

# Implementing Activity-Based Costing

Institute of Management Accountants

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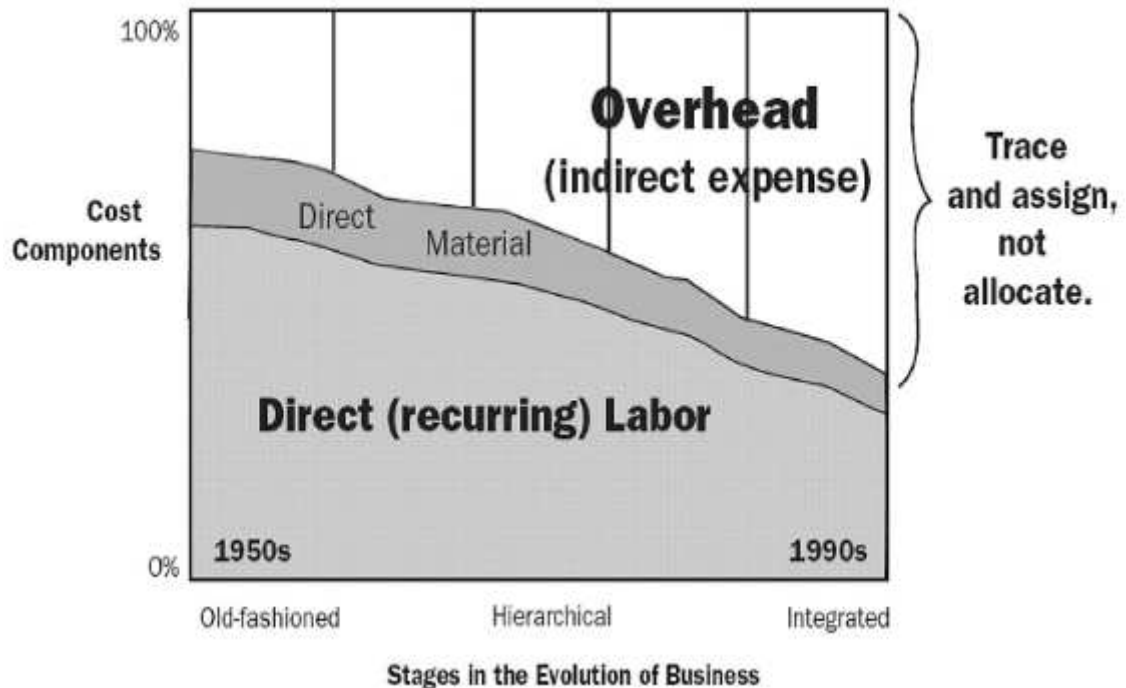
## 1. Rationale – what leads to interest in ABC?

There is a growing desire among organizations to understand their costs and the behavior of factors that drive these costs. Yet there is confusion over how to go about understanding costs and how to distinguish competing cost measurement methodologies (e.g., activity-based costing, standard costing, throughput accounting, project accounting, target costing, etc.). The result is that managers and employees are confused by mixed messages about which costs are the correct ones. Upon closer inspection, the various costing methodologies do not necessarily compete: they can coexist, be reconciled, and blended.

In an increasingly competitive business environment, organizations seeking to maintain or improve their competitiveness need cost information that is accurate and relevant. In the past, companies planned and controlled their operations using accounting information that was assumed to accurately reflect the costs of their products and services (and, ideally, their channels and customers as well). In fact, this was often not the case. The costing systems of many companies, with their broad averaging allocation of indirect costs, masked by an illusion of precision, were actually providing misleading information to decision makers. This resulted in suboptimal decision making by these companies' managers.

In order to overcome the over-generalizations of traditional costing systems, with their excessively simplified cost allocations and resulting lack of visibility for indirect costs, organizations have been adopting activity-based costing (ABC) systems. These systems are based on cost modeling that traces an organization's expenses – both direct and indirect – to the products, services, channels, and customers that cause those expenses to be incurred.

Exhibit 1 illustrates one factor that has led to interest in ABC. Indirect expenses are displacing the direct expenses that make products or deliver services to customers. When asked for the cause of this displacement, most say that it is because of technology, equipment, automation, or computers. In other words, organizations are automating what previously had been manual jobs. But this is only a secondary factor for explaining the shift in the type of organizational expenses. The primary cause for the shift is the gradual proliferation in the types of products and service lines. Over the last few decades, most organizations have been offering an increasingly greater variety of products and services and using more types of distribution and sales channels. In addition, organizations have been servicing more and different types of customers. Introducing this greater variation and diversity (i.e., heterogeneity) creates complexity, and increasing complexity results in greater overhead expenses. The fact that the overhead component of expense is displacing the recurring labor expense does not automatically mean that an organization is becoming inefficient or bureaucratic. It simply means that a company is offering more variety to different types of customers. The problem with traditional costing is that the increasingly large amount of indirect expenses continues to be allocated using allocation factors that are typically unrelated to what causes the costs to be incurred. The consumption of resources needs to be traced and assigned as costs based on cause and effect relationships – and that is what ABC does.



**Exhibit 1. Indirect costs are displacing direct costs (Source: Gary Cokins)**

Here is a simple way to understand the basic principles of ABC. Imagine that you and three friends go to a restaurant. You order a small salad and they each order the most expensive item on the menu – a prime rib steak. When the server brings the bill, the others say, ‘Let’s split the check evenly.’ How would you feel? You would feel this is unfair and inequitable. This is similar to the effect on the calculated cost of many products and service lines in a traditional cost accounting system where the accountants take a large amount of indirect expenses and allocate them as costs without any logic. There is minimal or no relationship to how the products or service lines uniquely consumed the expenses. This likely results in distorted product costs. ABC avoids this problem. In the restaurant example, ABC is equivalent to the server providing four individual checks – each patron is charged for what he or she individually consumes.

Many organizations have evolved beyond using ABC solely for obtaining more accurate and relevant costing information. For these companies, the emphasis has shifted from ABC to ABM – activity-based management. These organizations use an understanding of their cost drivers – the measures of activity that are causal factors in the incurrence of cost – to improve their operations. They use their improved understanding of their cost structure, which is now more highly visible, to proactively manage their resources to enhance the key elements of value from their customers’ perspective. (For more information, see IMA’s Statements on Management Accounting (SMAs) *Implementing Activity-Based Management: Avoiding the Pitfalls and Tools and Techniques for Implementing ABC/ABM.*) Organizations involved in business process reengineering, quality improvement, and lean management initiatives use both the financial and nonfinancial insights from ABC as a measurement system.

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## 2. Scope

This SMA provides an overview of the approach to designing and implementing an ABC system. The principles contained in this SMA are applicable to any organization, regardless of size or industry. It provides those considering implementing an ABC system with information regarding:

- the roles and responsibilities of management accountants in ABC projects;
- the need for behavior change management when implementing an ABC system;
- how to design and implement an ABC system;
- how to plan an ABC project implementation;
- how to ensure sustainability of an ABC system; and
- how to evaluate ABC software.

The information in this SMA will enable the reader to design and implement a sustainable ABC system that provides a greater understanding of product and customer costs, business processes, and work activities. This understanding provides an organization with the means for making better business decisions.

## 3. Defining ABC

Traditional costing methodologies and ABC differ in the following way:

- Traditional cost accounting techniques allocate indirect expenses to products (and to any cost object) based on characteristics of a single allocation factor that is typically not causally related to the type and level of work consumed.<sup>1</sup> Traditional cost allocation factors include the number of direct labor hours required to manufacture a unit, the cost of that direct labor, the purchase cost of merchandise resold, or the number of days occupied. These are broad averages that do not reflect causality for the indirect expenses. The problem is that use of these allocation methods results in allocations that vary with changes in the allocation basis. ABC systems recognize that individual products or customers do not consume indirect expenses in those proportions. Instead, they focus on the work activities of people and equipment required to produce each product or provide each service, and their consumption of each of those activities.

As an example of the cost distortion from applying broadly averaged overhead rates, consider a semiconductor plant that once calculated its product costs by taking direct labor and direct material and then added 1600% of these costs as an allocation of overhead costs. Compared to this standard cost allocation method, however, the company's various products consumed the overhead very disproportionately. The result was product cost distortions of over 500% relative to

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<sup>1</sup> A cost object is a function, organizational subdivision, contract, product, or other work unit for which cost data is desired and for which provision is made to accumulate and measure the cost of processes, products, jobs, capitalized projects, etc. Intermediate cost objects are internal to a company, while final cost objects are products, standard service lines, or the cost-to-serve customers that generally touch external entities. Organizational sustaining final cost objects are those not caused directly by suppliers, products, channels, or customers. Senior management and regulatory bodies are examples. Cost objects can be thought of as for what or for whom work is done.

the organization's beliefs. The profitability of the company's various products and services was very different from what it believed to be the case.

ABC traces indirect costs (commonly called 'overhead') to products, services, and customers by identifying resource and their costs, the consumption of these resources by activities, and the performance of activities to produce output. Examples of resource expenses are salaries, operating supplies, equipment depreciation, and electrical power. They represent the capacity to perform work.

ABC gives visibility to work activities and their costs. Activities are a group of tasks in the same function that are governed by the same driver and same intensity of resource consumption. The activities performed by an organization are identified using activity analysis. This involves determining what activities are done within the department, how many people perform the activities, how much time they spend performing the activities, what resources are required to perform the activities, what operational data best reflect the performance of the activities, and the value of the activities to the organization.

With ABC, resources are traced to activities using resource drivers; these are used to calculate the cost of each activity that consumes the resources. Activity costs are then traced, using activity drivers, to each product or service (i.e., cost object) that consumes a given activity. This is done by determining how many units of activity output each cost object consumed during any given period of time. (The topic of 'drivers' can be confusing; definitions and examples of 'drivers' will be discussed in Section 7.)

ABC originated in the manufacturing sector, but subsequent implementations by organizations in virtually every sector of the economy have demonstrated its universal applicability. For example, many governmental units and companies in the financial services industry now use ABC systems to determine customer profitability.

#### **4. The role of the management accountant**

As with any new management technique, buy-in from the executive team is crucial to the implementation of an ABC system. Also essential is the support of an organization's management accounting staff. These professionals need to understand that their existing costing system – which they have a vested interest in maintaining – is most likely producing inaccurate and misleading costing information. It is essential that adequate communication take place to demonstrate to the accounting staff that a better alternative exists – one that provides operational relevant information and enhances the quality of the information they provide to managers.

Management accountants can perform an important role in the design of an ABC system. Based on their skills and training, they can help identify what is appropriate for analysis (product, customer, process, etc.) and explain the probable causes of an existing cost system's deficiencies. In addition, based on their detailed knowledge of the information in their company's costing information systems, they are uniquely qualified to judge the level of aggregation appropriate to the ABC costing system. They can use their understanding of costing methods to recommend appropriate methodologies for the assignment of costs to activities and

cost objects. Finally, they will be able to use their understanding of the information and cost relationships to support the system once it is implemented.

A few notes of caution and a qualifier: ABC calculates historical costs to provide insights, understanding, and focus. ABC is basically full absorption costing but without violating rules of causality as is typically done with traditional cost allocations of indirect expenses. But decisions impact the future. To validate the expected financial impact of a decision, one should apply managerial economics that involve marginal cost analysis that classifies the behavior of expenses with respect to changes in mix and volumes as being variable, semi-variable, step-fixed, or fixed (or include that capability in the ABC model). Such analysis should also distinguish the difference between capacity provided and capacity used and consider the presence of unused and available capacity. Full absorption costing in an ABC context does not mean that 100% of a period's expenses are traced to customer-related products, services, and channels. Costs not related to customers, including unused capacity expenses, are ideally traced to a final cost object called 'business sustaining costs' (described in Section 7).

When the impact of decisions are less obvious and require validation, marginal cost analysis methods (such as resource consumption accounting and activity-based resource planning) or capital investment analysis using discounted cash flow (DCF) should be applied. With ABC, marginal cost analysis and capital justification techniques apply various versions of past period costs that can be layered according to which resource expenses are to be included or excluded depending on the type of decision being made and the planning horizon. Determining which expenses to include or not in decision analysis can be judgmental, such as the cost of unused capacity. This SMA addresses how to more accurately calculate what something costs today and gives insight as to what expenses may be required in the future based on various forecasts. It is the role of management accountants to determine which assumptions to make as they support their organization in decision analysis.

Another caution about limitations of ABC data involves lifecycle costing. The descriptive view of ABC typically covers a time period such as a month, quarter, or year. Products and customers, however, pass through life cycles. ABC may measure unusually high product costs during a product's early stages, when it requires attention to stabilize production. The product may appear unprofitable today but be profitable in the future as those costs subside. The lesson here is that ABC does not calculate the multi-period costs across a life cycle, but its cost snapshots during each period can be used as inputs for life-cycle costing.

## **5. Implementing ABC involves behavioral change management**

As with any new management technique or tool, an effective change management process must be in place before implementing an ABC system. An objective of this process should be to ensure that there is support for the system at all levels of an organization. This includes having a toplevel manager to champion the initiative, as well as acceptance by lower-level managers. The acceptance by these later managers often can be obtained by demonstrating that in most cases the existing

cost accounting system produces distorted, and thus misleading, information. This distortion often arises because an existing costing system does not reflect the increasing complexity of an organization and the products and services it offers. By implementing a costing system that reflects that complexity – and provides the operational information necessary for managing a company's operations – managers can see the increased relevance of the information provided for managerial decision making and enhanced performance management.

The change management process needs to specifically address the 'people' issues that will arise in the implementation of the new costing system. This includes addressing commitment to the existing system that various managers may have, and their reluctance to change. It is also important to address the effect of the new system on performance measurement and compensation systems. New performance metrics may need to be devised, or existing ones revised, based on information obtained during the ABC system implementation. An example of an effect of reporting the 'new' cost data from ABC is the shift in costs among products. Some products that were effectively subsidizing others will now be reported with lower costs and higher profit margins. The opposite effect will occur with other products, which will now show lower profit margins or even losses.

Effective communication – at all levels of an organization – of the need for change is essential. An organization needs to communicate the deficiencies of its existing costing system, the effect of this distortion on managerial decision making, how ABC costing principles can be used to provide information that is more relevant for managerial decision making, and the effect of the new system on the evaluation and rewarding of individual employees. Communication is a two-way process, and employee concerns need to be addressed.

Implementation of an ABC system needs to be justified on a cost-benefit basis, just as with any other investment. Yet the value of having better decision-making information can be difficult to measure – more so than, say, the benefits from an investment that is more tangible, such as the purchase of a piece of machinery. The key is that the benefits from having the improved costing information exceed the extra administrative effort to produce it. That is, the following equation must be satisfied:

$$\frac{\text{Incremental benefits}}{\text{Incremental administrative cost}} > 1$$

By demonstrating that the equation's numerator is much higher than people realize and that the denominator can be kept low by being practical (e.g., using estimates and only minimal extra data collection), the perceived ratio can be shifted from below 1 to above it (and very likely well above it).

One ABC implementation technique introduced in the 1990s that radically accelerated the time to implement ABC, improved the ABC model design, and minimized the risk that a project may run into problems caused by excessive detail and complexity is called ABC rapid prototyping with iterative remodeling. This technique assures that the denominator in the benefits to cost ratio is kept small. It also raises the numerator by revealing more unrecognized benefits. This approach is discussed in Section 12. ABC rapid prototyping can lead to a production ABC system being created in weeks, not years, and with minimal support.

## 6. Planning for an ABC implementation

A guiding principle for an ABC initiative is to work backwards, keeping the end in mind. Have a compelling reason to reform the existing cost system. Know a type of decision or analysis the ABC system will improve. In this way, an ABC implementation is no different than implementation of any other project: before you start, you need to know what you expect to be the final outcome. By following this principle, an organization can help ensure that the ABC system it ends up with has been designed to meet its specific needs, and not those of some generic organization.

Numerous approaches can be taken when designing and implementing an ABC system. There is no generic approach that is universally appropriate. In order to obtain 'proof of concept,' many companies, especially larger ones, initially implement ABC using a pilot project approach, where a segment of the organization is selected for implementation of ABC costing concepts.

The pilot project can be implemented using actual revenues and expenses. If the main goal is to gain buy-in for ABC, budgeted or planned revenues and expenses may be used, but budgets and forecasts may be substantially different than actual results. Continuing with the pilot implementation, activities and their interrelationships, cost drivers, and volumes are identified. Cost attachment points are identified, and activity costs are calculated. The consumption of activities by cost objects (such as products or customers) is identified, and the drivers and volumes identified. The successes of the pilot project can also be used to validate the business case for implementing ABC company-wide and provide 'lessons learned' for subsequent rollout of the methodology.

An organization can also opt to fully implement ABC from the start. In this case, the ABC rapid prototyping with iterative remodeling approach is strongly recommended. The structure of the ABC rapid prototyping approach is similar to that used in the pilot approach, but it includes more areas (ideally, the entire enterprise), more data, and more analysis. By exposing managers (for which it is important to select advocates and avoid nay-sayers or those who may feel threatened) to the quickly produced preview of the reformed costs, buy-in will occur. Use of this approach enables an organization to achieve a new awareness of cost system design throughout the organization, giving it the ability to rapidly adopt these systems and use the enhanced information to improve its performance. People do not know what they do not know. As these models are iteratively scaled, managers will see more outcomes that will stimulate what they want to analyze. Seeing results accelerates this learning process.

If the initial approach is a pilot ABC study of a single department or process, then the organization should be cautious in that pilots address only a subset of an organization's activities. Such an approach faces the danger of overlooking activities or costs from departments, cost centers, and functions in the organization not being studied. Activity analysis across multiple departments, and, ideally, organization-wide, is preferred by process consultants. Also, comparison of the shift in product costs of the existing costs to ABC costs cannot be done validly by including only a few departments or attempting to focus on only one or a few products.



Various questions need to be addressed in the design and implementation of an ABC system. One of these relates to ownership of the ABC system. While management accountants will calculate the ABC information, in many cases it is desirable for the system to be 'owned' by others.

The ownership of an ABC system should be consistent with its primary objective. If, for example, improving operations is the primary objective of the system, it is best placed under the control of operating personnel. Giving this area ownership of the system instead of the accounting department will help ensure that the system is used and maintained properly. In practice, however, this is often a challenge because the accounting department's role historically has been to collect, validate, and report accounting information and then analyze it. The result is that the accounting department typically ends up maintaining the ABC model.

Another issue that needs to be addressed is the complexity of the system. In designing a costing system, there is a trade-off between the cost of the system and the detail, accuracy, and flexibility of the system. A guiding principle of ABC is that the level of detail and accuracy depends on what decisions will be made with the information. The quest for precision is expensive. Ninety-nine percent accuracy is not required. Those who have completed an ABC implementation and look back to compare their previous cost system's inaccurate and flawed costs to their new, more substantially correct costs appreciate why the ABC community proclaims, 'It is better to be approximately correct than precisely wrong!' Reasonable accuracy, produced economically, is usually 'good enough,' particularly in light of the inaccuracies from an existing cost system. In general, systems that support strategic decision making use more aggregated data than those used for more operational decision making. The need for additional accuracy is a long-term issue to be analyzed based on evolving business needs, and it may be addressed as the model evolves. In some cases, data collection can be scaled back as accuracy requirements and the magnitude of expenses are better understood.

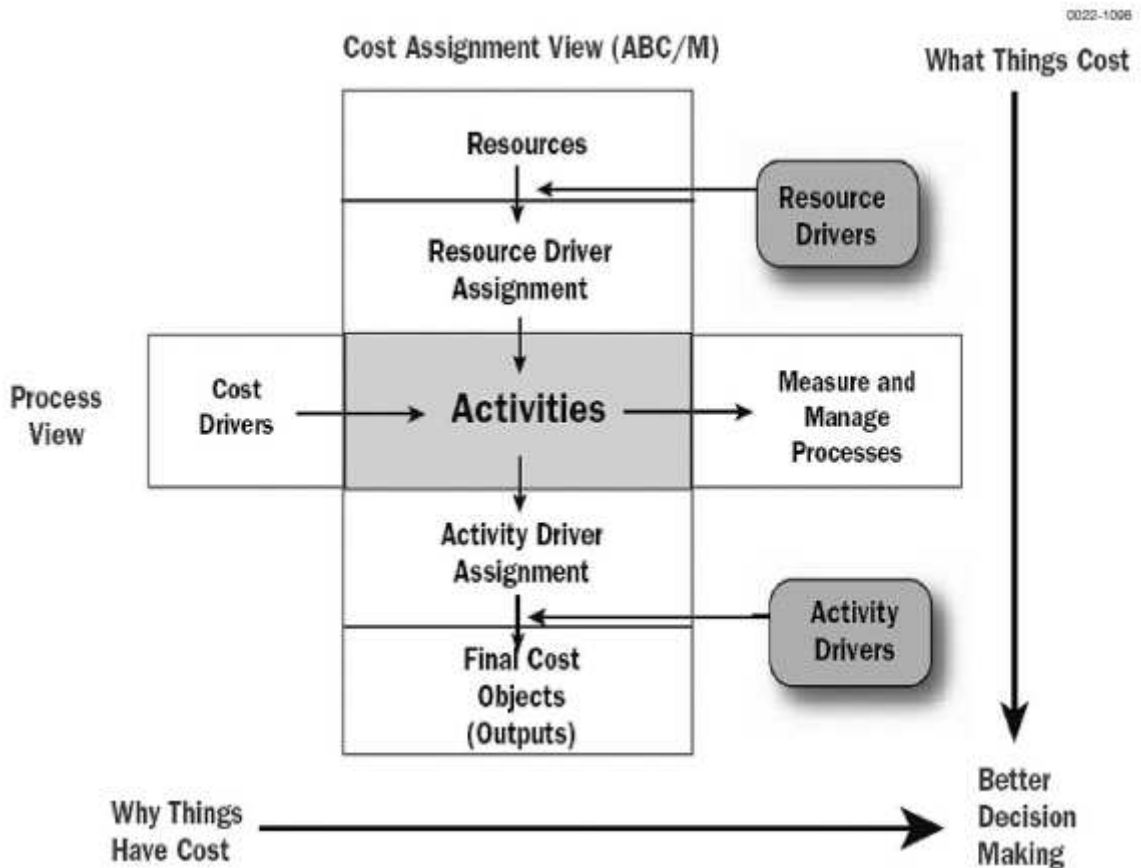
The question as to whether to integrate the ABC system with the financial accounting system is also an issue. ABC systems can be integrated into the financial accounting system or exist as stand-alone systems. In many organizations, a well-designed, periodically updated ABC model (e.g., quarterly, semiannually) is sufficient for decision-making needs. An offline ABC implementation enables these organizations to obtain improved costing information without disrupting day-to-day information system activities. This approach to ABC modeling is especially appropriate for small and mid-sized organizations. It can also serve as a first step toward implementing ABC in larger organizations.

In situations where ABC is fully integrated into an organization's management information systems, it goes beyond the traditional role of cost accounting and becomes a primary source of information for improving business processes and forward planning. Organizations use the information as the basis for activity-based management (ABM); they use the understanding of their activities and their cost drivers to improve their processes and enhance their customers' satisfaction. In such cases, data collection is adjusted to meet the requirements of the ABC system. The general ledger chart of accounts, cost center structure, inventory/cost of sales accounting procedures, interdepartmental charges, accounts payable and payroll cost distribution practices, financial and management reports, or other cost-related facets of the accounting system remain untouched. ABC simply repurposes the transactional information. Section 14 discusses commercial ABC software. In

that section, the removal of interdepartmental charges from the general ledger and their replacement with proper activity-based costs is described.

## 7. Initial design of the ABC system

An ABC system can be viewed in two different ways: the cost assignment view and the process view. The cost assignment view provides information about resources, activities, and cost objects. The process view provides operational (often nonfinancial) information about business processes and the activities that belong to them. These two views of ABC can be visualized as pictured in Exhibit 2.



**Exhibit 2. The activity-based cost management framework (the CAM-I cross)**  
(Source: Adapted from CAM-I)

The cost assignment view of ABC can be seen in the vertical portion of Exhibit 2, while the process view is represented by the exhibit's horizontal portion. Work activities in the intersection are essential for both views. For purposes of measuring costs, the difference is:

- The cost assignment view transforms the expenses of resources (e.g., salaries, supplies) into the costs of the work activities (for both people and assets) and ultimately into the final cost objects (e.g., products, customers).
- The process view sequences the work activities in time and accumulates the build-up of activity costs from start to end of a business process.

More about the distinction between these two views is contained in Section 11, which describes the process/value stream mapping that ABC information can supplement. The emphasis of ABC is typically on the cost assignment view. Although ABC is the acronym for activity-based costing, much of the utility from its information comes from its measurement of the costs of the diverse types of outputs (cost objects) and the driver-based consumption of activities they cause.

The term 'drivers' can be confusing. Resource drivers for employees reflect the time they spend performing work activities. Resource drivers for indirect material purchased items reflect their usage by an activity, such as energy expense's kilowatts by a machine. Activity drivers are a measure of the output of an activity. For example, for the customer-related work activity, 'processing a sales order,' the activity driver would be the number of sales orders processed. A cost object driver is where a final cost object consumes a mix of another final cost object, such as when a customer purchases a mix of products. The costing principle for selection of all drivers is that the level of costs incurred should vary directly with quantity of the driver.

The term cost driver can be ambiguous. It is more general than the driver types just described. It can be described in words but not necessarily with quantitative measures. For example, a severe storm is a cost driver that will cause insurance claims to be processed. One cannot easily measure a storm's intensity, but you can measure the number of claims processed that resulted from it. ABC restricts itself to only measurable resource, activity, and cost object drivers. Cost drivers are typically examined in ABC analysis. They are linked to processes or activities to stimulate discussion about impact or potential impact. Since cost drivers are generally cross-functional, they often point to areas of improvement. While cost drivers often are not quantifiable, they often provide the 'why' when looking at ABC results.

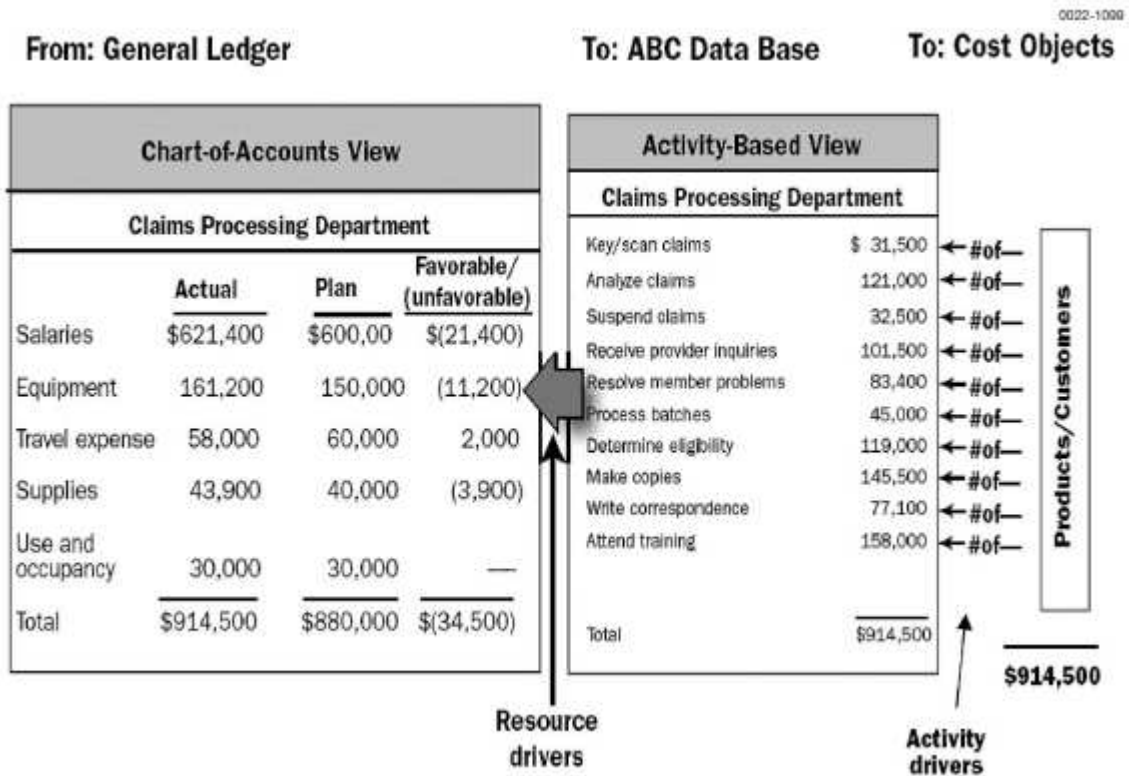
The cost assignment view has evolved from the two-stage ABC approach of the early 1980s to a multiple-stage approach. We will first discuss the two-stage approach to appreciate some fundamental principles of ABC, and then discuss the multiple-stage approach.

### **7.1. Two-Stage ABC Approach**

Exhibit 3 illustrates the two-stage ABC approach. Sub-accounts of the general ledger are distributed to the various activities in the appropriate proportions using what were originally called first-stage cost drivers and now are referred to as resource drivers. The costs accumulated in these activities are then distributed to cost objects using what were initially called second-stage cost drivers but are now called activity drivers. For example, costs such as unemployment insurance and equipment maintenance might be allocated to activities based on labor cost and equipment hours, respectively, based on resource drivers. Costs accumulated in the various activities are then reassigned to products using activity drivers such as the number of equipment setups, orders, purchase orders, equipment run minutes, direct labor hours, and so forth.

The left-side box in Exhibit 3 is the monthly cost center spending report. An important reason as to why ABC is being adopted is the realization that, in this cost center, the responsibility report using chart of account elements, such as salaries

and supplies, is structurally deficient in its ability to transform expenses to calculated costs. This is a strong statement. But it is not until the ledger expenses are restated in different format – as activity costs – that the activity drivers can be attached to activity costs in order to reassign them to the activities’ outputs in proportion to their consumption of the resources. This problem is compounded as companies flatten and de-layer their organizations. Employees from cost centers flexibly multitask, often working jointly on common activities, making the tracing of cost to products (or other cost objects) more difficult, especially when using a traditional costing methodology.



**Exhibit 3. Each activity has its own activity driver (Source: Gary Cokins)**

In other words, for business process owners – those individuals responsible for the performance of business processes that cross multiple cost centers – to see the costs of their processes, activity costs must first be translated from expenses classified based on the general ledger. They must be reassembled based on the activities that make up the sequential steps that comprise a process. Again, the general ledger cost center report is structurally deficient to do this. It has been said that when cost center managers receive their monthly reports comparing actual to budget (or planned) spending, they are either happy or sad, but rarely are they any smarter! ABC information makes them smarter. A more stinging commentary on the general ledger-based report is that it is at best useless (except for collecting transaction data) and at worst leads to dysfunctional and misleading decisions. The data needs to be transformed into meaningful costs that reflect cause and effect behavior.

Note the total expenses and costs are equal in the resource, activity, and cost object views; they must reconcile. The important message here is that the general ledger’s view of the chart of accounts only answers what was spent. By

transforming expenses into calculated costs in the next two views in Exhibit 3, there are more valuable and useful answers regarding why it was spent, what caused the rate of it to be spent, and for whom or what it was spent.

## 7.2. Multiple-Stage ABC Approach

The multiple-stage approach represents an advancement in ABC modeling. Rather than simply tracing the cost of resources to activities and then to cost objects, the multiple-stage approach models cost flows in a manner that more closely reflects the actual flow of costs through an organization. This approach includes an understanding of the relationships between indirect work activities and other activities, as well as between those activities and cost objects. Costs are traced from activity to activity in a series of stages, all based on cause-and-effect relationships. (To simplify the size of the ABC model, some organizations use the concept of resource pools to accumulate similar expenses into categories before assigning them to activities.)

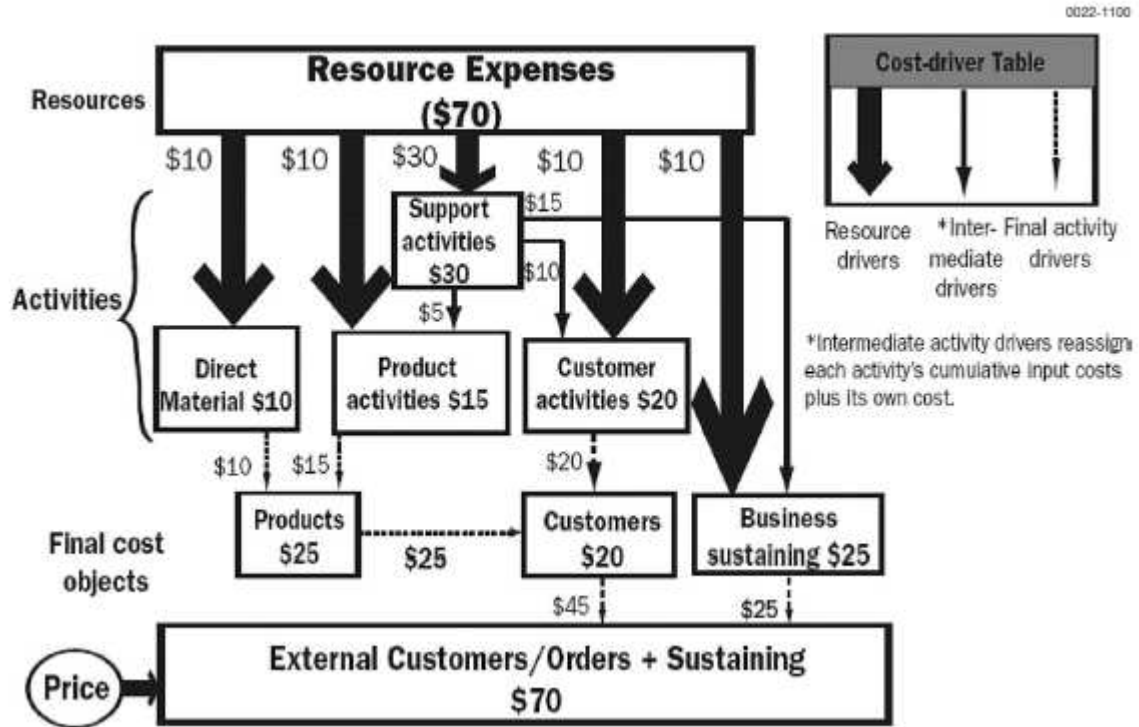
For a manufacturing company, the activities 'performing maintenance' and 'operating the tool room' will accumulate the costs directly related to those activities. (Note that activities are best described using an action-verb and noun grammar convention.) Under the two-stage approach, an activity (or second-stage) driver would be used to allocate the costs of these activities directly to cost objects. The multiple-stage approach differs in that it recognizes that the maintenance activity is not directly consumed by the final cost objects. The maintenance activity supports other activities (including some activities of the tool room). In general, an activity may directly support both final cost objects and other activities; the latter are called intermediate cost objects. The costs accumulated in those activities are distributed to either final cost objects or other activities based on the demand for those activities, services, or resources.

To some, this multiple-stage method of assigning expenses may appear to be the traditional step-down cost allocation method of full absorption costing. ABC is more granular, however, tracing costs at the activity level and not at a department level. The allocation of expenses at a department level induced errors because it restricted the allocation basis of those costs to a single activity driver. As a rule, all assignments in ABC are based only on usage and consumption. If an activity does not use part of a resource, it is not allocated any of that resource's costs.

Activity-to-activity cost assignments and an entire enterprisewide view of an ABC cost assignment network are illustrated in Exhibit 4, where \$70 of resource expenses are fully absorbed as calculated costs into customer and business sustaining cost objects (the latter being traced mainly to senior management). Note how the \$30 of support activities is traced to three other types of activities, which are then traced to products, customers, or business sustaining cost objects.

Business sustaining costs (\$25 in Exhibit 4) are activity costs not caused by making products or delivering services to customers. The consumption of these costs cannot be logically traced to products, standard service-lines, channels, or customers. (They can be arbitrarily allocated, but not with a causal relationship.) Examples include the monthly 'closing books' activity of the accounting staff and 'file government regulatory papers' activity of the legal staff. The cost of these activities should be traced to senior management and the regulatory agency,

respectively, as business-sustaining cost objects. While it is true that the business must recover these costs with its revenues, the point is that allocating them to products or customers is misleading and would overstate their costs, sending the wrong signals to employees who use product cost information for decision-making purposes.



**Exhibit 4. Multi-level cost assignment flow (Source: Gary Cokins)**

The cost of customer activities is often called the 'cost-to-serve.' These activities not only include examples such as processing sales orders, call center assistance, and handling returned items, but also the sales force's activity 'making sales calls.' This last activity may appear odd since the customer may not initiate a sales call, but the purpose of ABC is to measure how much effort goes into work and where that work is consumed. An important or difficult, high-maintenance customer may consume substantial sales-call-related costs. These costs may be a greater proportion of the customer's revenues than smaller, less demanding customers. ABC measures and detects this type of not-so-obvious relationship.

Exhibit 4 also shows that some final cost objects (e.g., the \$25 of product costs) can be consumed by other final cost objects that use them. For example, customers consume (i.e., purchase) uniquely different 'baskets' of products or services. In this example, the products are traced using 'cost object drivers,' such as the number of products purchased. Other examples include the type of order (e.g., special vs. standard) or type of sales channel (e.g., truck vs. rail, human bank teller vs. an ATM machine).

Also note that in the exhibit, the price for products and servicelines enters as revenues only after all of the costs have been assigned. A price cannot be distinguished as to whether it is for the product or cost-to-serve costs (unless it is unbundled separately as a fee). This property provides the insight that layers of

profit contribution margins (i.e., the profit and loss statement's bottom lines, not top lines) can be reported as the various work activities ultimately are traced logically and causally to customers. It must be understood that ABC deals with cost. Pricing is a management decision that typically is market based. What ABC provides is a much more accurate 'middle' line so that the profit margin, derived from sales less traceable costs, can be made more visible.

Exhibit 5 disaggregates and expands Exhibit 4 to reveal a generic ABC structure that is a good representation of any universal costing model for any organization. Note that direct material expenses are sometimes traced directly to products. A more common modelling practice is to have direct material expenses 'touch' a 'passthrough' intermediate cost objects in the Activity view so that the three cost views equate in terms of total costs (e.g., they all equal \$70 in Exhibit 4).

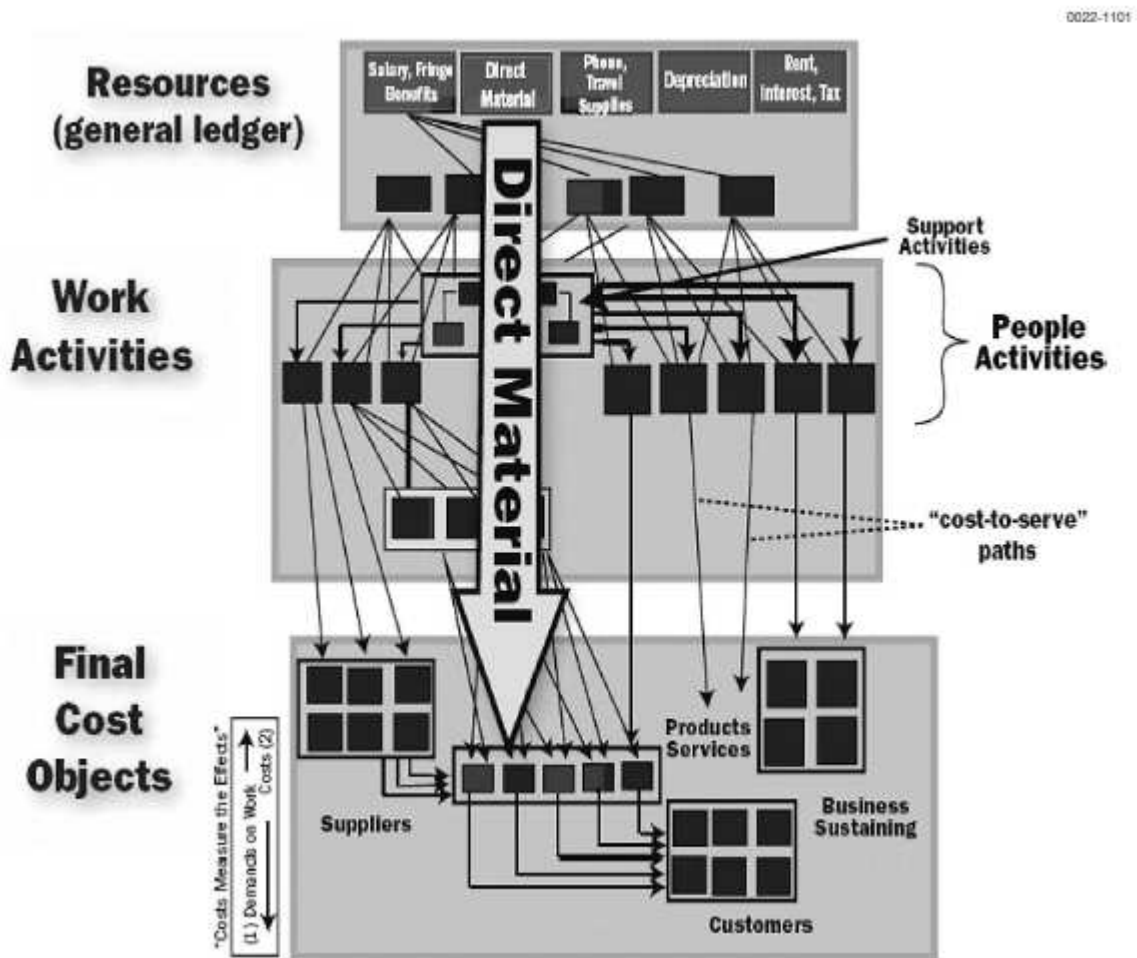


Exhibit 5. ABC cost assignment network (Source: Gary Cokins)

To understand Exhibit 5, imagine the cost assignment paths (the arrows) as pipes or straws where the diameter of each path reflects the amount of cost flowing. The power of an ABC model lies in the fact that the cost assignment paths and their destinations provide traceability to segment costs from beginning to end, from resource expenditures to each type of (or each specific) customer-who ultimately are the origin for all costs and expenses. The cost assignment network captures and reflects the diversity and variation in how cost objects uniquely consume

resources and activities. To understand costing, it is useful to mentally reverse all the arrowheads in Exhibit 5. This polar switch reveals that all expenses originate with a demandpull from customers. The calculated costs simply measure the effect. Costs are always a measure of effect – a basic principle in costing.

With integrated ABC software, the direct costing of indirect costs is no longer an insurmountable problem, as it was in the past. (Commercial ABC software is discussed in Section 14.) ABC allows intermediate direct costing to a local process, an internal customer, or a required component that is causing the demand for work. In short, ABC connects customers to the unique resources they consume – in proportion to their consumption. Visibility to costs is provided everywhere throughout the cost assignment network.

## 8. Strategic vs. Operational cost management

There are two broad purposes for using management accounting information:

- *Strategic* cost management – to determine the right things to do, i.e., selecting the correct processes, suppliers, products, channels, and customers.
- *Operational* cost management – to perform well on those things identified as strategic, improve productivity, and remove waste.

This section discusses both forms of cost management.

### 8.1. Strategic Cost Management

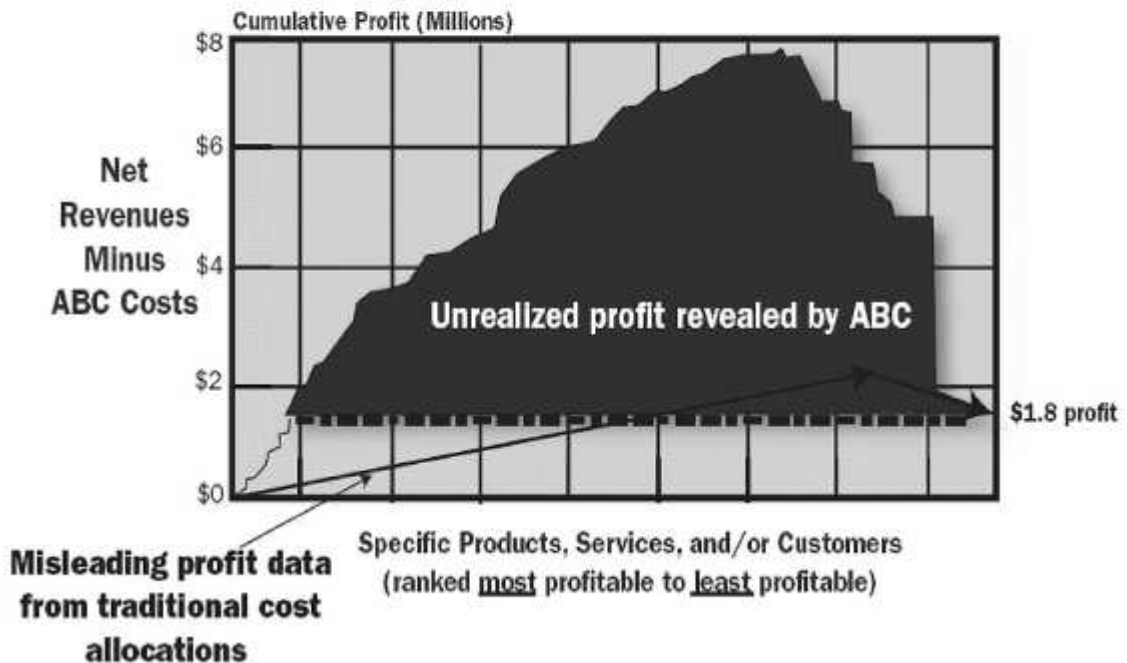
After implementing ABC, organizations typically experience shock. Their erroneous beliefs regarding the true profitability of their products, channels, and customers produced by the flawed and misleading costs of traditional costing have been replaced by knowledge of their true costs.

ABC reveals which products are over- or undercosted, exposing the magnitude of sources of profits and losses. Exhibit 6 presents a typical scenario. This diagram is popularly called a ‘profit cliff’.

Insights gained from answering questions that are stimulated from analyzing the ‘profit cliff’ are examples of strategic cost management. The insights can address rationalizing which products, channels, and customers to develop, acquire, grow, retain, and improve – and which ones not to. But an organization must be careful not to improperly conclude what actions to take when analyzing ABC data. Ultimately, management accounting, including ABC, is a methodology for discovery and focus. Better management accounting does not provide all the answers. It does not answer questions directly, but rather it allows more and better questions to be asked.



\$	30.0 sales
-	28.2 expenses
=	\$ 1.8 profits



**Exhibit 6. Profitability profile using ABC – ‘profit cliff’ (Source: Gary Cokins)**

Here are three problems from reacting to ABC data prematurely:

- It must be recognized that measuring the costs and profits during a time period such as a month or quarter does not recognize the costs and profits of individual products, service lines, and customers during their entire life cycle. Hence, servicing an apparently unprofitable product or customer today may be done with the intention of developing a very profitable one in the future. Life-cycle profitability must also be analyzed (and ABC unit costs are essential for such an analysis).
- In some cases, a business will deliberately sell some products at a loss to promote purchases of other more profitable ones. Similarly, some unprofitable customers may be retained or pursued to retain or attract profitable customers with which they have referral relationships. Retention of these customers is a management decision, but it is important to understand how much these customers are ‘costing’ the firm.
- Abandoning unprofitable products and customers reduces activity costs but not the expenses of the resources – it merely frees up capacity in those resources. To realize a profit impact from dropping products or customers, the unused capacity created must either be filled with new, profitable orders, shifted to perform value-added work elsewhere, or altogether removed (e.g., closing an operation or terminating employees). The resource cost of freed up unused capacity created by dropping unprofitable products or customers should not be reassigned in the ABC cost assignment network to existing products or customers. They did not cause it. It should be traced to a business sustaining final cost object, ‘Unused Capacity’. Failure to assign expenses in this way

results in over-costing the existing products and customers, giving the illusion they have become less profitable and, therefore, are new candidates to drop. This has been referred to as the 'overhead death spiral.' Inappropriate decisions to drop more products or customers due to prior period removals, sometimes blamed on the use of ABC, is a result of flawed cost assignment assumptions.

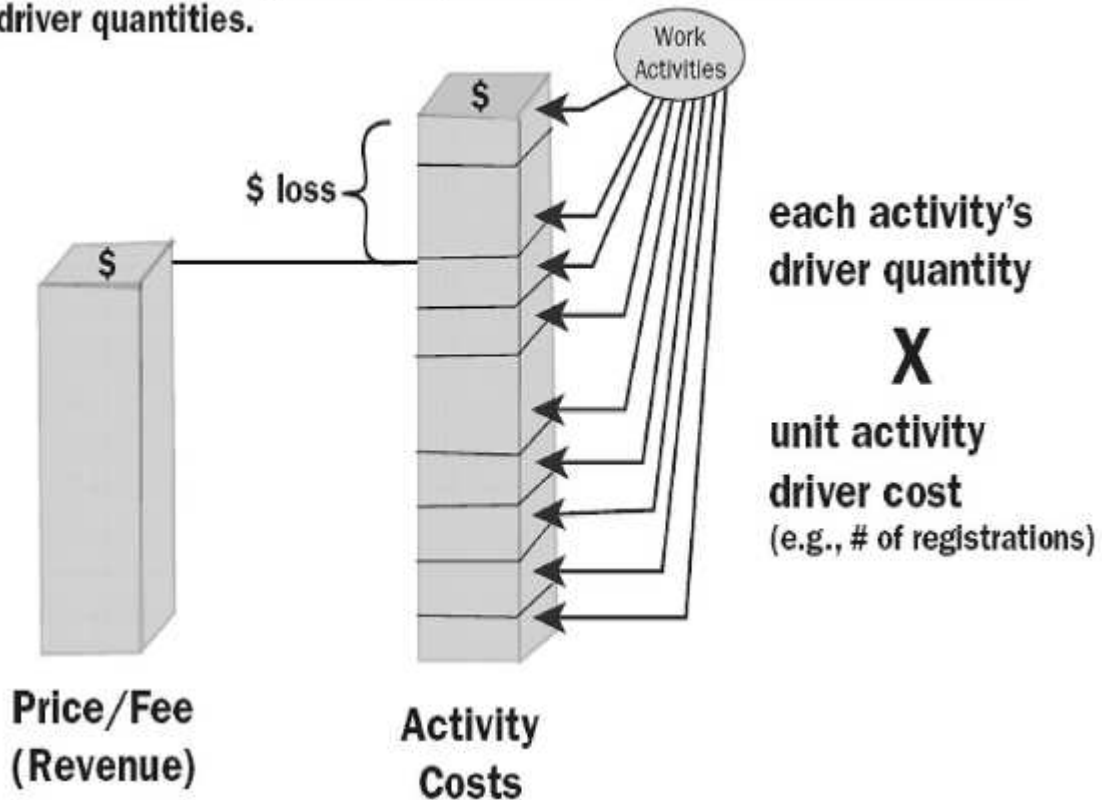
Cost management must always be done in the broader context of performance management, which adds the dimensions of time, quality, risk, service levels, and other strategic goals to maximize value from existing customers and potential new ones.

**8.2. Operational Cost Management**

Exhibit 7 illustrates how the activity costs (with each activity initially traced from its resource expenses) from Exhibit 6 are assigned to each cost object and then summed or 'stacked'. In Exhibit 7, a product's true cost is more than its price, creating a loss during that period. This is represented by the descending products located on the right-hand side of the profit cliff depicted in Exhibit 6.

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**ABC provides insight for the product's or service's cost drivers and driver quantities.**



**Exhibit 7. Fully traced costs to a cost object (Source: Gary Cokins)**

Managers and employee teams are seeking more transparency and visibility of their costs. Having reliable unit costs of their outputs of work using ABC is useful for benchmarking best practices or to report trends when measuring performance improvement. Exhibit 7 visualizes how this need is met. It removes the illusion that overhead costs are necessary and, therefore, appear to be free when in fact they are not. The exhibit also indicates that the costs of a cost object can be reduced (i.e., lowering the 'stack') by:

- Reducing the quantity, frequency, and/or intensity of the activity driver (e.g., a fewer number of inspections reduces the 'inspect product' activity cost).
- Lowering the activity driver cost rate from productivity improvements (e.g., shorten the time for each 'inspect product' event).
- Understanding the sources and causes of waste leading to nonvalue-adding activities to reduce or eliminate them (e.g., solve the problem that requires an 'inspection' in the first place).

These three items are examples of how ABC data leads to operational cost management. Note how these actions support the continuous improvement principles of the Six Sigma quality and Lean management initiatives that are embraced by the operations and quality communities. There is further discussion of process/value stream mapping to improve operations and quality in Section 11.

### 8.3. ABC Attributes

There is an added bonus to using ABC with commercial ABC software. It can report another dimension of costs – the 'color of money' spent. It applies cost attributes, usually to an activity, by tagging or scoring it with a code. This dimension of cost does not exist in general ledger accounting systems because attributes are tagged to activities or to cost objects, not to resource expenses.

An example of a tag would be whether an activity adds value (value-adding) or not (nonvalueadding). Another example is the five 'cost of quality' (COQ) categories of work, which increase sequentially in their severity: error free, prevention-related, appraisal-related, internal failure work, and external work. Attributes do not alter the cost of anything calculated by ABC, but they facilitate grouping activity costs into various categories that in turn help focus management attention (e.g., nonvalue-adding costs) and can suggest actions. Commercial ABC software can keep track of a work activity's attributes and trace it to cost objects. For example, one may discover that the unit cost of delivering two similar service lines is relatively the same, but one service line consumes much more nonvalueadding activity costs than the other. Presuming operational improvements can reduce the nonvalue-adding costs, this means that one service line has a greater likelihood of having a lower cost in the future. This could never be detected using the broad-averaged cost allocations of general ledger cost center reporting.

## 9. Customer profitability reporting

Some customers purchase a mix of mainly low-margin products. After adding the 'costs-to-serve' those customers apart from the products and service lines they purchase, these customers may be unprofitable to a company and to its extended

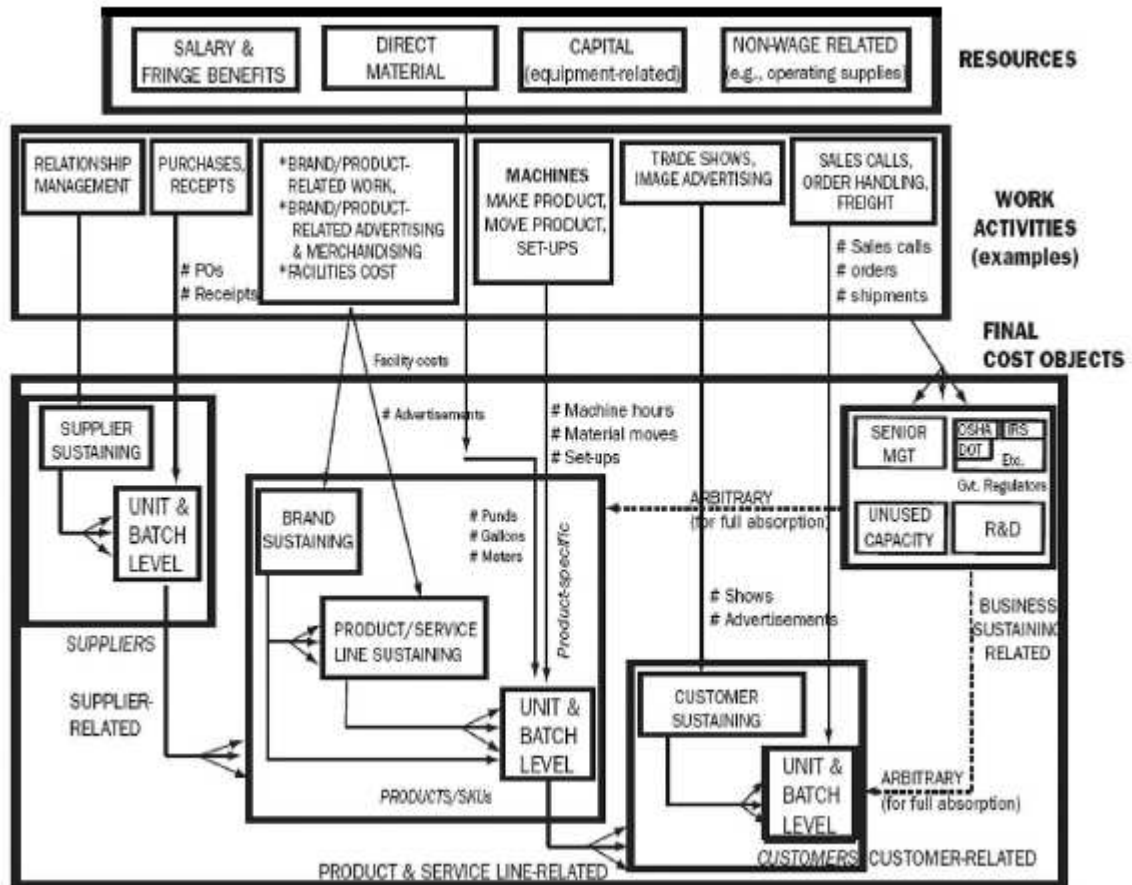
value chain. Customers who purchase a mix of relatively high-margin products may demand so much in extra services that they also are unprofitable. How does one properly measure customer and supplier profitability? After the less-profitable customers and suppliers are identified, they need to be migrated toward higher profits using 'profit margin management' techniques or, if that is not possible, they need to be 'fired.'

If two customers purchased the exact same mix of products and services at the exact same prices during the exact same time period, would both customers be equally profitable? Of course not. Some customers place standard orders with no fuss, whereas others demand nonstandard everything, such as special delivery requirements. Some customers just buy your standard product or service line, and you hardly ever hear from them. Others you always hear from – and it is usually to change their delivery requirements, inquire about expediting their order, or return or exchange their goods. Some customers require more post-sale services than others do. In some cases, just the geographic location of the customer makes a difference.

What kinds of customers are loyal and profitable? Which customers are only marginally profitable or, worse yet, losing you money? Strategic ABC is the accepted methodology to economically and accurately trace the consumption of an organization's resource expenses to the types and kinds of channels and customer segments that place varying demands on the company. It is typical to find 10%-20% of your customers are unprofitable; in some cases the percentage of unprofitable customers is 40% or more, particularly with banks, where a minority of highly profitable customers carry less-profitable customers who have the potential to become profitable.

Exhibit 8 decomposes the network of the ABC Cost Assignment Network's final cost object module depicted in Exhibit 5. It displays two layers of a 'nested' consumption sequence of costs. A metaphor for this consumption sequence is the predator food chain. The final cost object, which in this exhibit is the customer, ultimately consumes all the other final cost object costs, with the exception of the business sustaining costs.

Each of the major final cost object categories (e.g., supplier, product/service line, and customer) has its own 'sustaining costs' that are assignable to its end-product or customer. When tracing these 'sustaining costs,' however, one cannot apply a measurable product- or customer-specific quantity. For example, a product branding program from the marketing department may benefit only a select group of products, but how much of the branding cost should be charged to each specific product within the brand? Even though there is no cause-and-effect relationship, these 'product sustaining costs' can be traced using some 'shared' basis, such as sales unit-volume, or be spread evenly.



**Exhibit 8. ABC profit contribution margin layering (Source: Gary Cokins)**

As costs flow from one final cost object to another, each flow will consume the unique mix of the upstream cost object. That is, an individual customer's total costs (apart from its direct costs-to-serve) are inclusive of only the product quantities and mix that it purchased. In the ABC cost assignment network, each product incurs its own activity costs with a cause-and-effect relationship, not with an arbitrary indirect cost allocation. This then creates layers of costs that produce many profit margin layers.

Exhibit 9 is an example of an individual customer profitability statement. Using ABC, there can now be a valid profit and loss income statement for each customer and for logical segments or groupings of customers. A tremendous amount of detail lies below and within each of these reports. For example, individual product and service lines can be examined in greater detail; they comprise a mix of high- and low-profit margin items based on their own unit costs and prices. In other words, in a customer-specific profit and loss summary, the product or service-line profit margin is reported as a composite average, but details about the mix are viewable by 'drilling down' into the product mix information. In addition, the user can 'drill down' further within each product or service line to examine the content and cost of the work activities and materials ('the bill of costs').

CUSTOMER: XYZ CORPORATION (CUSTOMER #1270)			
Sales	\$\$\$	Margin \$ (Sales - ΣCosts)	Margin % of Sales
<b>Product-Related</b>			
Supplier-Related costs (TCO)	\$xxx	\$xxx	98%
Direct Material	xxx	xxx	50%
Brand Sustaining	xxx	xxx	48%
Product Sustaining	xxx	xxx	46%
Unit, Batch*	xxx	xxx	30%
<b>Distribution-Related</b>			
Outbound Freight Type*	xxx	xxx	28%
Order Type*	xxx	xxx	26%
Channel Type*	xxx	xxx	24%
<b>Customer-Related</b>			
Customer-Sustaining	xxx	xxx	22%
Unit Batch*	xxx	xxx	10%
Business Sustaining	xxx	xxx	8%
Capital Charge** (inventories, receivables)	xxx	xxx	2%
			8% Operating Profit
			6% Economic Profit (for EVA)

\* Activity Cost Driver Assignments use measurable quantity volume of Activity Output (Other Activity Assignments traced based on informed (subjective) %s)      \*\*Capital charges can also be directly charged as imputed interest to products & cust.

**Exhibit 9. ABC customer profit & loss statement (Source: Gary Cokins)**

What does all this information reveal? First, it quantifies what everyone may already have suspected: All customers are not the same. Some customers may be more or less profitable based strictly on how demanding their behavior is. Although customer satisfaction is important, a longer-term goal is to increase customer and corporate profitability. There must always be a balance between managing the level of customer service to earn customer satisfaction and the impact that doing so will have on shareholder wealth. There is a difference between customer-focused and customer-obsessed. The best solution is to increase customer satisfaction profitably. Because increasingly more customers will expect and demand customization rather than standard products, services, and orders, understanding this balance is important. ABC data facilitates discussions aimed at arriving at that balance.

There are two major 'layers' of profit margin in the company profit and loss statement in Exhibit 9:

1. Mix of products and service lines purchased, and
2. 'Costs-to-serve' apart from the unique mix of products and service lines.

Exhibit 10 provides a two-axis view of customers with regard to these two major

layers. Any single customer (or cluster) can be located based on these two attributes. The vertical axis measures the 'composite margin' of what each purchases (reflecting net prices to the customer), and the horizontal axis measures a customer's 'costs-to-serve'. Exhibit 10 debunks the myth that the company with the highest sales must also generate the highest profits.

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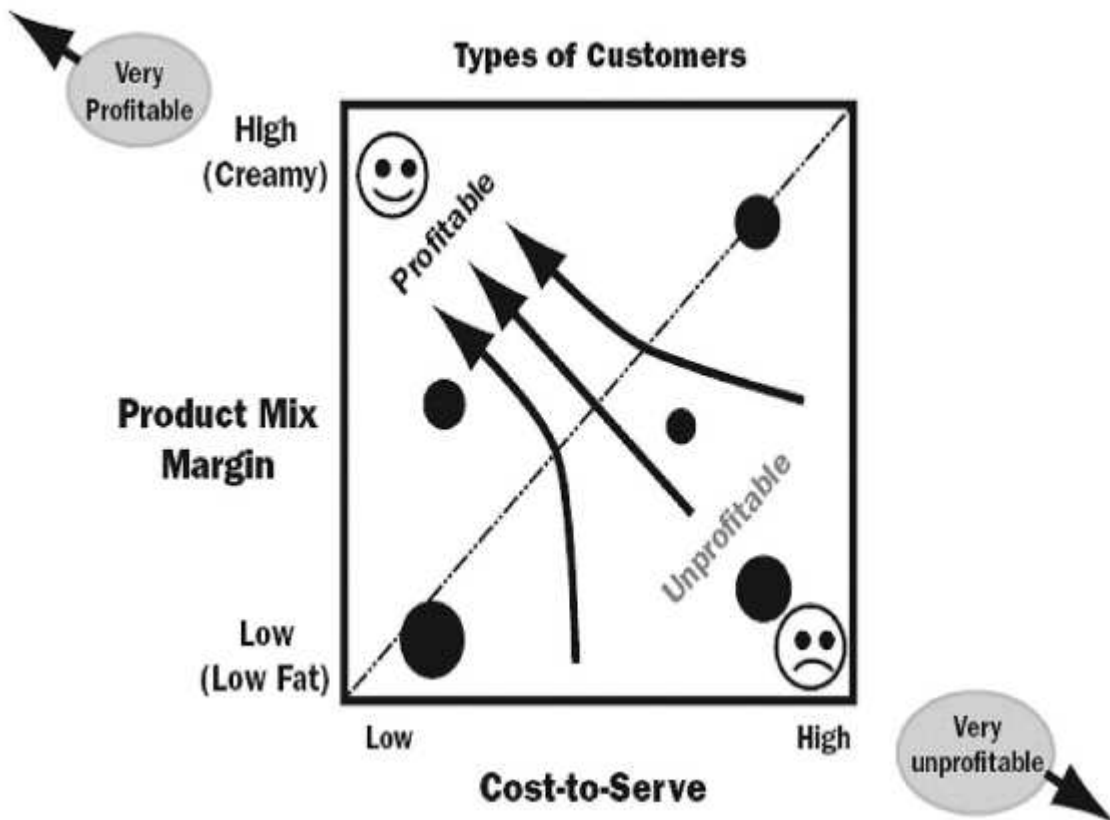


Exhibit 10. Migrating customers to higher profitability (Source: Gary Cokins)

Exhibit 10 also reveals that the objective is to make all customers more profitable, graphically represented by driving them to the upper-left corner. Although this is a partial list, making customers more profitable can be accomplished by:

- Managing each customer's 'costs-to-serve' to a lower level;
- Establishing a surcharge for or re-pricing expensive 'costs-to-serve' activities;
- Reducing services;
- Raising prices;
- Increasing costs on activities that a customer shows a preference for;
- Shifting the customer's purchase mix toward richer, higher-margin products and service lines; or
- Discounting to gain more volume with low 'costs-to-serve' customers.

An extreme action is to 'fire' the customer – terminate the relationship when one concludes it will never be a profitable relationship.

Note that migrating customers to the upper-left corner is equivalent to moving customers from right to left in the profit profile. Knowing where customers are located on the matrix requires ABC data. Changes can be made only by knowing the activity detail behind the numbers.

## 10. ABC project planning

Once questions involving the initial ABC model design and construction are answered, planning for the ABC project can move forward. Like any major organization-wide systems project, a formal project management structure and project plan is necessary for an effective implementation. The structure should include a steering committee composed of upper management whose main role is to ensure that the ABC system is consistent with the organization's business strategy and needs and to ensure that there is participation and cooperation from all affected areas of the organization. The project manager reports to the steering committee and is supported by a cross-functional team. The size of the team and level of involvement of the various members would depend on the specifics of the project. The important point is that all affected functions of the organization must participate in the development and implementation of the ABC system in order to foster buy-in and commitment throughout the organization and to improve its design.

An important element of a successful implementation of ABC is training. Although it is not necessary for management to become ABC experts, they must understand the need for ABC, its benefits, and its key concepts. On the other hand, members of the project team – those actually designing and implementing the system – do need to develop a thorough understanding of both the 'hows' and 'whys' of ABC. Because ABC is as much an art as it is a science, it is not enough to master the mechanics. The designers and implementers must comprehend the various approaches and the levels of scope, accuracy, and detail that will result in the most cost-effective system for their particular organization. Those who will be providing data input for the system, both during its development stages and its ongoing execution as a repeatable reporting system, must understand the significance of the data they provide.

Finally, the system will not be effective unless its users understand the new information that ABC provides. At some organizations, ABC will contradict many of the beliefs about the organization's costs and profit margins. For example, most manufacturing firms have believed for decades that direct labor efficiency was the key measurement of productivity. Under ABC, many of these firms found that direct labor may be an immaterial component of the cost equation relative to indirect expenses, and focusing on direct labor efficiency drew attention away from important issues. The project team must ensure that everyone involved understands the new system's output and how it can best be put to use in improving the organization's operations.

## 11. Collecting ABC data

Two types of information are required for an ABC project: conceptual and transactional. Conceptual information is needed to develop the overall design of the ABC system, and transactional information is needed to simulate the cost flows through the system model. Transactional information also serves as the raw data from which to develop and validate some of the conceptual information. The goal of the data-gathering activity is to accumulate the necessary information to:



1. Identify the work activities performed by people and equipment in the organization (for both the cost assignment and process views);
2. Identify the organization's elements of cost (for the cost assignment view) and performance measures (for the process view);
3. Determine the relationships between the various activities and elements of cost (for the cost assignment view); and
4. Identify and measure the activity drivers that determine the work load (for the process view) and cause accumulated activity costs to flow to other activities or to the organization's products and services (for the cost assignment view).

### 11.1. Identifying Work Activities

Even a small organization can identify an almost limitless number of activities. The work activity identification exercise, however, should be guided by materiality and the objectives of the ABC system. For example, if the objective is strategic (e.g., product line profitability, pricing policies), the primary need is to accurately assign costs to final cost objects. In such cases, activities can be broadly defined. If the intent is to improve operations (e.g., eliminate non-value-added processes), however, the need is for information about work activities and intermediate cost objects. For example, in a purchasing department, what is the difference between the unit costs of a special order vs. a standard order vs. a blanket purchase order? What activity costs comprise each, and what activity drivers cause each? In these cases, activities must be defined more narrowly.

Materiality will also impact activity aggregation definitions. For example, an organization with only two individuals in the purchasing function will not gain as much by dividing the function into 20 separate activities as will an organization with 50 individuals.

### 11.2. Identifying Elements of Cost

Elements of cost are the expenses of the organization's resources, including labor salaries and expenses of capital, machinery, buildings, materials, supplies, equipment, and utilities. An organization's general ledger is typically the source of information about these cost elements, but it does not break those cost elements down by activity performed. That is why ABC reassigns those resource expenses into activity costs using resource drivers.

### 11.3. Determining the Relationship between Activities and Elements of Cost

The ABC system designer must assign the expense data contained in the general ledger to activities. This assignment is determined by the relationships between the various work activities and the elements of cost. Mentioned earlier as an optional design, some ABC models first group similar expenses into categories or jobs, referred to as resource pools. The elements of cost or resource pools can be assigned to activities by assigning them in some directly measurable manner (e.g., metering electric consumption, charging maintenance via a work order, charging

requisitioning activities for supplies) or through estimation (as determined through questionnaires and interviews).

Arbitrary cost allocations, particularly those using broad averages, should be minimized whenever possible. This is because they do not improve the understanding of the economics of performing activities. In addition, over-averaging the allocations distorts the costs of cost objects by over-costing some while under-costing others. (Remember that for past period costing, there must be zero-sum errors.)

#### 11.4. Identifying and Measuring Activity Drivers

Activity drivers are the usage-based variables that explain the behavior and magnitude of activity costs. They reflect the consumption of expenses by activities and the consumption of activities by other activities, products, or services.

The quest for precision tempts ABC system designers to select too many excessively detailed activities (effectively, tasks), each of which will require an activity driver. Decisions must be made as to the trade-offs between higher accuracy and administrative effort, as well as the difficulties of operating a more complex costing system.

#### 11.5. Sources of ABC System Information

There are three primary sources for the information needed to develop an ABC system: people, the general ledger, and the organization's information technology (IT) systems.

1. The people who perform the work can provide information about the organization's activities, the resources consumed, and the performance measures used.
2. The general ledger provides information about an organization's elements of cost. In some cases, the ABC system can directly extract data from the payroll and accounts payable systems that are summarized in the general ledger system.
3. IT systems provide data that measures the outputs produced. Collectively, the organization's IT systems should contain information about most of the cost objects and the resource and activity cost drivers. For example, the number of invoices paid – a potential activity driver – should be available from the accounts payable system.

Including representatives from the IT function on the cross-functional ABC project team can help in the determination as to whether the required information is already available in the transactional and other IT systems. This will facilitate capturing and processing of information. Some of the data used in developing the ABC system, however, will come from interviews and questionnaires directed to the organization's personnel because they are the best source of this information.

It is important that the ABC project team be reasonable in its determination

regarding the level of detail needed to design the system properly. Knowledgeable estimates of the relevant items are preferable to precise calculations of irrelevant ones. As a result, team members must not become too focused on details and should keep the concept of materiality and Pareto's '80-20' rule (80% of an outcome can be explained by 20% of all the information potentially available) in mind at all times.

The interview process can be supplemented with tools such as process mapping and value chain/stream analysis, which help to document the results of the data collection process and organize the information to ensure it is complete, understandable, and can be readily analyzed. As mentioned in Section 7, these tools are embraced by the operations and quality communities to remove waste, focus on value-adding work, and improve productivity.

Value chain/stream analysis, as it relates to activity-based costing, requires the subdivision of an organization's processes into its distinct strategic activities. Basically this is the disaggregation of the end-to-end business processes into the work activities that belong to each of them. These activities provide the building blocks by which the organization creates value for its customers.

Leveling business processes to a useful level of detail can be a challenge, and accountants tend to excessively disaggregate them. Disaggregating is the result of defining the verb-noun grammar of an activity. For example, the activity 'process invoices' can be disaggregated into 'process domestic invoices' and 'process international invoices.' For ABC's purpose, the amount of time and cost for each will sum to the higher aggregate, but dividing them provides better structure to trace each activity using its own individual activity driver. The result will be a more accurate distinguishing of the unit cost of processing a domestic invoice relative to an international invoice (where the latter is likely to be a higher unit cost due to the extra steps involved). Without disaggregating the unit cost per processed invoice for each type, the result will be an average unit cost for the two types. ABC is in effect a de-averaging technique. At some level, however, the insights gained and the increased cost accuracy is not worth the effort. Typically, you do not want to divide activities into their tasks. Keep in mind that the level of detail and need for accuracy depends on the decision for which cost data is needed.

Strategic work activities should be considered distinct and, therefore, isolated if they represent a significant percentage of operating cost, the behavior of their cost is unique, they are different from the activities performed by competitors, or they have potential for differentiating the product or services in the market place.<sup>2</sup>

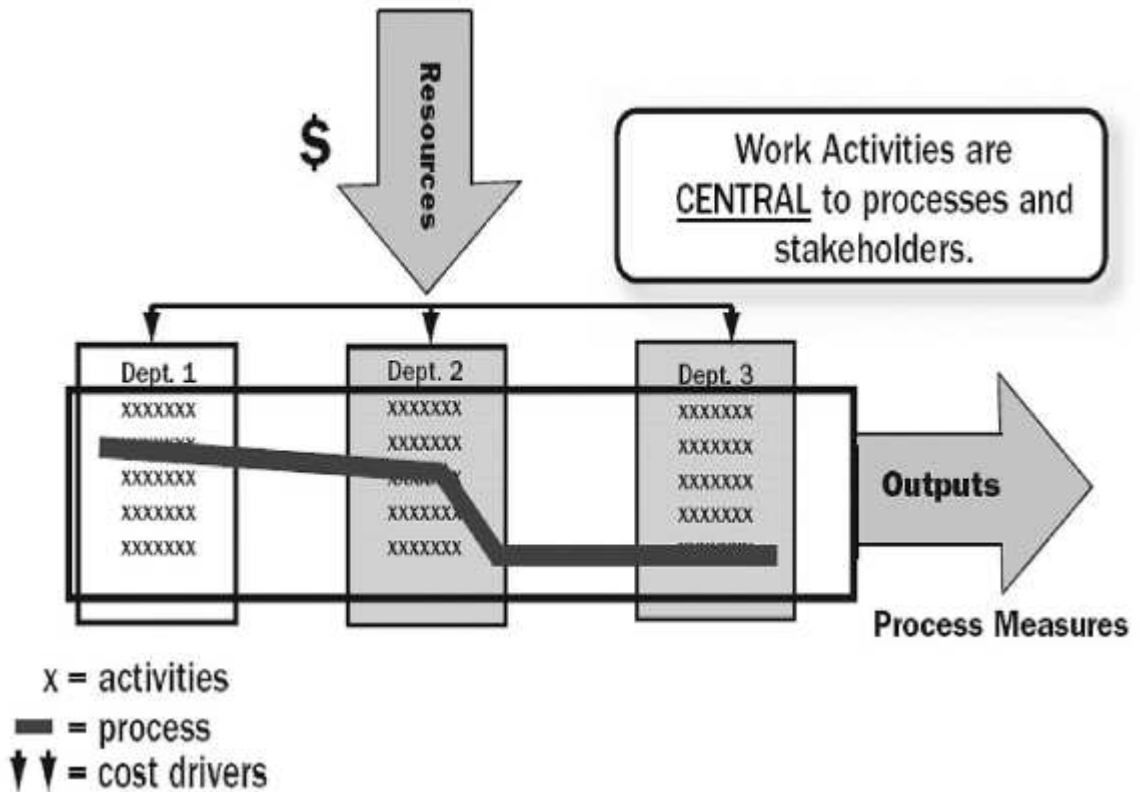
Process mapping sequences the activities across time. It does not involve reassigning those activities into their final cost objects – the bottom of the three cost views in Exhibit 5. ABC does that. In contrast, during any time period, ABC typically does not consider how activities relate in time – whether an activity occurs before or after another one. In a sense, the ABC view for final cost objects is time-blind but mix-sensitive.

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<sup>2</sup> For a more complete description of value chain analysis, see John D. Shank and Vijay Govindarajan, 'Strategic Cost Management and the Value Chain,' *Journal of Cost Management*, Winter 1992, pp. 5-21; and Shank and Govindarajan, 'Strategic Cost Analysis: The Crown Cork and Seal Case,' *Journal of Cost Management*, Winter 1989, pp. 5-16.

In contrast, the process view of activities is mix-blind but time-sequence sensitive. Exhibits 11 and 12 illustrate this difference.

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**Exhibit 11. Process view (Source: Gary Cokins)**

Other useful data can often be found in the records that support operating employees' unofficial systems – the ones they maintain because they do not believe the official accounting system or because the data they need is not collected in that system. This data can be either financial or nonfinancial. Since these employees need to get their job done in spite of an ineffective cost system, often they will have accumulated a wealth of relevant data that will support a properly designed ABC system.

Finally, informed observation is a valuable information-gathering tool. With a sound understanding of the basic philosophy of ABC, an observer can see inconsistencies between the cost system and the real world when watching the organization's product being manufactured or service being performed.

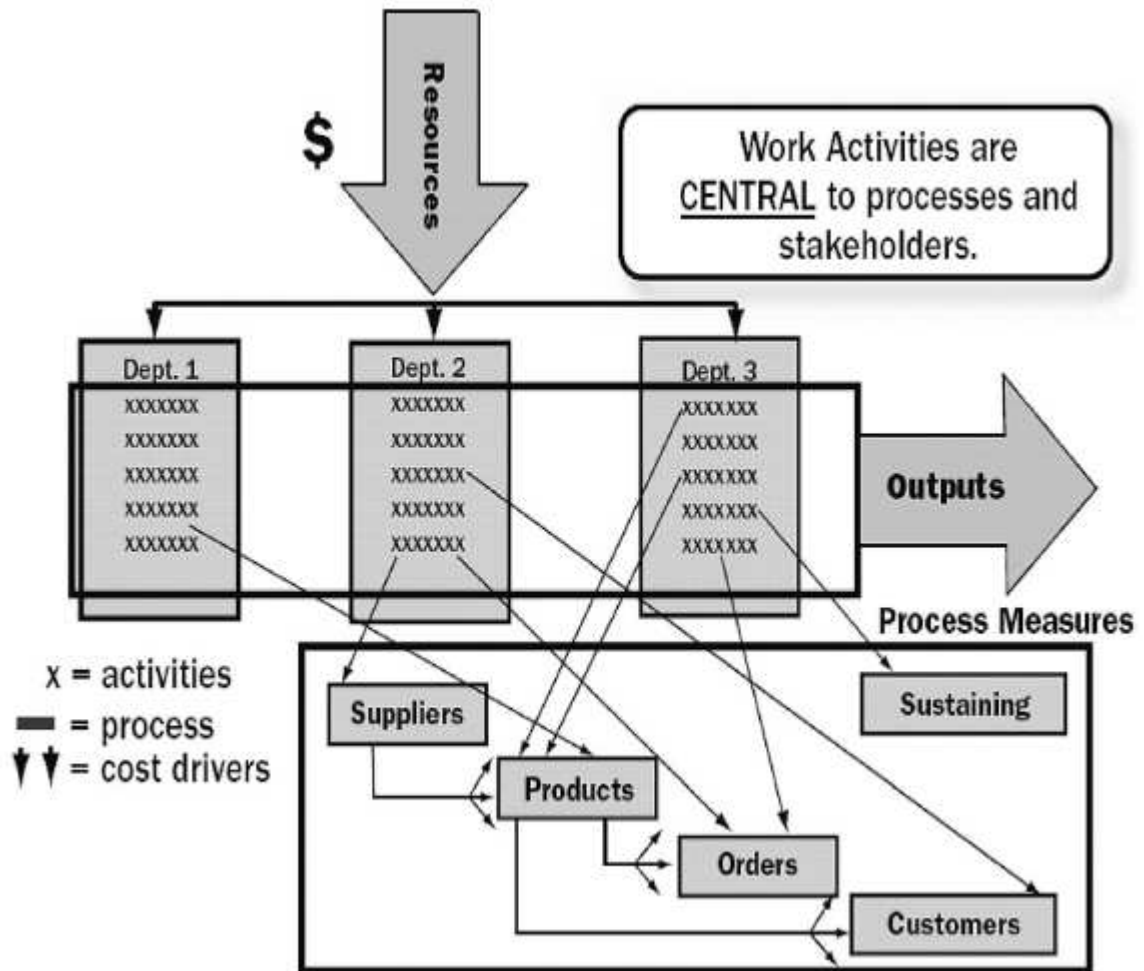


Exhibit 12. Final cost object view (Source: Gary Cokins)

## 12. Implementing the final ABC system

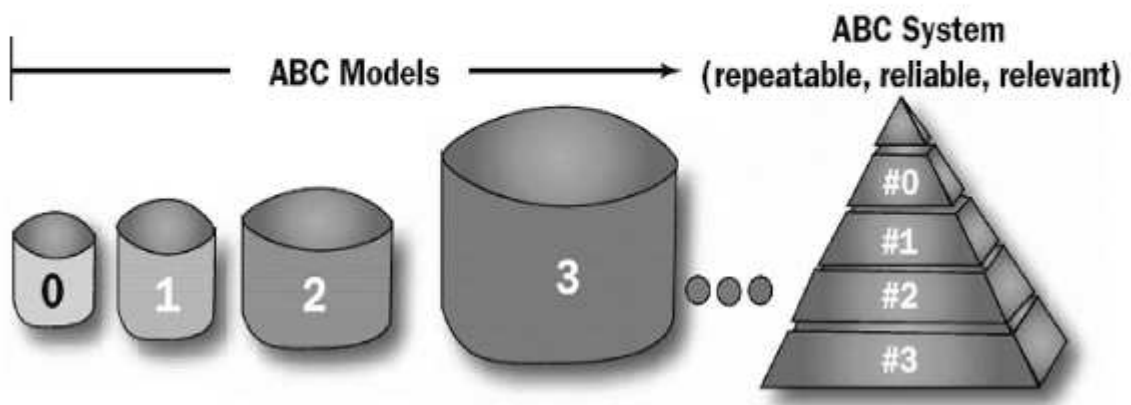
Exhibit 5, the multiple-stage cost assignment system, represents the generic structure at a high level of what the ABC project team must design, but scaled at a lower level. Think of this as the scale model that must be inflated and disaggregated to become a permanent, repeatable production costing system.

Exhibit 13 illustrates the ABC rapid prototyping with iterative remodeling approach that has proven to be a successful implementation approach, avoiding the failures of ABC systems in the 1990s. The prior approach presumed ABC was a big system and required devoting months to build large components, such as the employee time collection systems, that were ultimately all assembled and integrated. This approach sometimes failed because executives began to doubt if the result would be worthwhile, particularly with regard to the effort required to sustain the model because the final result was so complex that even the accounts could not understand it. The ABC rapid prototyping approach has these benefits:

- It prevents over-design and excessive detail in the ABC system. The major determinant for accurate costs is the design of the cost assignment path flow structure. That is, cost accuracy is much less influenced from having correct driver measures. Remember that the period's general ledger expenses to be transformed into calculated costs are basically 100% correct. Having modest inaccuracies in drivers from using employee estimates rather than extracting more precise information from data sources of other business systems typically has minimal impact, and most errors dampen out (i.e., error offsets) further down the cost assignment network. The result of not understanding this property of costing (which admittedly is counterintuitive, but it becomes apparent after the ABC models are constructed) is excessive administrative effort to collect the transactional input data and transform it into costs.

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## Each iteration enhances the use of the ABC system.



**Exhibit 13. ABC rapid prototyping with iterative remodeling (Source: Gary Cokins)**

- The initial models, although not yet attaining the needed accuracy requirements (which should never be 100%) or the necessary levels of disaggregation of activities, products, or customers, accelerate the learning and shift the focus from building a more perfect cost system to determining the best uses of the improved cost information in decision support for profit margin analysis (strategic cost management) and productivity improvement (operational cost management). This shifts attention from squabbling about how the new costs are derived to how the information will lead to higher-profit-generating decisions.
- Organizational learning by managers about ABC principles and how to use ABC information is accelerated simply because it is much more engaging to learn about ABC by applying it to their own organization, where they are familiar with its current business problems and processes, than it is to learn from a case study or examples using fictitious companies. The theory becomes reality.
- It is difficult to construct the final ABC system correctly to get the right levels, selection of drivers, determination of which drivers can be estimated or require data extracts, and so on. The ABC rapid prototyping approach with iterations

allows for mistakes early rather than later, when they can be very expensive to correct.

- Some employees may fear the disclosure of the new cost information or feel adversely affected by the resulting shift in cost assignments relative to the existing reported costs. For example, a product manager may learn his or her products are no longer the most profitable, but are now actually much lower in profit ranking. These employees will be threatened and exhibit resistance to change. Implementing ABC is much more about behavioral change management than it is about doing the ABC math. By briefing select groups of managers with the early ABC prototypes, the ABC project team and those managers can develop risk-mitigation plans to deal with the expected resistance.
- Decisions based on the ABC information are made sooner, increasing the ABC project's return on investment (ROI). Higher-level managers who are briefed on early ABC cost iterations will find that the information both validates a conclusion they intuitively thought (but which was distorted or not disclosed by their existing cost system) and reports costs wildly contrary to their beliefs (formed by flawed costs from their existing cost system). With both outcomes, they will likely make changes – decisions resulting from the preliminary ABC information. A major influencer that increases the ROI of any investment or project is how quickly cash inflows are generated (from revenue enhancements or cost savings).

Common sense assists with the remaining implementation steps to convert the most recent ABC iterative model into a permanent, repeatable production system. By that point in time, the cost assignment structure is designed and all the drivers are identified – resource, activity, and cost object drivers. In effect, the IT task of data requirements definition has been completed.

The remaining tasks are to automate the import of data into the calculation model, routinize the procedures (e.g., a monthly cycle), and develop reports. Fortunately, general ledger, sales order, and operational systems (e.g., enterprise resource planning or ERP systems) are common, and they serve as the sources of raw transaction data to program and feed the ABC modeling software. Driver data that may not be easily available or is not yet measured can be estimated by functional employees who are familiar with their processes. Using reasonable estimates for expenses or activity costs that are not substantially large will not introduce significant costing errors that could potentially jeopardize good decision making.

### **13. Ensuring successful use as a sustainable system**

The best ABC system will be useless if no one understands how to use the information. There is an anecdote of an untrained end-user who was given the ABC reports and replied, 'I feel like a dog watching television. I don't know what I'm looking at.' As important as it is to design and implement a theoretically sound and properly maintained system, it is just as important to make sure that (1) management has been trained in the concepts and use of ABC, (2) management receives reports that are not only useful but understandable, and (3) the ABC information is kept current.

An important step in ensuring the sustainability of an ABC system is to get the buy-in and 'signing on' of managers at the beginning of the project by convincing them that their old, flawed methodology is incorrect and denied them the ability to see and understand large portions of the company's cost behavior. Again, the ABC rapid prototyping methodology assists with securing buy-in. As the new system is developed and becomes usable, these individuals should be shown how the new ABC system overcomes the deficiencies and related problems of the previous system and how the new costing system provides information that will enable each manager to make better decisions. One way to accomplish this is by developing new reports with relevant data and eliminating old reports that were published but rarely used.

In planning the ABC implementation, it is useful to identify the key purposes for the ABC information and work backwards with those ends in mind. That is, have compelling reasons for using ABC data, such as obtaining better price quote profit margin estimates. A well-designed ABC system can also be the basis for improved budgeting, planning, and capacity resource planning. Ultimately, management accounting information is used for many diverse purposes. If a few key purposes are satisfied, the rest will eventually be accommodated, too.

The ABC system must be kept current to prevent inaccurate costs from gradually creeping in. When recalculating the model at periodic intervals (typically monthly), the general ledger expenses used for the update are typically accurate. Not all the driver data needs to be recollected – only the data that experiences volatility. The rest can be reanalyzed or re-estimated on quarterly or semiannual cycles. This lowers the denominator in the benefits to costs ratio, raising ABC's return on investment. Constant vigilance of the structural ABC model maintenance is necessary in regard to new processes, work activities, products, channels, and customers.

## 14. Commercial ABC software

Some organizations initially construct their ABC model using a personal computer and spreadsheet software. They aggregate general ledger expense accounts into groups, as yet undefined activities into processes, and products and customers into families and segments with similarities. The spreadsheet ABC model 'hits the wall' when it becomes apparent that: its columns-to-rows math logic is restrictive, multiple-stage assignments are necessary, disaggregation is required, and there are too many columns-to-rows calculations. It is also at this stage that it becomes apparent the ABC spreadsheet will never graduate from an ABC model to a reliable, repeatable ABC system. Consequently, the selection of a commercial ABC software package becomes the only option.

Commercial ABC software is designed to interface with general ledger, sales, and operating systems, such as ERP. The software itself is designed to calculate the multiple-stage cost assignment network. After that, raw transactional data is loaded, and the laborious calculation of costs is automated.

Some ERP software packages include an ABC module, but much of the driver data may come from a multitude of disparate data sources outside of the ERP system.



Also the priorities of an ERP software vendor are typically transaction-based operations and control. The trend of commercial ABC software is toward advanced modeling capabilities. These packages typically possess functionality to report multidimensional views of costs and to display visual cost assignment paths that can be quickly and flexibly remodeled. As ABC software modeling capabilities advance to reflect expense and cost behavior with regard to volume and mix changes, there will be further improvements in reliability of forecasting and predictive analytics to evaluate what-if scenarios.

The premier commercial ABC systems reside on top of a single, integrated information platform that has already extracted and cleansed data from disparate sources (although data sources can still be directly accessed). Since management accounting is only one component in what are now popularly becoming called business intelligence systems deployed for enterprise performance management, there is synergy to having all components of a performance management portfolio linked, including customer relationship management analytics. The ABC system produces key performance indicators (KPIs) for the increasingly popular scorecard and dashboard applications, and the ABC information not only helps monitor the KPI dials of dashboards, but, more importantly, it also moves them. Systems integration is no longer required, and these systems also provide powerful, Web-based query and reporting capabilities.

## 15. Conclusion

ABC is a powerful management tool that has evolved in response to the ineffectiveness of traditional cost accounting and cost management practices. Advocates of ABC have been won over following their realization that the general ledger's cost center and chart of account expense data is structurally deficient in calculating costs and providing cost visibility and driver understanding. They realize that broad-based cost allocations create grotesquely distorted and misleading costs compared to tracing costs with ABC principles.

The adoption rate of ABC is propelled by increasing proliferation of all businesses outputs (including types of suppliers, products, services, channels, and customers) that cause increased complexity and increased indirect expenses to manage the complexity. Appeals by quality and Lean management to their sales colleagues to 'standardize' cannot overcome customers' demand for customization. Operations managers tasked with streamlining processes and removing waste recognize that ABC data is useful for comparable benchmarking and quantifying the magnitude of non-value-added costs and of profit-reducing costs of quality.

The need to measure customer profitability and value, in which most companies rarely go beyond product costing, is escalating. For most companies, products are becoming commodities, and they must shift to differentiating services for different customers in order to gain a competitive edge and to maximize shareholder wealth. It is no longer about simply growing sales, but rather it is about profitably growing sales. ABC principles can also be applied to expenses below the product gross margin line, and customer-related cost-to-serve costs may be arguably more critical to understand than product costs.

As important as it is, however, ABC is not a panacea. As mentioned earlier, cost management should always be done in the broader context of performance management that integrates time, quality, service levels, risk, capacity planning, and costs. Given that, it is critical that an organization understands its cost structure. Having a management accounting system that supports that understanding, such as ABC, is critical for all of its stakeholders – its employees, its community, its loyal customers, and its shareholders.

## 16. Glossary

**Activity driver** – A factor used to assign cost from an activity to a cost object. A measure of the frequency and intensity of use of an activity by a cost object.

**Capacity** – The physical facilities, personnel, and processes available to meet the product or service needs of customers. Capacity generally refers to the maximum output or production ability of a machine, person, process, factory, product, or service.

**Cost driver** – A measure of activity that is a causal factor in the incurrence of cost to an entity. Examples include direct labor hours, machine hours, beds occupied, computer time used, flight hours, miles driven, and contracts.

**Cost object** – A function, organizational subdivision, contract, or other work unit for which cost data is desired and for which provision is made to accumulate and measure the cost of processes, products, jobs, capitalized projects, etc.

**Cost object driver** – The best single quantitative measure of the frequency and intensity of demands placed on a cost object by other cost objects.

**Resource driver** – A measure of the quantity of resources consumed by an activity (e.g., the floor space occupied by the activity).

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