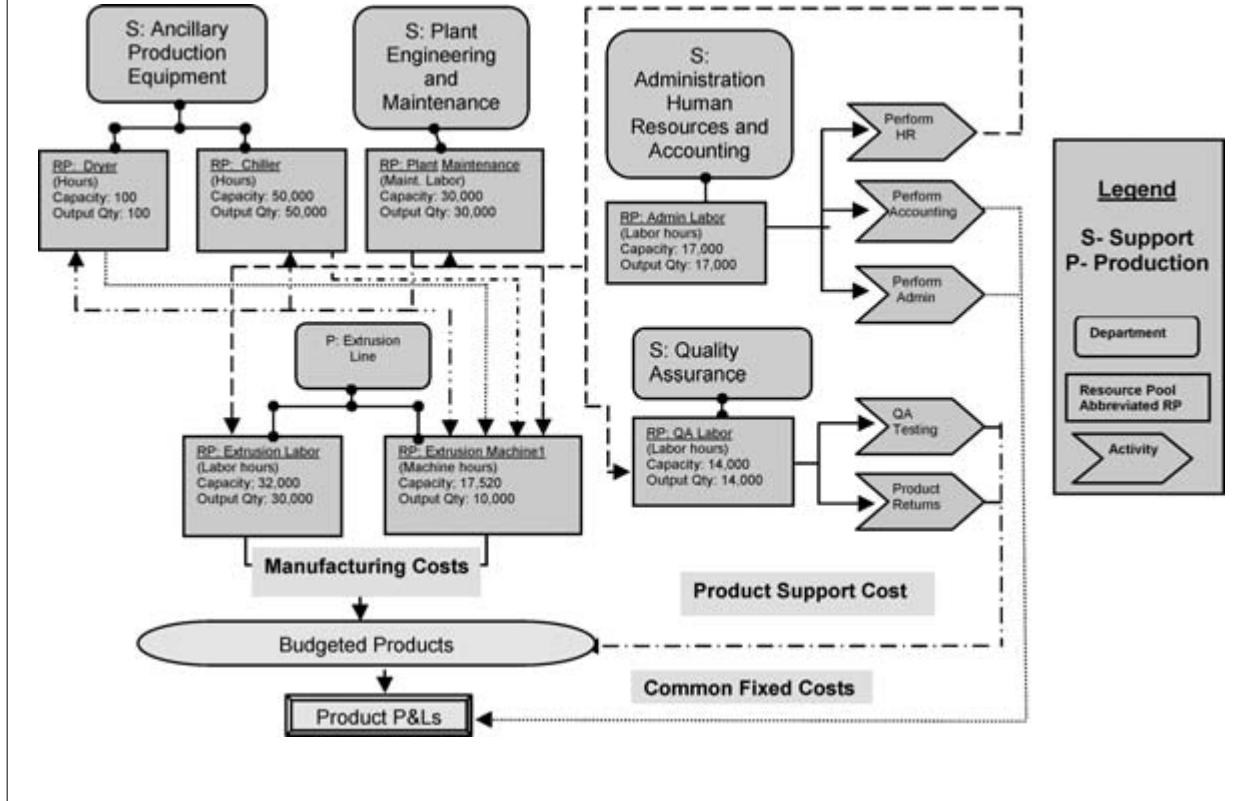
The support departments may support other support and production resource pools, but this model centers on the extrusion line. Each department has one or two resource pools. Most resource relationships are directly traced with resource drivers, but the resource pools under the administration and quality assurance departments are traced with activity drivers.

A few key observations:

- Resource pools have inter-relationships; they often provide support to each other.

Exhibit 10

Example of RCA Model for a Component of an Organization



- Some resource pool activities only support the product line or are common fixed costs of the organization, not traceable on a cause-and-effect basis to individual resource pools.
- Idle capacity isn't included in the map. It would be applied to a higher level in the organization than the product P&L.
- This model can be complex, but it needs to reflect the reality of the resource flows in this organization without arbitrary allocations not based on cause and effect. Managers' information needs are the primary determinant of what should be

modeled. (Think about the highly detailed diagrams required to document internal controls over financial reporting and International Organization for Standardization [ISO] certification—models must be as complicated as they need to be. What is more important than aligning value creation and decision making in your organization?)

This model diagram shows the cause-and-effect-level modeling, but how is the principle of responsiveness captured? How are fixed and proportional costs and the changing nature of costs captured? Exhibit 11 is an

example of a data sheet for a support department.

Primary costs are the costs generated within the resource pool. They are broken down into fixed and proportional based on their relationship to the output of the plant maintenance resource pool. The output is defined as 20,000 maintenance labor hours, which are accomplished by the ten technicians using most of the general material. The supervisor and equipment depreciation are fixed costs, since their relationship to the output is fixed. Depreciation could be proportional if the underlying equipment's use was deemed more significant than time in determining its depreciation.

Exhibit 11

RCA Data Sheet for a Resource Pool

Plant Maintenance Resource Pool	Output Measure: Maintenance Labor Hour Output Quantity: 20,000 Hours
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Primary Costs

Technician Wages
Supervisor Salary
General Material
Depreciation: Shop Equipment

	Fixed	Proportional
\$	-	\$ 600,000
\$	80,000	-
\$	12,000	\$ 100,000
\$	50,000	-
\$	142,000	\$ 700,000

Secondary Costs

<u>Resource Pool</u>	<u>Output</u>	<u>Fixed Qty</u>	<u>Prop Qty</u>
Utilities	MW-Hrs	40	160

<u>Activity/Process</u>	<u>Driver</u>	<u>Fixed Qty</u>	<u>Prop Qty</u>
HR: Benefits Adjustments	# Adjusts	22	0
Purchase: Gen Materials	# PO's	10	200

\$	6,000	\$ 24,000
\$	1,100	-
\$	500	\$ 10,000
\$	7,600	\$ 34,000
Total Resource Pool Costs		
\$	149,600	\$ 734,000
Unit Cost Rates (/20,000 Hrs)		
	7.48	36.70

Source: Keys, D., & van der Merwe, A. (2001, September/October). The case for RCA II: Resource interrelationships. *Journal of Cost Management*, pp. 27–36.

Secondary costs are costs passed to the plant maintenance resource pool from other resource pools that support it—in this case, utilities for the shop space and equipment, human resource costs for benefit adjustment actions, and purchasing actions for 210 orders for general materials. Note that human

resource and purchasing costs use activity drivers to charge costs to the resource pools they support. Utility costs are charged by a direct resource pool-to-resource pool relationship; if we wanted to know more about how the utility costs were incurred, an activity driver or drivers could be added.

This analysis provides a pretty clear picture of what costs may change for the plant maintenance resource pool within the range above or below its current output of 20,000 hours. I say “may change” because the costs may change their character rather than be eliminated based on decisions. For example, a

decision that cuts demand for this resource pool temporarily may only reduce general materials costs since skilled technicians may not be laid off because of the difficulty in hiring them. However, in RCA, excess capacity costs associated with such idle resources would be attributed to an appropriate point (of responsibility) in the P&L, not to direct production resource pools and, hence, to product cost.

RCA Characteristics

Based on the explanation and examples provided, you can see RCA complies with the principles and concepts laid out for effective decision support for manager decisions to optimize operations throughout the organization.

- Clear insight is obtained into the causal relationships among resources within the organization modeled, in both an operation view (resource quantities) and their associated costs.
- RCA provides attributable costs of a final product or service but not a fully absorbed cost. (The information to calculate a fully absorbed cost is readily available.)
- RCA handles fluctuations in final product or service output volume accurately without distorting cost allocations.
- RCA provides direct insight into resource capacity management and capacity costs, not merely the information to estimate or calculate it.
- The complexity of the model can be readily managed—when process insights are needed, they can be added. When process insights are

not needed, simpler direct resource pool-to-resource pool relationships can be traced and will still provide an effective measure for control and monitoring of process effectiveness.

- Cost behavior (fixed and proportional costs) is accurately modeled in resource pools, as is the nature of any changes (proportional costs becoming fixed). This provides the necessary resource divisibility insights vital for bridging the operational (fixed and proportional) and decision support (avoidable and unavoidable) cost concepts. It also provides managers with much greater clarity about which part of the organization is responsible for costs and resource utilization.
- The information is readily available to produce multi-level (within the organization) and multidimensional (product or service, customer, distribution channel, etc.) contribution margin and profitability reporting.

Another benefit of RCA that merits an entire article is the aspect of planning and forecasting. Because the model is highly divisible in terms of resource flows and costs, the model can be easily run in reverse to assess the impact of new scenarios on the modeled current operations—what operational constraints may occur and various cost impacts.

Once the operational plan is final, RCA lends itself to variance analysis comparing planned resource flows, costs, margins, and profits to actual results. These variances are meaningful to managers since the typical distortions associated with tradi-

tional standard costing allocations are eliminated, and costs relate directly to operational resource flows.

State of RCA Practice

While the foundations of RCA are not new, the state of management accounting is extremely confused, particularly in the United States. The underlying GPK methodology is simply not known in the United States, even though GPK was adopted as the mainstream costing approach in the SAP software.

RCA concepts were incubated in the CAM-I Cost Management Section as an interest group from 2001 to 2007. SAP was a member of this group, and during this time key aspects of RCA were incorporated in the SAP R/3 software. From a technology perspective, RCA is in the enviable position of having a solid and mature technology out there that supports it. Moreover, for current SAP clients, there is no incremental investment in information technology.

During RCA's incubation period, several case studies were completed and published. To ensure RCA knowledge and practice grows in a disciplined manner, the RCA Institute (www.rcainstitute.org) was established in 2008 to serve as a center of the RCA community of practice—the next step in bringing RCA to maturity. The Institute offers training and certifications and coordinates assurance services to support companies who adopt RCA and practitioners who implement RCA.

RCA is a panacea for improved operational and cost knowledge to optimize business enterprises, particularly those with complex operations, tight

margins, and large capital investments. However, it is not a “quick fix.” It requires significant education, including a great deal of unlearning of the U.S. approach to financial statement–focused “cost accounting,” and a significant investment in model design and implementation. Software other than SAP exists to support RCA, but it is often little known to the U.S. market, or as in the case of SAP, requires specialized expertise to create the RCA configuration.

It is fairly obvious many companies need better management accounting information. For nearly 30 years, various management accounting methods and software products have promised and failed to deliver. RCA is a dramatic departure from method-centric and software-centric thinking. It is a departure from financial statement–oriented accounting thinking. It provides

a new context and framework for management accounting information—focused on the principles and information managers need for enterprise optimization decisions at all levels inside the organization. It takes advantage of modern information technology and existing enterprise systems but with fundamentally different thinking and concepts.

NOTES

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2. Institute of Management Accountants. (1996). *Practices and techniques: Measuring the cost of capacity*. Statement of Management Accounting Number 4Y. Montvale, NJ: Institute of Management Accountants.
3. Klammer, T. P. (Ed.). (1996). *Capacity measurement and improvement: A manager's guide to evaluating and optimizing capacity productivity*. Chicago: Irwin Professional Publishing.
4. The concept of resource divisibility refers to the ability to sell or terminate a resource that will no longer be needed due to the outcome of a decision.
5. For an in-depth discussion of the fundamental nature of the principle of causality in management accounting see van der Merwe, A. (2007, May/June). Management accounting philosophy series I: Gaping holes in our foundation. *Cost Management*, 21(3), 5–11; van der Merwe, A. (2007, September/October). Management accounting philosophy series II: Cornerstones for restoration. *Cost Management*, 21(5), 26–33; van der Merwe, A. (2007, November/December). Management accounting philosophy series III: An evaluation framework. *Cost Management*, 21(6), 20–29.
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7. Smith, C. A. (2005, April). Going for GPK: Stihl moves toward this costing system in the United States. *Strategic Finance*, pp. 36–39.
8. Krumwiede, K. R. (2005, April). Rewards and realities of German cost accounting: Time-tested German cost analysis can help improve financial results. But first you have to grapple with its complexities. *Strategic Finance*, pp. 27–34.

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