Resource consumption accounting (RCA) is a comprehensive, fully integrated cost management system. It’s an approach to management accounting that leverages the best of the last several decades of developments in the discipline in Europe and the U.S. As one example, RCA effectively blends the robust German cost management system (GPK) with activity-based costing (ABC). This merger of the best of two worlds provides an integrated and comprehensive approach to management accounting.

Three pillars are key to resource consumption accounting: the view of resources, the view of the nature of cost, and a quantity-based approach to cost modeling. As a comprehensive, integrated system based on this new foundation, RCA has a ripple effect throughout the entire enterprise management process. For example, we’ll show you a practical application of resource consumption accounting planning and control principles in tandem with activity-based costing and activity-based budgeting (ABB). We’ll also look at the potential that RCA holds for the process of planning and control in an enterprise. This first article addresses the management process of planning. A second article will address organizational control.
Activity-based budgeting (ABB) has been hailed as the remedy for many a budget ailment because it uses the activities in the value chain as the mechanism to convert anticipated levels of activity output into monetary equivalents. For example, Table 1 gives details of how cabin crew staff are used on two aircraft types for an airline’s current flight timetable. Note that the A7Y7 is a larger airplane and requires more cabin crew per flight. The actual total expense in the general ledger (G/L), traditionally used for ABC modeling, corresponds to the flight hours in Table 1 as $10.6 million. This number is composed of $9 million (cabin crew salaries and benefits), $1 million (allowances), and $600,000 (allocated costs).

Figure 1 shows the ABB planning process for the airline using the costs from the G/L and the information from Table 1. First, in the top half of Figure 1, the full-time equivalents (FTEs) are used to split the $10,600,000 of cabin crew cost between the activities for each aircraft type. This results in costs of $4,240,000 and $6,360,000 per activity as shown. The cabin crew activity for the A7X7 has a rate of $424/flight hour ($4,240,000/10,000) and, for the A7Y7, $1,272/flight hour ($6,360,000/5,000).

Next, these actual cost rates are used in the activity-based budgeting process to calculate a budget for the future period as shown in the bottom half of Figure 1. The planned flight timetable calls for 7,500 flight hours for each of the aircraft types. Within ABC, the cabin crew activities are considered unit related and their costs variable. The planned costs for the future period for the A7X7 and A7Y7 will therefore be $3,180,000 ($424 x 7,500 flight hours) and $9,540,000 ($1,272 x 7,500 flight hours), respectively. The total planned costs for cabin crew for the planned flight hours are calculated as $12,720,000.

**Shortfalls of Traditional ABB**

Activity-based budgeting falls short in three areas:

- First, the approach doesn’t adequately consider the fixed costs on unit-related activities. ABB assumes all costs of these activities to be variable. Yet every activity/process inherits the nature of the cost of the resource that executes it, and very few, if any, activities contain zero fixed costs. (Practitioners have adopted vari-
ous approaches to address the fixed cost problem. An interview with Robert Eiler of Price-waterhouseCoopers revealed tagging of accounts, e.g., depreciation, as fixed. “Fixed accounts” aren’t increased/decreased in proportion to activity driver increases/decreases, respectively. But these approaches leverage the traditional ABC mapping method and aren’t considered comprehensive solutions to the problem.)

◆ Second, because ABC doesn’t use quantities in defining relationships in the cost model, the backflush in ABB from activities to resources is a calculation based solely on dollar values (hereafter referred to as a value-based calculation). This results in a diminished ability to accommodate planned excess capacity.

◆ Third, because of the view in ABC that resources are primarily monetary inputs into activities, insight into resource-specific demands due to a particular characteristic of the plan is lost. For example, training cabin crew in safety procedures differs among airplane types. The impact of the new flight timetable on cabin crew safety procedure training can’t be gleaned from the ABB information.

**ACTIVITY-BASED RESOURCE PLANNING USING RCA PRINCIPLES**

A reliable method is required in the operational planning process to calculate both the resource quantities and the associated dollars necessary to support the execution of a given strategy/business plan. The approach traditionally used in resource consumption accounting to achieve this is a reverse flow of its quantity-based cost model.

Activity-based resource planning (ABRP) is based on RCA principles, while ABB is based on traditional ABC principles. As we illustrated in an article we wrote for the Journal of Cost Management in September/October 2001, the quantity-based approach in RCA is superior in reflecting causal relationships. A quantity structure along with the RCA view of the nature of cost forms the foundation for ABRP. (A quantity structure is a series of quantity-based causal relationships that span the entire cost model—i.e., all causal relationships from resources through to final consumers (target market/market segment) are quantity-based.)

There are four steps to a quantity structure and an effective ABRP process:

◆ Establish resource-pool-level unit standards for resource elements,

◆ Establish resource output consumption unit standards with consumers,

◆ Determine planned resource output demand, and

◆ Convert planned resource output demand into monetary equivalents.

**Step 1: Establishing Resource-Pool-Level Unit Standards for Resource Elements.**

This is done by relating some level of resource-pool output within the relevant range—say, practical capacity—with its associated costs and is referred to as an analytical cost plan (ACP). First, you have to determine the resource output. Table 2 shows the cabin crew utilization details for each aircraft type. Actual hours worked per the current flight timetable are 200,000. Next, you need to establish unit standards within the cabin crew resource pool for all costs and secondary quantities consumed.

An analytical cost plan for the cabin crew is reflected in Table 3. Costs associated with the 200,000 hours of output are planned and classified as primary and secondary costs and are decomposed into their fixed and proportional components.

Primary costs for cabin crew, at $30/hour, are split into productive time ($6,000,000 for 200,000 hours) and crew rest days ($1,500,000 for 50,000 hours), both proportional to output. Rest days are required by law to be at least 25% of productive time. Assume total annual hours per person as 2,000. The balance of cabin crew costs are considered idle time and are reflected in the excess/idle capacity account: $1,500,000 for 50,000 hours—a fixed cost. The cabin crew also receives fixed allowances for tenure and seniority.

Secondary costs consumed are:

◆ Benefit adjustments from human resources (HR), which have activity driver rates of $60 fixed and $40 proportional. The quantity consumed, 150 adjustments, is fixed; one adjustment per employee is allowed annually. This results in $15,000 of fixed cost.

◆ Facilities for 15,000 square feet of space, charged at $39 per square foot, a fixed rate, resulting in fixed costs of $585,000.

With the ACP completed, unit standards for each resource cost element have been established relative to the pool’s output quantity.

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**Table 2: Basic Data for an ABRP Example**

<table>
<thead>
<tr>
<th>Aircraft Type: A7X7</th>
<th>Aircraft Type: A7Y7</th>
<th>Total Cabin Crew Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000 Flight Hours</td>
<td>5,000 Flight Hours</td>
<td>200,000 hours</td>
</tr>
<tr>
<td>Crew Size: 8 people</td>
<td>Crew Size: 24 people</td>
<td></td>
</tr>
<tr>
<td>80,000 cabin crew hours</td>
<td>120,000 cabin crew hours</td>
<td>200,000 hours</td>
</tr>
</tbody>
</table>

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**Table 3:** Basic Data for an ABRP Example
Step 2: Establish Resource Output Consumption Unit Standards with Consumers.

From Table 2 you can determine the unit standards for resource output consumption. For the aircraft type A7X7, it is 8:1 (80,000/10,000 = 8 cabin crew hours per flight hour or a crew size of 8), and, for the A7Y7, the unit standard is 24:1. Using these standards and the resource-pool output unit cost rates from Table 3, you can calculate the dollar cost for each aircraft type's activity (see the top half of Figure 2). At this point, the quantity structure is complete and ready to support the activity-based resource planning process. (We don’t show consumption of activities by cost objects since it adds no value to the illustration. Also, fixed and proportional costs will always be reflected on activities, but we omit them here for simplicity. Quantities, not values, are used in ABRP, so the omission of values in Step 3 has no effect on the planning result in Step 4.)
Step 3: Determining Planned Resource Output Demand.

Given the planned utilization for each aircraft type for the future fiscal period, you can calculate new demand for cabin crew hours. Using the unit standards previously established, new demand for cabin crew hours is 60,000 (8 x 7,500) for the A7X7 and 180,000 (24 x 7,500) for the A7Y7. Total demand for the future period is 240,000 (60,000 + 180,000) cabin crew hours (bottom half of Figure 2).

Step 4: Converting Planned Resource Output Demand into Monetary Equivalents.

Finally, having determined the new demand for cabin crew output, you can convert the output to planned costs by resource element using the unit standards established in Step 1. The new plan for the cabin crew resource pool is shown in Table 4.

Advantages of the ABP Approach

Activity-based resource planning indicates total expected cabin crew cost as $10,600,000. Traditional ABB, on the other hand, indicated $12,720,000. This discrepancy of $2,120,000, or 20%, occurs for the following two reasons:

- RCA properly accounts for excess/idle capacity. ABRP decreases the excess capacity account (Table 3) under the planning scenario to compensate for increased cabin crew demand. ABB increased all cabin crew costs. (The cabin crew example could be seen as a stalking horse since some ABC approaches treat excess/idle capacity differently. But none of these methods properly accounts for excess/idle capacity.)

- RCA accurately reflects the nature of cost of the invested resource base. Fixed costs are a detriment to traditional ABB. Primary fixed costs (allowances) and secondary fixed costs (HR and floor space) are increased in activity-based budgeting but not with activity-based resource planning.

The enhancements that result from incorporating resource consumption accounting principles into a planning method, ABRP in this instance, offer the following advantages:

- You can have an accurate projection of monetary equivalents for planning scenarios based on activities and outputs.

- You have the ability to perform reconciliation of demand for and supply of resources’ outputs in a proactive manner.

- You have superior decision support for incremental investment decisions based on insights related to resource demand and the nature of cost of the resource pool in question.

- You can glean detailed resource-related impacts of
particular planning scenarios from the information—e.g., training requirements or compliance with statutory requirements around rest time.

◆ You can derive a comprehensive and accurate monetary plan by reversing the entire quantity-based RCA cost model, including all simultaneous support relationships (see Figure 3).

**Figure 3: ABRP’s Quantity-Based Backflush**

By combining resource consumption accounting principles with traditional activity-based budgeting, activity-based resource planning is able to provide accurate projections of resource demand and resource-related costs as well as properly account for planned excess/idle capacity. These characteristics of the approach also serve as the foundation for organizational control, the subject of our next article.

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**More on RCA**

More information on resource consumption accounting can be obtained through CAM-I at [www.cam-i.org](http://www.cam-i.org) or at the following website dedicated to the subject: [www.rcainfo.com](http://www.rcainfo.com).

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