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ACTIVITY-BASED COST MANAGEMENT

**An
Executive's
Guide**



Gary Cokins

ACTIVITY-BASED COST MANAGEMENT

This book is dedicated to the late Robert A. Bonsack, a friend, a mentor, and a craftsman in the field of advanced cost management.

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An Executive's Guide

Gary Cokins



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About the Author

Gary Cokins, CPIM, is an internationally recognized expert, speaker, and author in advanced cost management and performance improvement systems. He received a BS in Industrial Engineering/Operations Research from Cornell University in 1971 and an MBA from Northwestern University's Kellogg School of Management in 1974.

He began his career as a strategic planner with FMC Corporation. With FMC's Link-Belt Division, he served as Financial Controller and then Production Manager, which exposed him to the linkages between cost information, operations, performance measurements, and results. In 1981, he began his management consulting career with Deloitte & Touche (where he was trained by Eli Goldratt and Robert Fox and implemented Theory of Constraints (TOC) OPT software). Next, with KPMG Peat Marwick, Gary implemented integrated business systems and ultimately focused on cost management systems, including Activity-Based Costing (ABC). While at KPMG Peat Marwick, he was trained on ABC by Prof. Robert S. Kaplan of the Harvard Business School and by Prof. Robin Cooper. Gary headed the Global Cost Management Consulting Services for Electronic Data Systems (EDS) from 1991 to 1996. More recently, he is Director of Industry Relations for ABC Technologies (www.abctech.com).

Gary was the lead author of the acclaimed *An ABC Manager's Primer* sponsored by the Institute of Management Accountants (IMA) and the Consortium for Advanced Manufacturers—International (CAM-I). His second book, *Activity Based Cost Management: Making It Work*, was judged by the Harvard Business School Press as “read this book first.”

Gary serves on performance management committees, including CAM-I, American Production and Inventory Control Society (APICS), the Supply Chain Council, the Council for Logistics Management (CLM), the Automotive Industry Action Group (AIAG), the IMA, Association for Management Information in Financial Services (AMI/FS), the American Society for Quality (ASQ), the Society of Manufacturing Engineers (SME), and the American Institute of CPAs (AICPA). Gary was the co-editor of CAM-I's *2001 Glossary of ABC/M Terms* and is a member of *Journal of Cost Management* Editorial Advisory Board. Gary can be contacted at Garyfarms@aol.com.

Preface

Sometimes luck beats planning. I have been fortunate in my professional career, a career that began in 1973 as an accountant and continued into operations management and management consulting. Without realizing it—through a series of different jobs and management consulting assignments—I somehow earned a reputation as an internationally recognized expert in activity-based cost management (ABC/M). In truth, I am always learning new things about how to build and use managerial accounting systems. I'm not sure that any expert in ABC/M exists. I'm just fortunate to have been formally working with ABC/M since 1988 when I was introduced to it.

I have already written two books about ABC/M, so why would I want to write another? There are several reasons:

- Since I wrote my last ABC/M book five years ago, a great deal of progress has occurred in the field. There has been a marked increase in the growth, acceptance, and successes with ABC/M implementation by organizations of all sizes and in all industries and in most countries as well as in government and the public sector. As evidence, the attendance at ABC/M software companies' customer conferences is almost exceeding the capacity of the largest hotel conference centers. They will need to be held at city convention centers.
- There is an increasing understanding that ABC/M provides information that integrates with a broad number of applications and decisions. ABC/M in isolation is not an improvement program—it is an enabler for other managerial methods and approaches to be effective. In some cases ABC/M data allow processes to be better performed and decisions to be better made. In other cases, they make decisions possible that were not before.
- I have personally recognized that the impediments that have been preventing ABC/M from exploding faster in growth and acceptance are the misconceptions about it. They range from false beliefs that ABC/M is monstrously large and complicated to misperceptions that it takes forever to implement. These falsehoods must be replaced with the evidence that quickly implemented, non-complex ABC/M models ignite the best results. (The discussion on ABC/M Rapid Prototyping in Chapter 9 will reinforce my observations.)
- Poor ABC/M model design and architecture will inevitably lead to poor results. Unfortunately, large ABC/M systems are sometimes flawed right from the beginning design steps. Hence, ABC/M regularly gets an undeserved black eye. Well, there is nothing wrong with ABC/M—the problem is with

the improperly designed structures. I believe that ABC/M is a craft—and I hope my book provides guidance to those with craftsman-like minds. Some accountants may have problems with this.

- The advanced and more mature users of ABC/M—those who have been recalculating their ABC/M autopsy data (i.e., historical expenses) for several years—have pushed the ABC/M methodology to be applied to the future. These advanced companies want to gauge the consequences of their decisions and scenarios. They want to know what will change based on pursuing alternatives available to them. This introduces the topics of predictive costing and cost estimating. That may not sound exciting to some, but as the Internet spawns more e-trading market exchanges with auctions and bidding, rule-based decision making relying on ABC/M may become mission-critical for suppliers and service-providers in an e-commerce digital economy.
- Finally, I am writing another book because it is in me to do it. I have learned a lot since my last book was published. Some readers may dismiss some writers as simply displaying ego rather than being of practical use. I'd like to think that my contribution to the field of managerial accounting originates from a sense of duty rather than ambition. I have now seen many ABC/M systems and have been comparing them. In short, I'd like to make a difference.

I enjoy constructing computer figures that illustrate the points I write about. (Actually, it usually happens in reverse. I first create the diagram, then compose text for the picture that I drew.) My gift for visualizing and illustrating has apparently made my prior ABC/M books popular.

As you wander into my book, I want one key message, which may get muddled, to be stated up front so you can watch for it. That message is that managerial accounting is now transitioning into managerial economics. Many of those fuzzy questions about marginal costs, profits, and economics can finally begin to be answered using valid data with credible assumptions. And computer software and data are no longer the inhibitors to calculating results that they were in the 1990s. The technology problem has been solved. The major obstacle is not producing the cost math—it is in people's *thinking*. It is how they frame a problem, make assumptions, and consider what they are really trying to do or solve with their cost information.

I begin this book by first discussing why there is an increasing interest in ABC/M (Chapter 1), immediately followed by some fundamental explanation of how one constructs an ABC/M Cost Assignment Network that models an organization and becomes its repeatable reporting system (Chapter 2).

The expansion of costing beyond just products and base services into channels, distribution, and customers enables customer contribution profit margins to be calculated and made visible. The managerial movement to manage profit margins is addressed in Chapter 3. The Internet introduces new ramifications, particularly the irreversible shift of power from sellers to buyers. Chapter 4 discusses

applying ABC/M across an entire supply chain of trading partners to improve profits and remove excess costs.

The output of an ABC/M calculation system is always an input into something else. Chapters 5, 6, and 7 discuss the popular uses and applications of ABC/M data, including for balanced scorecard performance measurements, shared services management, unused capacity management, project management, and quality management. In short, ABC/M supports better decision making.

Chapter 8 gives a preview of where ABC/M is headed—its use as a predictive costing tool. In this chapter, I reconcile ABC/M with the Theory of Constraints throughput accounting method. ABC/M is also revealed as the foundation for activity-based budgeting, a budgeting approach that is superior to today’s highly “political” approach.

Chapters 9 and 10 deal with the myths and misconceptions about ABC/M. Chapter 9 describes a popular solution to implementing ABC/M in days, not months, that removes most of the mysteries: ABC/M Rapid Prototyping. It quickly produces results in contrast to long drawn-out ABC/M implementations.

Chapter 11 concludes my book with a crystal ball look that suggests that managerial accounting is evolving into managerial economics. And the force making this possible is not so much the high-speed computing horsepower of laptops and servers as much as it is better thinking about the dynamics and properties of cost behavior made more understandable by ABC/M.

I write this book to focus the managerial accounting community’s attention on the thinking rather than the math. The margin for error for organizations is continuously narrowing, so I want ABC/M data and their uses to help people and organizations make better decisions and perform better and more in alignment with their defined strategy.

I am forever grateful to my wife, Pam Tower, who for the year I was writing this book allowed me to balance—and occasionally mis-balance—my job and family.

Gary Cokins

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1

Removing the Blindfold with ABC/M

“Whoever is careless with the truth in small matters cannot be trusted with important matters.”

—Albert Einstein, German-Swiss-American scientist¹

INTRODUCTION

Imagine that you and three friends go to a restaurant. You order a cheeseburger and they each order an expensive prime rib. When the waiter brings the bill they say, “Let’s split the check evenly.” How would you feel?

That is how many products and service lines “feel” when the accountants take a large amount of indirect and support overhead expenses and allocate them as costs without any logic. There is minimal or no link that reflects a true relative use of the expenses by the individual products, service lines, or end-users. This is unfair. Activity-based cost management (ABC/M) “gets it right.” It more fairly splits the waiter’s check. Many ABC/M practitioners wish the word *allocation* never existed. It implies inequity to many people based on past abuses in their organization’s accounting practices. The word *allocation* effectively means “mis-allocation” because that is usually the result. ABC/M practitioners will often say that they do not *allocate* expenses; instead they *trace and assign* them based on cause-and-effect relationships.

ABC/M can do much more than simply trace expenses and costs. It provides a tremendous amount of visibility for people to draw insights from and also use for predicting the possible outcomes of decisions. Many operations people cynically believe that accountants count what is easily counted, but not what counts. Outdated, traditional accounting blocks managers and employees from seeing the more relevant costs.

Important Messages for ABC/M Project Teams

It is a mistake for ABC/M project teams to refer to ABC/M as an improvement program or a change initiative. The ABC/M data are simply used as a means to an end. If ABC/M is described as an improvement program, it might be regarded by managers and employees as a fad, fashion, or “project of the month.” ABC/M data make visible the economics of the organization and its consumption of resource expenses. Money is continuously being spent on organizational resources whether or not ABC/M measuring is present.

ABC/M is analogous to a physician’s stethoscope, which allows a doctor to listen to one’s heartbeat. Your heart is beating regardless of the presence of the stethoscope. Similarly, an organization is continuously burning up its resources through its activities into its outputs regardless of whether ABC/M is monitoring these events.

I am deliberately understating ABC/M for an important reason. In the early 1990s, when ABC/M was beginning to receive serious attention, the management consulting community began selling ABC/M engagements as consulting services. Unfortunately the consultants oversold ABC/M as a magic pill that could possibly solve all of an organization’s problems (and perhaps solve world hunger, too). This raised management’s expectations too high. If the consultants did not solve the problems that their clients engaged them for, some of those clients blamed ABC/M for not working. However, ABC/M worked just fine; some of the consultants just did not adequately understand how to interpret and use the data. Some did not know how to design and construct an effective ABC/M system. When one realizes that ABC/M is fundamentally good data to be used for understanding, discovery, and decision making, then it is better positioned for longer-term use and wider acceptance.

So I am deliberately managing expectations about ABC/M by reducing the perception that it provides all the answers. ABC/M restacks the costs; it does not root them out. ABC/M’s data can be a great enabler for providing answers; the key word here is *enabler*. One controller I met referred to ABC/M as the ultimate question generator. He observed that, equipped with the ABC/M data, employees and managers frequently had reactions like, “What would explain or account for that?”

Organizational improvement is referred to by a variety of terms, among them total quality management (TQM) and business process reengineering (BPR). They all have one thing in common: a focus on continuing improvement of work and the pursuit of excellence in daily operations. Many of these programs emphasize the following:

- Management of processes rather than resources;
- Elimination of waste;
- Improvement to processes that results in better, faster, and cheaper services to customers; and
- Empowerment of employees to create change.

A common thread runs through all these improvement techniques: a focus on work activities and their relationship to services or products provided to customers.

The ABC/M data can turbocharge these types of popular performance improvement programs. It is inevitable that all organizations will eventually rely on some form of an ABC/M information system to assist in effectively managing their affairs. There is no reason to hype or overstate the power of ABC/M; it will continue to claim widespread global acceptance based on its merits and on the utility that the ABC/M information provides.

Organizational Shock from ABC/M

Ninety percent of ABC/M is organizational change management and behavior modifying, and 10 percent of it is the math. Unfortunately most organizations that implement ABC/M initially get those two reversed. They spend far too much time defining and constructing their ABC/M information system and very little time thinking about what their organization will do once they have their new ABC/M data. This is a huge problem.

This poor implementation habit has adversely affected the rate of adoption of ABC/M. When ABC/M systems fall short of manager and employee teams' expectations, it is usually because the initial ABC/M system design was substantially over-engineered. The typical initial ABC/M system is usually excessively detailed and is well past diminishing returns on extra accuracy for each incremental effort of work. One manager reacted to seeing the first ABC/M report by saying, "I feel like a dog watching television. I don't know what I'm looking at!" With a fraction of the effort and in a much shorter time frame, the implementation team could have started to produce results.

It is important to start getting results quickly from ABC/M because of the organizational shock that some managers and employees may experience when they receive the new ABC/M data. That is, it is important to start realizing what kind of new and possibly disturbing information might come from ABC/M.

When people see the ABC/M data for the first time, they will see things they have never seen before—and some of it will not be pretty. For example, there may be a product manager who for years believed that his or her products or service lines were the most profitable in the organization. But when ABC/M finishes more properly tracing the true consumption of expenses, that person's product or service line may appear much less profitable than it did under the traditional broad cost averaging scheme, and perhaps even unprofitable! That product manager will not be happy to see that information or whoever is reporting that information. Do not underestimate the level of resistance that can come from exposing managers and employees to the ABC/M data.

There is an important lesson here: Treat the ABC/M data responsibly. ABC/M is not an accounting police tool. It is an organization-wide managerial information system. Its data are not intended to embarrass anyone, and it should not be used to punish anyone. In many cases no one really knew what their true costs were. Many may have suspected that the existing expense and cost allocation was wrong, but they did not know what the correct calculations would

reveal. ABC/M finally gives managers and employee teams the hope that they can see the truth. But seeing the data and using the data are not the same thing. Much more thinking is required when it comes to using the ABC/M data for managing and decision making.

There is an old saying that all truth passes through three phases:

1. It is ridiculed.
2. It is violently opposed.
3. It is accepted as being obvious.

Whether dealing with the ABC/M methodology itself or the output data computed by the ABC/M system, keep the following in mind: There will be resistance to ABC/M, due to people being afraid not so much of change—although that is a factor—as of uncertainty. The irony is that ABC/M brings truth, but until the ABC/M data are revealed, people are not sure what it is going to show or how it might be used.

In short, even if an activity-based cost model is in place, do not expect ABC/M to follow automatically. Using the data is a hurdle.

Overhead Expenses Are Displacing Direct Costs

The direct laborers in organizations are the employees who perform the frontline, repeated work that is closest to the products and customers. However, numerous other employees behind the frontline also do recurring work on a daily or weekly basis. These employees' work is highly repeatable at some level, for example, a teller in a bank. Figure 1.1 is a chart that includes this type of expense plus the other two major expense components of any organization's cost structure, its purchased materials and its overhead.

Most organizations are experienced at monitoring and measuring the work of some of the laborers who do recurring work by using cost rates and standard costs. In the bottom layer of the chart is cost information that also reveals performance-related costs other than the period's spending, such as labor variance reporting. It is in this area of the chart, for example, that manufacturers use labor routings and process sheets to measure efficiency. These costs are well known by the name *standard costs*. Service organizations also measure this type of output-related information. For example, many banks know their standard cost for each deposit, each wire transfer, and so forth.

Problems occur in the overhead expense area appearing at the top portion of Figure 1.1. The chart reveals that over the last few decades, the support overhead expenses have been displacing the recurring costs. The organization already has substantial visibility of its recurring costs, but it does not have any insights into its overhead or what is causing the level of spending of its overhead. ABC/M can help provide for insights and learning.

In a bank, for example, managers and employee teams do not get the same robustness of financial information about the vice-presidents working on the sec-

A key to understanding ABC/M is to understand how cost behavior truly varies in relation to other factors.

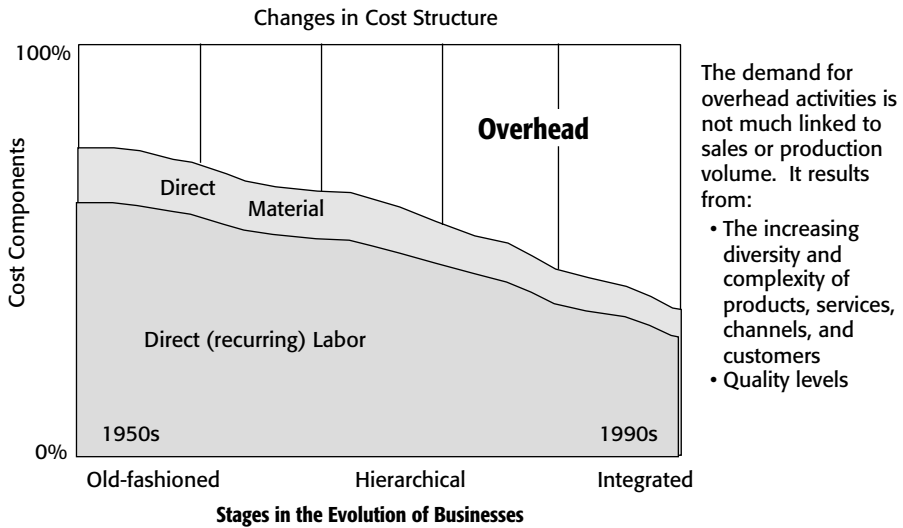


FIGURE 1.1 Overhead Costs Displacing Direct Costs

ond floor and higher up in the building as they do about tellers. The only financial information available to analyze the expenses of the vice presidents and other support overhead is the annual financial budget data. These levels of expenses are annually negotiated. The focus is on spending levels, not on the various cost rates. The expense spending is monitored after the budget is published. Spending is only monitored for each department or function for each period to see if the managers' spending performance is under or over their budget or plan.

ABC/M extends to the overhead the understanding and visibility of spending that is already applied to the recurring laborers. ABC/M can then become an organization-wide method of understanding work activity costs as well as the standard costs of outputs.

Impact of Diversity in Products, Service Lines, Channels, and Customers

When you ask people why they believe indirect and overhead expenses are displacing direct costs, most answer that it is because of technology, equipment, automation, or computers. In other words, organizations are automating what previously were manual jobs. However, this is only a secondary factor in the shift in organizational expense components.

The primary cause for the shift is the gradual proliferation in products and service lines. Over the last few decades organizations have been increasingly offering

a greater variety of products and services as well as using more types of distribution and sales channels. In addition, organizations have been servicing more and different types of customers. Introducing greater variation and diversity (i.e., heterogeneity) into an organization creates complexity, and increasing complexity results in more overhead expenses to manage it. So 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 the company is offering more variety to different types of customers.

For those who may not be convinced by this explanation, go speak with an employee who has been in your organization a long time and is shortly due to retire. Ask him or her: “How thick was our product catalog when you joined the organization and how thick is it now? What types of customers did the founder serve at the inception of our organization and how many more types do we serve now?” The explanation for increasing overhead will become evident.

In short, the shift to overhead displacing direct labor reveals the cost of complexity. ABC/M does not fix or simplify complexity; the complexity is a result of other things. But what ABC/M does do is point out where the complexity is and where it comes from.

How long can organizations go on making decisions with the misinformation reported by their accounting systems? In the 1980s many organizations, reacting to the pressures from high-quality Japanese products, confessed that they had a “quality crisis.” In the twenty-first century, organizations may realize that they have an “accounting crisis.”

IF ABC IS THE ANSWER, WHAT IS THE QUESTION?

Growing Discontent with Traditional Calculation of Costs

Why do managers shake their heads in disbelief when they think about their company’s cost accounting system? I once heard an operations manager complain, “You know what we think of our cost accounting system? It is a bunch of fictitious lies—but we all agree to them.” It is a sad thing to see the users of the accounting data resign themselves to lack of hope. Unfortunately, many accountants are comfortable when the numbers all foot-and-tie in total and could care less if the parts making up the total are correct. The total is all that matters, and any arbitrary cost allocation can tie out to the total.

The sad truth is that when employees and managers are provided with reports that have accounting data in them, they use that information regardless of its validity or their skepticism of its integrity. Mind you, they are using the data to draw conclusions and make decisions. This is risky.

Imagine you were a roving reporter who asks managers and employee teams throughout your organization: “How happy are you with the existing financial and accounting data to support our decisions to improve our competitiveness? Thumbs up or down?” Many would give the data thumbs down. These people

have basic needs such as knowing where their organization makes or loses money. It is amazing, but for many organizations the most fundamental questions get the poorest answers—or no answers.

How can traditional accounting, which has been around for so many years, suddenly be considered so bad? The answer is that the existing data are not necessarily bad so much as somewhat distorted, incomplete, and unprocessed. Figure 1.2 shows the first hint of a problem. The left side shows the classic monthly responsibility-center statement report that managers receive. Note that the example used is the back office of an insurance company. This is to demonstrate that, despite misconceptions, indirect white-collar workers produce outputs no differently than do factory workers.

If you ask managers who routinely receive this report questions such as “How much of these expenses can you control or influence? How much insight do you get into the content of work of your employees?” they will likely answer both questions with, “Not much!” This is because the salary and fringe benefit costs usually make up the most sizable portion of controllable costs, and all that the manager sees are those expenses reported as lump-sum amounts.

When you translate those “chart-of-account” expenses into the work activities that consume the financial general ledger’s expenses, a manager’s insights from viewing the activity costs begin to increase. The right side of Figure 1.2 is the ABC/M view that is used for analysis and as the starting point for calculating the

Stating activities with an action verb-adjective-noun grammar convention creates an atmosphere for change by providing a new way of looking at something people are already familiar with, rather than something that is foreign.

From: General Ledger

Chart-of-Accounts View			
Claims Processing Department			
	Actual	Plan	Favorable/ (unfavorable)
Salaries	\$621,400	\$600,000	\$(21,400)
Equipment	161,200	150,000	(11,200)
Travel expenses	58,000	60,000	2,000
Supplies	43,900	40,000	(3,900)
Use and occupancy	30,000	30,000	—
Total	\$914,500	\$880,000	\$(34,500)

To: ABC Database

Activity-Based View	
Claims Processing Dept	
Key/scan claims	\$ 31,500
Analyze claims	121,000
Suspend claims	32,500
Receive provider inquiries	101,500
Resolve member problems	83,400
Process batches	45,000
Determine eligibility	119,000
Make copies	145,500
Write correspondence	77,100
Attend training	158,000
Total	\$914,500



When managers get this kind of report, they are either happy or sad, but they are rarely any smarter!

FIGURE 1.2 Language of ABC/M

Source: Gary Cokins, *Activity-Based Cost Management: Making It Work*, © 1996, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

costs for both processes and diverse outputs. In effect, the ABC/M view resolves the deficiencies of traditional financial accounting by focusing on work activities. ABC/M is work-centric, whereas the general ledger is transaction-centric.

A key difference between ABC/M and the general ledger and traditional techniques of cost allocation (i.e., absorption costing) is that ABC/M describes activities using an “action-verb-adjective-noun” grammar convention, such as “inspect defective products,” “open new customer accounts,” or “process customer claims.” This gives ABC/M its flexibility. Such wording is powerful because managers and employee teams can better relate to these phrases, and the wording implies that the work activities can be favorably affected, changed, improved, or eliminated. The general ledger uses a chart of accounts, whereas ABC/M uses a chart of activities. In translating general ledger data to activities and processes, ABC/M preserves the total reported revenues and costs but allows the revenues, budgeted funding, and costs to be viewed differently.

Notice how inadequate the data in the “chart-of-accounts” view are for reporting business process costs that run cross-functionally, penetrating the vertical boundaries of the organization chart. The general ledger is organized around separate departments or cost centers. This presents a reporting problem. For example, with a manufacturer, what is the true total cost of processing engineering change notices (ECNs) that travel through so many hands? For a service organization, what is the true cost of opening a new customer account?

Many organizations have been flattened and delayed to the extent that employees from different departments or cost centers frequently perform similar activities and multi-task in two or more core business processes. Only by reassembling and aligning the work activity costs across the business processes, such as “process ECNs” or “open new customer accounts,” can the end-to-end process costs be seen, measured, and eventually managed. As a result of the general ledger’s structure of cost center mapping to the hierarchical organization chart, its information drives vertical behavior, not the much more desirable process behavior.

In effect, using traditional cost systems, managers are denied visibility of the costs that belong to the end-to-end business processes. This is particularly apparent in the stocking, distribution, marketing, and selling costs that the traditional accounting “expenses to the month’s period.” With traditional cost allocations, these sales, general, and administrative expenses (SG&A) are not proportionately traced to the costs of the unique products, containers, services, channels, or customers that cause those costs to occur.

In summary, the general ledger view describes “what was spent,” whereas the activity-based view describes “what it was spent for.” When employees have reliable and relevant information, managers can manage less and lead more.

Drivers Trigger the Workload

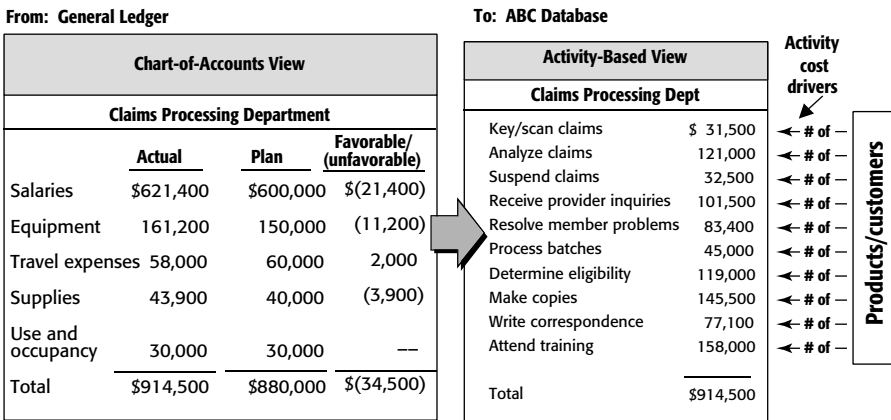
Much more information can be gleaned from the right-side view. Look at the second activity, “analyze claims” for \$121,000, and ask, what would make that cost

significantly increase or decrease? The answer is the number of claims analyzed. That is that work’s activity driver. Figure 1.3 shows that each activity on a stand-alone basis has its own activity driver. At this stage the costing is no longer recognizing the organizational chart and its artificial boundaries. The focus is now on the work that the organization performs and what affects the level of that workload.

There is additional information. Let’s assume there were 1,000 claims analyzed during that period for the department shown in Figures 1.2 and 1.3. The unit cost per each analyzed claim is \$100 per claim. If a specific group of senior citizens over the age of 60 were responsible for half those claims, we would know more about a specific customer or beneficiary of that work. The senior citizens would have caused \$60,500 of that work (i.e., 500 claims times \$121 per claim). If married couples with small children required another fraction, married couples with grown children a different fraction, and so forth, ABC/M would trace all of the \$121,000. If each of the other work activities were similarly traced using the unique activity driver for each activity, ABC/M would pile up the entire \$914,500 into each group of beneficiary. This reassignment of the resource expenses would be much more accurate than any broad-brush cost allocation applied in traditional costing procedures and their broad averages.

The Cost Assignment Network is one of the major reasons that ABC/M calculates more accurate costs of outputs. The assignment of the resource expenses also demonstrates that all costs actually originate with the customer or beneficiary of the work. This is at the opposite extreme of where people who perform

In addition to seeing the “content of work,” the activity view gives insights into what drives each activity's cost magnitude to fluctuate.



Fixed versus variable classifications get redefined with ABC/M.

FIGURE 1.3 Each Activity Has Its Cost Driver

“cost allocations” think about costs. Cost allocations are structured as a one source-to-many destinations redistribution of cost. But the destinations are actually the origin for the costs. The destinations, usually outputs or people, place demands on work, and the costs then “measure the effect” by reflecting backward through the ABC/M cost assignment network.

What Are Costs?

Although the two cost views, cost assignment and process, seem logical, people who design or use ABC/M systems often have difficulties deploying the power of these two views, because in practice they often confuse the two views. Part of the problem in defining and designing costing systems is understanding just what exactly *costs* are. What are costs anyway? Costs themselves are abstract and intangible. One cannot see costs or hold a couple of them in one’s hands. Yet we all know they are there. Like an echo, we know they exist whether we measure them or not.

We know that costs increase or decrease as there are changes in the workload that affect the activity costs via their cost drivers. Work activities are triggered by events, and the costs react as the effect. In one sense, because costs are not tangible, ABC/M operates as “an imaging system” similar to radar, sonar, ultrasound, or an electrocardiogram. Just like a digital camera, ABC/M records an image.

Costs measure effects more than they illuminate root causes. However, ABC/M systems do provide an enterprise-wide image of all the collective effects plus the causal relationships that result in an organization’s costs. So costs provide insights into root causes, but mainly through their inferences. This may sound ironic, but “cost management” can be considered an oxymoron (such as “jumbo shrimp” and “hospital food”). You do not really manage costs and financial results; that is like pushing a rope. You understand the *causes* (and drivers) of costs. Then you manage the causes. Cost management is accomplished by driver management.

So, in effect, an organization does not manage its costs: It manages *what* causes those costs to occur (i.e., its cost drivers) and the *effectiveness and efficiency* of the organizations’ people and equipment to respond to those causal triggers.

When one designs a cost measurement system, that costing information is actually measuring something that, as mentioned, is intangible and invisible. In its own way, ABC/M “tangibilizes” data to represent things that most people believe are intangible.

To sum up, in one sense, the report on the left side of Figures 1.2 and 1.3 represents an “accounting police” command-and-control tool. Have you overspent your budgeted target? If you have, who says that budgeted target amount was fair when it was initially imposed? When managers receive the left-side responsibility center report, they are either happy or sad, *but rarely any smarter*. Today’s competitive world will be dominated by “learning organizations,” not ones that are straightjacketed by spending restrictions. The right side of Figures 1.2 and 1.3

restates those same expenses in a much more useful format and structure for decision support.

When expenses are expressed as activity costs they are in a format that makes it easy to trace them into outputs. This way employees can never say, “we could care less about what anything costs.” People care more when they know what things cost and believe that the accuracy of those costs is reliable. Cost accounting is outside many individuals’ comfort zones. ABC/M makes cost understandable and logical.

As ABC/M converts expenses into the calculated costs of work activities and their outputs, it starts making expenses appear more concrete. To aid in organizational learning, we as a society need to increase the representation of reality—and ABC/M is the foundation for that financial realm. The problem today is that when you have the wrong information coupled with the wrong measurements, it is not difficult to make wrong decisions.

ABC/M as a Translator, Not a Replacement for the General Ledger

Figure 1.4 uses the analogy of an optical lens to show how ABC/M serves as a *translator* of general ledger data to provide more focused information for improved decision support. The lens not only translates the ledger costs into a more useful and flexible format, it provides more sensory information. The data from the ABC/M lens can serve as an early warning detector that some resource level of spending may be out of alignment with the goals or strategy of the organization. For quality managers, ABC/M makes visible all the work related to the cost

An ABC system does not replace the accounting system. It restates the same data and adds operating relationships to more effectively support decision making.

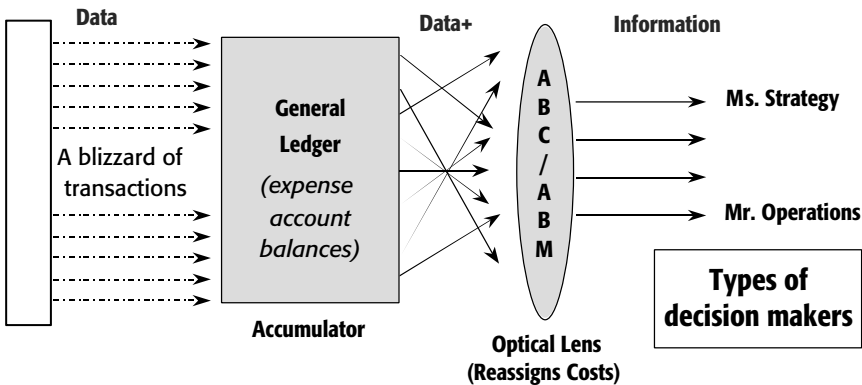


FIGURE 1.4 ABC/M Does Not Replace the Accounting System

Source: Gary Cokins, *Activity-Based Cost Management: Making It Work*, © 1996, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

of quality (COQ). It reveals for them where quality-related costs are located and which outputs and products the COQ costs have gone into.

Figure 1.4 illustrates that ABC/M is not a replacement for the traditional general ledger accounting. Rather, it is a translator or overlay that lies between the cost account accumulators in the general ledger and the end-users, such as managers and analysts, who apply cost data in decision making. ABC/M translates expenses into a language that people can understand. It translates expense into elements of costs, namely the work activities, which can be more flexibly linked or assigned to business processes or cost objects based on demand-driven consumption patterns, not simplistic cost allocations. The reason ABC/M is becoming popular is that the general ledger is now recognized as being structurally deficient for delivering good business information for decision support. The general ledger is a sound mechanism for collecting and accumulating transaction-intensive costs but not for converting those costs into useful managerial information.

In the simplest terms, the general ledger acts like a checkbook; one can read the dollar amounts spent but not really know the what-fors and whys of any individual “check.” And unfortunately the general ledger’s largest “check” amounts are employee payroll-related, which gives managers virtually no visibility of the content of the employee work activities being performed. Furthermore, the payroll-related costs do not reveal the interrelationships between that work and other work or products and customer services. There are no insights into what events cause or drive work activity costs to vary. Because an organization’s work activities are probably the most controllable costs that a manager or team can influence, these activities are critical to know and to understand.

In contrast to traditional accounting, ABC/M focuses on the work activities associated with operating a business or managing a not-for-profit organization. As previously mentioned, ABC/M is work-centric, whereas the general ledger is transaction-centric. Both have their place, but the general ledger’s data are too raw to be considered business intelligence for decision support. ABC/M solves the general ledger’s problem of unprocessed expenditure data. However, just translating the ledger account expenses into their work activities is an incomplete description of ABC/M. The total ABC/M picture comes from linking the activities into networks to calculate the cost of outputs for performing analysis, determining trade-offs, and making decisions.

Managing with a process view created a growing need for better managerial and costing data. Managing processes and managing activities (i.e., costs) go together. By defining a *business process* as comprising two or more logically related work activities intended to serve end-customers, the need for integrating processes, outputs, and measured costs becomes even more apparent as an important requirement for managers and teams. And the ABC/M Cross (discussed further in the following sections) provides a logical way to visualize and report on these linkages.

In summary, ABC/M resolves the general ledger’s structural problem. With ABC/M, the general ledger account balances are first converted into activity costs.

Then ABC/M assigns the activity costs to cost objects or reassembles the activity costs across business processes. These new and transformed ABC/M cost data can be used to identify operating relationships that can be used effectively in making product, channel, market, and customer-oriented decisions. This ABC/M information can also be useful in managing processes and any quality-related issues within the processes. In all cases, ABC/M transforms the general ledger data into a different type of cost information that is more useful for decision making.

How Does Activity-Based Costing Compute Better Accuracies?

ABC/M was developed as a practical solution for problems associated with traditional cost management systems that we now realize are distorting and incomplete. Indirect expense and overhead cost allocation practices of traditional systems can bring more damage than good to organizations. In traditional costing the indirect expenses are usually too aggregated to serve any purpose, and these large groupings destroy any likelihood for calculating an accurate cost of any type of output.

The next problem with overhead cost allocations is that excessively broad-brush average cost rates are applied to calculate costs. Worse yet, the cost allocations usually rely on a sales-related, volume-based factor or basis, such as direct labor hours or department expenses. It may be an inputs-used or outputs-produced basis measure, but the basis usually will not accurately measure the segments of the total. This flawed basis for allocating costs rarely reflects the specific cause-and-effect relationship between the indirect overhead expense and the work output, part, product, service, channel, or customer (i.e., the cost object) that is actually consuming the cost. Many managers are tired of “allocation foodfights.”

The result of inaccurate cost allocations, because allocating is a zero-sum error game, is that some cost objects are over-costed while the remainder are under-costed. In other words, as a consequence of unquestioned formula cost allocations, traditional financial accounting can grotesquely distort the true cost of products and service lines, which in turn can wildly distort their individual profit margins. Some refer to traditional cost allocation methods as “spreaders.”

The ABC/M logical assignment of expenses and costs obliterates the use of simple averages as the basis for tracing costs. Figure 1.5 illustrates the impact of applying ABC/M rather than the traditional allocation. The diagram reveals ABC/M’s “S-curve.” The horizontal line represents the flawed costs that are calculated by a traditional standard costing system. These costs represent the belief system of the organizations. Many employees accept them as accurate strictly because the accountants report them. Other employees are suspicious.

In practice, one discovers that the under-costed products are substantially under-costed because these products may be low-volume with small lot sizes, require more technical attention, consume more handling, or need extra inspection. ABC/M removes the distortions from simplistic cost allocations. An allocation-free

Experiences reported from ABC/M implementations show that cost subsidization has been extraordinarily large.

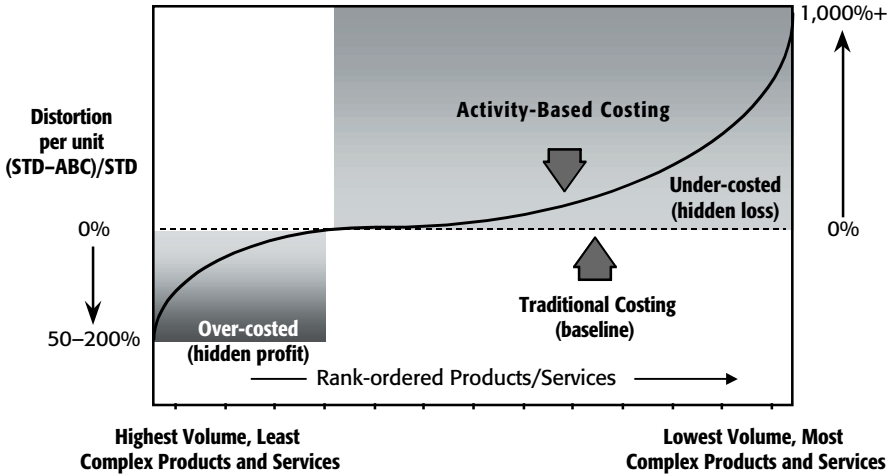


FIGURE 1.5 Product and Service Cost Distortion

cost system is like a smoke-free environment: no pollution. In short, don't allocate, prorate. In the end, ABC/M is like bringing in the "myth grenades" that blow up the old flawed beliefs and replace them with real facts.

Defending the Status Quo

Some accountants defend their simplistic allocations as adequate for product and service-line costing. They may have been so in the past. The use of volume-based allocations will provide reasonably accurate calculated costs when the following conditions exist:

- Few and very similar products and service lines.
- Low overhead expenses.
- Homogeneous conversion processes.
- Homogeneous channels, customer demands, and customers.
- Low selling, distribution, and administrative expenses.
- Very high margins.

How many organizations possess those characteristics? Hardly any today. Perhaps simple cost allocations worked when Henry Ford was producing thousands of Model-T automobiles, all black—and with minimal indirect and overhead costs. But not anymore.

In effect, we have allowed the accounting profession to construct a costing scheme that distorts reality and violates variable costing, as a manager understands it. The ultimate problem is that companies are actually losing money on certain

products, orders, services, and customers when their accounting systems state that they are profitable. And since the price quotation practices usually rely on the same flawed cost data, quoting unprofitable orders to potentially unprofitable customers is perpetuated with the illusion that the quoted orders are profitable.

ABC/M corrects for these flaws by identifying the work activities that are responsible for costs. It provides a cost flow assignment network, which allows the work activity costs and their output costs to be continuously reassigned, or passed on only if the products, services, or customers, or in some cases other work activities, actually use the activity. This condition of consumption and use is what sets ABC/M apart from traditional cost allocation schemes. Figure 1.6 is a popular diagram called the ABC/M Cross.

The ABC/M Cross reveals that work activities, which are located in the center intersection of the cross, are integral to reporting both the costs of processes and the costs of cost objects. *Cost objects* are the persons or things that benefit from incurring activity costs; examples are products, internal or external customers, stakeholders, and outputs of internal processes. Cost objects can be thought of as *to what and for whom work is done*. Figure 1.7 lists the questions that the vertical cost assignment view answers.

The vertical cost assignment view explains what specific things cost, whereas the horizontal process view, which some refer to as ABM, explains what causes costs to exist and to fluctuate.

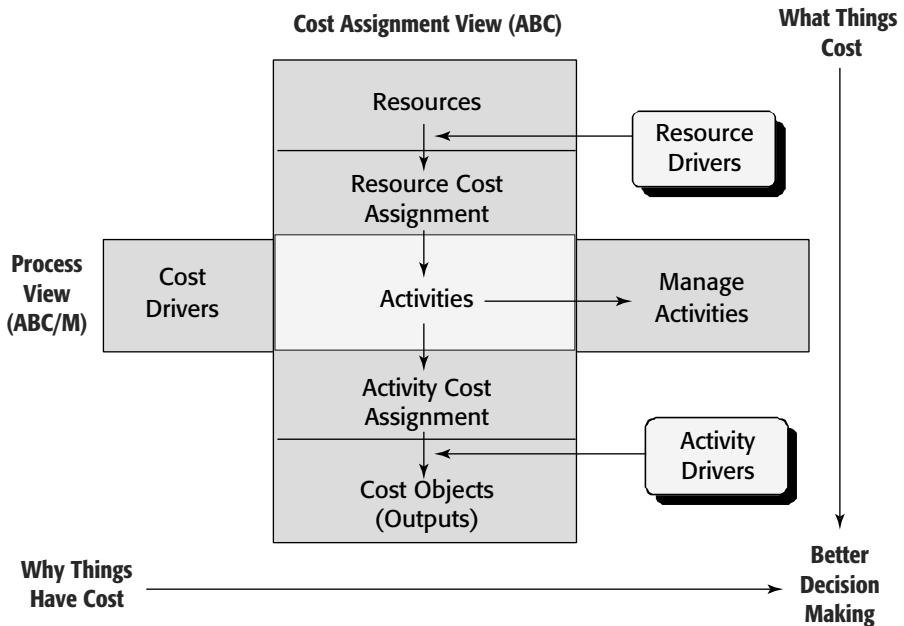


FIGURE 1.6 Activity-Based Cost Management Framework

Source: The Consortium of Advanced Manufacturing-International (CAM-I), 1990. Used with permission.

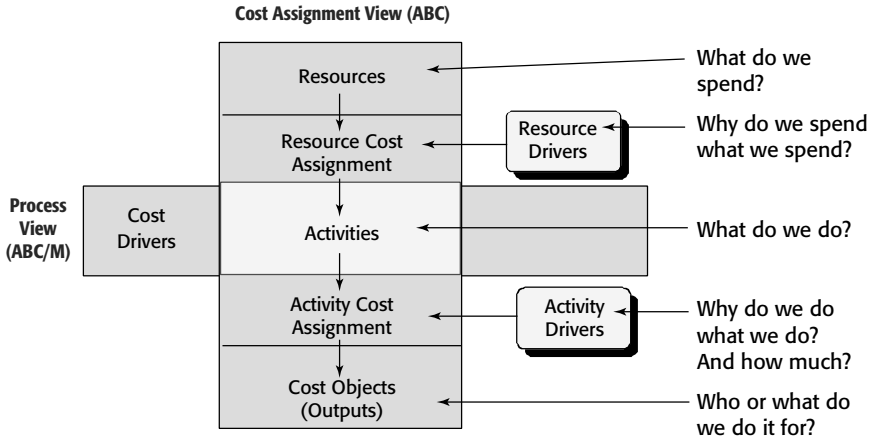


FIGURE 1.7 Questions Answered by the ABC/M Framework
 Source: The Consortium of Advanced Manufacturing–International (CAM-I), 1990. Used with permission.

Vertical Axis

The vertical axis reflects costs as they are sensitive to demands from all forms of product, channel, and customer diversity and variety. The work activities consume the resources, and the products and customer services consume the work activities. The ABC/M cost assignment view is a cost-consumption chain. When each cost is traced based on its unique quantity or proportion of its driver, *all* the resource expenses are eventually reagggregated into the final cost objects. This method provides much more accurate measures of product, channel, and customer costs than the traditional “peanut-butter spreading” cost allocation method.

ABC/M has been called “pull and remember” based on its activity drivers. This is in contrast to the nickname “push and forget” for traditional cost allocation. Commercial ABC/M software has a powerful audit trail of its computed costs that runs all the way back to the resource expenditures. In ABC/M, the activity drivers behave like a “pump and valve” in this cost reassignment network. Activity drivers are critical to ABC/M because not only do they segment and flow the costs to reflect the diversity of the products and customers, they govern the accuracies as well.

Horizontal Axis

The horizontal view of the ABC/M Cross represents the business process view. A business process can be defined as two or more activities or a network of activities with a common purpose. Activity costs belong to the business processes. Across each process, the activity costs are sequential and additive. In this orientation, activity costs satisfy the requirements for popular flow-charting and process modeling techniques and software. Business process-based thinking, which can be visualized as tipping the organization chart 90 degrees, is now

dominating managerial thinking. ABC/M provides the cost elements for process costing that are not available from the general ledger.

Cost Drivers and Activity Drivers

There is probably no term, other than *activity*, that has become more identified with ABC/M than the term *driver* and its several variations. The problem is that it has been applied in several ways with varying meanings. To be very clear, a *cost driver* is something that can be described in words but not necessarily in numbers. For example, a storm would be a cost driver that results in much clean-up work and the resulting costs. In contrast, the *activity drivers* in ABC/M's cost assignments must be quantitative, using measures that apportion costs. In the ABC/M vertical cost assignment view there are three types of drivers, and all are required to be quantitative:

- Resource drivers trace expenditures (cash outlays) to work activities.
- Activity drivers trace activity costs to cost objects.
- Cost object drivers trace cost object costs to other cost objects.

In the ABC/M Cross's vertical cost assignment view, activity drivers will have their own higher order cost drivers. Events or other influences, which are formally called cost drivers, cause work activities. A *cost driver*, such as a sales or work order, is the trigger that causes the work activity to utilize resources to produce output or results. Activity costs are additive along the process and therefore can be accumulated along the business process.

Cost drivers and activity drivers serve different purposes. Activity drivers are output measures that reflect the usage of each work activity, and they must be quantitatively measurable. An activity driver, which relates a work activity to cost objects, "meters out" the work activity based on the unique diversity and variation of the cost objects that are consuming the activity. It is often difficult to understand whether use of the term *activity driver* is related to a causal effect (input driver, such as "number of labor hours") or to the output produced by an activity (output driver, such as "number of invoices processed" or "number of gallons produced"). In many cases, this is not a critical issue as long as the activity driver traces the relative proportion of the activity cost to its cost objects. An activity cost has an output cost rate that is synonymous with the activity driver rate. Older, less-effective terms, such as *first* and *second stage* driver, continue to be used to describe items similar to the currently more accepted terms *resource driver* and *activity driver*.

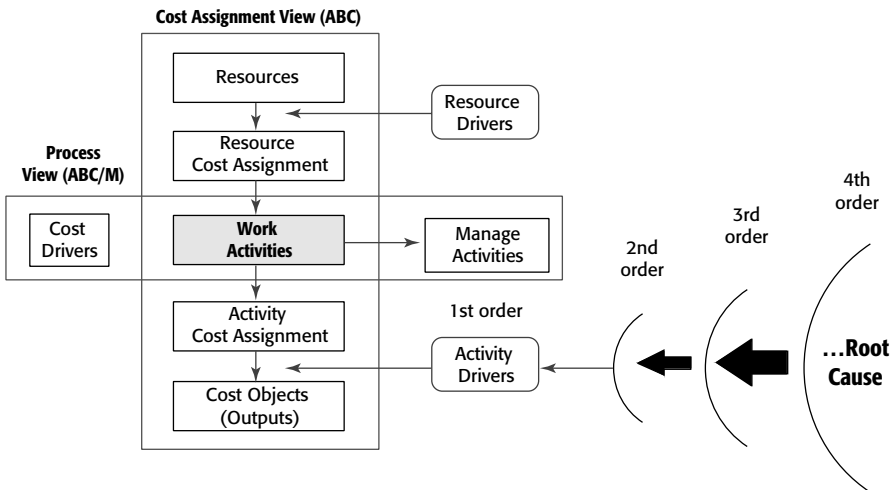
A *cost driver* is a driver of a higher order than activity drivers. One cost driver can affect multiple activities. A cost driver need not be measurable but can simply be described as a triggering event. The term describes the larger scale causal event that influences the frequency, intensity, or magnitude of a workload and, therefore, influences the amount of work done that translates to the cost of the activities. For example, a sales promotion can be a cost driver for substantial increases in the company's work activities of the order-fulfillment process. The

amount of effort used in taking orders, for example segmented by teenagers versus senior citizens, would require an activity driver (i.e., number of orders placed due to promotion) to calculate the proportional costs to customers in each segment. There would be a unique activity driver for each work activity that belongs to the order-fulfillment process.

Figure 1.8 illustrates how activity drivers are lower order drivers of cost drivers. ABC/M relies on activity drivers for tracing costs, and collectively they are useful when combined with quality management (QM) problem-solving tools for identifying root causes.

Driver data, whether cost driver or activity driver information, spark root cause analysis. But usually the activity drivers used for ABC/M costing are output-based. Therefore, as the quantity of the drivers rises or falls over time, ABC/M can report the trend in terms of per-unit cost of work rates of the activity outputs and ultimately of the products. Alternatively, ABC/M can also provide the per-unit-of-each-output rates for use in predictive planning and what-if scenarios, a popular use of the ABC/M data. Cost estimating with ABC/M is natural because the activity costs react and behave linearly with changes from their activity drivers. Too often in traditional costing the cost rates do not directly vary with changes in volume; this results in mis-estimates and ultimately in errors, poor decisions, and lost profits.

Activity drivers have their own cost drivers. It is best to use “symptomatic” and physical output drivers in the ABC model to measure unit driver rates and segment the diversity of the cost objects...



...and rely on employees to determine the “nth order” drivers using TQM problem solving techniques outside of ABC’s cost flowing.

FIGURE 1.8 Drivers Have Drivers

As mentioned, in the vertical cost assignment view the term *driver* is appended in three areas. The first deals with the method of assigning resource costs to activities: a *resource driver*. The second deals with the method of assigning activity costs to cost objects: an *activity driver*. The third—a *cost object driver*—applies to cost objects after all activity costs have already been logically assigned. Note that cost objects can be consumed or used by other cost objects. (In this context, references to “first” and “second” stage drivers are being abandoned as being obsolete. Their use today would give a misleading impression that ABC/M can be easily accomplished as a simplistic two-step allocation. ABC/M practitioners have come to recognize that ABC/M is a multistage cost assignment scheme, as discussed in “Expanded ABC/M Cross” in Chapter 2.) By limiting the use of the word *driver* to four clearly defined areas—cost driver, resource driver, activity driver, and cost object driver—I hope to prevent misinterpretation or misuse of the term.

The ABC/M Cross displays in a simple fashion that the work activities at the intersection of the vertical and horizontal axis are integral to determining the cost of an organization’s processes as well as the cost of its cost objects. The activity at the intersection schematically represents an individual activity—a very local view. But from a global perspective, the vertical (cost assignment) and horizontal (process) views may consist of many activities that are networked based on their relationships to resources, cost objects, and other activities. (This is discussed further in “Expanded ABC/M Cross” in Chapter 2.)

Large ABC/M Size Does Not Make Better ABC/M

In practice, ABC/M systems will sometimes trace work activity costs to two or more other intermediate work activities that consume the work upstream from the ultimate products and customer services that initially trigger the demands on work. The reassignment network of cost-segmented consumption is responsible for the majority of ABC/M’s superior costing accuracy. ABC/M can tolerate reasonable cost driver estimates as proxies for actual transaction detail drivers because the error does not compound; it dampens out on its way to the final cost objects. It is somewhat counterintuitive, but with ABC/M, precision inputs are not synonymous with accurate outputs. This property significantly lightens the load for data collection.

ABC/M’s property of error-dampening also means that an ABC/M model does not need to be very granular or consequently very large in size. Unfortunately, because this idea is counterintuitive, many ABC/M systems are over-engineered. The ABC/M models are well beyond diminishing returns of extra accuracy for extra levels of effort. This is “ABC/M’s leveling problem.” No one knows in advance how detailed to make the first ABC/M model. The project team, often led by accountants, errs on the side of excess detail. Unfortunately, some activity-based costing projects are exposed to risk because the system became unnecessarily difficult to maintain prior to the users comprehending how

they could apply the ABC/M data. This is why ABC/M advocates' mantra is: "It is better to be approximately correct than precisely inaccurate!" In the end, the level of accuracy and detail depends on what decisions are made with the data. Usually the accuracy requirements are not unreasonably harsh. So learn how to right-size your ABC/M system. ABC/M is a solution, but a solution to a problem should not become the next problem. Learn the properties of ABC/M model design and architecture.

Some of the lessons learned about ABC/M and profitability analysis follow:

- Information, although not precise, can provide an organization with substantially improved support for decision making and greatly improve its understanding of profitability.
- An organization does need excellent ABC/M analysis to make great improvements.
- No ABC/M information and its analysis are perfect. Good judgment and additional qualitative information are necessary before final decisions are made.

A simple rule that will be repeated in this book is to constantly ask, "Is the climb worth the view?" That is, by building a more detailed and slightly more accurate ABC/M model, will the answer to your question be better answered? Avoid the "creeping elegance" syndrome. Larger models introduce maintenance issues. (ABC/M's leveling problem is discussed in depth in "ABC/M's Achilles Heel: The Leveling Problem" in Chapter 2.)

What Gave Rise to ABC/M?

Many organizations have been suspicious that their cost management system leads to behavior and actions that are counterproductive. Figure 1.9 lists several unexpected outcomes that can result from strictly adhering to the reporting from a traditional standard costing system. These outcomes mainly affect operational effectiveness and efficiency.

It may have been acceptable in the early 1900s, when Frederick Taylor's scientific management revolution was being introduced, to apply standard costing to maximize work center efficiency and utilization. In those days detailed variance analysis was the name of the game. It was useful in that era of standard products and large run batch-and-queue production. But, as I discuss in Chapter 4, mass production has given way to mass customization combined with better, faster, and cheaper requirements. Hence, the use of variances and standards has to be carefully reconsidered. Companies can no longer afford to allow their accounting system to drive aberrant operations behavior, people performing unneeded work simply to absorb more costs to avoid unfavorable variances on their report card.

To complicate matters, the traditional cost systems also did not produce the correct numbers needed for strategic decisions. In the early 1980s many companies began to realize that their traditional accounting systems were generating in-

Traditional cost systems negatively influence managers.	
Cost Data	Dysfunctional Influence
Purchase Price Variances	Quantities are ordered in excess of requirements from suppliers with <i>low</i> cost and <i>low</i> quality
Equipment Utilization and Labor Efficiency	People and equipment resources are maximized leading to building <i>incorrect</i> and excess inventories
Standard Cost Overhead Absorption	Managers will overproduce unneeded work to generate favorable variances (perpetuating the myth that overhead spending and direct costs are linked)
Overhead Rates	Managers try to control the rate, not their spending
Cost Center Reporting	Managers focus on departments, not on processes, especially customer-related processes

FIGURE 1.9 Traditional Cost Systems Are Flawed

accurate costing information. The typical organization’s cost structure had been substantially changing. For most of them, overhead and indirect costs were increasing and mainly displacing the direct labor costs, the costs of frontline workers. The three primary causes for this shift were increasing organizational complexity resulting from proliferation in the variety of product and service offerings; a more diverse group of channels and customers; and increased automation, new technologies, and new methodologies.

In the past, calculating costs using volume-based allocations may have been acceptable and may not have introduced excessive error. But most organization’s cost structures began to change in the 1970s. With greater overhead costs relying on a basis for cost allocations that were tied to unrelated volumes of usage, the traditional costing method had become invalid relative to how the rich variation of products and services consumed costs. Therefore the unfavorable impact of the costing errors was becoming much more intense than in the past.

Many managers understood intuitively that their outdated accounting system was distorting the product and service-line costs, so they sometimes made informal adjustments to compensate. However, with so much complexity and broad product and channel diversity, it was nearly impossible for managers to predict the magnitude and impact of the mental adjustments needed to achieve accuracy. These conditions clearly exist today, but they are more intense. ABC/M resolves the problem of poor indirect and overhead cost allocations, but it also provides additional information for analysis to suggest what positive actions, strategic or operational, can be taken based on the new data.

In addition to the need to address the distortion of true costs that are misrepresented by traditional systems, the rise in ABC/M has resulted from external factors. The level of competition that most firms face has increased dramatically. In the past, most organizations were reasonably profitable. They could make mistakes,

and their adequate profitability would mask the impact of their wrong or poor decisions. But competition has intensified. A company can no longer carry unprofitable products and service lines and unprofitable customers by hoping the profitable ones will more than offset and make up the difference. They can no longer survive with misleading cost allocations and without having visibility of their costs across their end-to-end business processes.

Today the margin for error is slimmer. Businesses cannot make as many mistakes as they could in the past and remain competitive or effective. Price quotations, capital investment decisions, product mix, technology choices, outsourcing, and make versus buy decisions today all require a sharper pencil. More competitors are better understanding the cause-and-effect connections that drive costs, and they are fine-tuning their processes, removing COQ, and adjusting their prices accordingly. The resulting price squeeze from more intense competition is making life for businesses much more difficult. Budget tightening is similarly affecting government and not-for-profit organizations. Knowing what your real costs are for outputs, product costs, and the “costs-to-serve” channels and customers is becoming key to survival. With activity-based costing visibility, organizations can identify where to remove waste, low-value-adding costs, and unused capacity, as well as understanding what drives their costs. They can also see the degree of alignment of their cost structure with their organization’s mission and strategy.

Today an organization’s road is no longer long and straight, it is windy, with bends and hills that do not give much visibility or certainty to plan for the future. Organizations need to be agile and continuously transform their cost structure and work activities. This is difficult to do when an organization does not understand its own cost structure and economics.

For years, ABC/M was considered an expensive project that only large organizations with extensive resources could undertake. But today, with the proliferation of computers for gathering and computing, the cost of data collection and measurement has fallen at the same time that information processing has improved. Not too long ago, it was cost prohibitive to accumulate, process, and analyze the data necessary to run an ABC system. Cost accounting was restricted to a big box mainframe computer and data stored as flat-files.

Today, not only are such activity measurement systems affordable, but much of the information already exists in some form within the organization. For example, quality management systems of ISO 9000-registered organizations have an abundance of data, usually not connected to the accounting system. Also, a few knowledgeable employees can usually estimate a large portion of any remaining data that may not be available. Estimates such as these will have a minimal adverse impact on accuracy. Hence, all organizations can easily produce ABC/M data. Better yet, information technology has dramatically improved the deployment of ABC/M data for viewing, planning, and decision making. Powerful database management systems and computing engines make data processing no longer an impediment to understanding costs.

What makes ABC/M even more realizable is the fact that most data for decision making need not be accurate to several decimal places. In addition, a technique for implementing ABC/M based on rapid prototyping scale models is assuring implementation success. In contrast to the long, multi-month, one-chance, single-design approach, the ABC/M rapid prototyping technique follows the quick build of the initial model, built roughly in two days, by iterative remodeling of increasingly larger scale ABC/M models. Eventually the larger scale ABC/M model becomes the organization's repeatable and reliable production system.

ABC/M in Advanced, Mature Users

Businesses like the Coca-Cola Company, DeLuxe Check, Navistar, and Allied Signal Corporation have been performing ABC/M for many years. They are advanced and mature ABC/M users who are interested in two goals: to institutionalize ABC/M company-wide into a permanent, repeatable, and reliable production reporting system and to establish the ABC/M output data to serve as an enabler to their ongoing improvement programs, such as TQM, change management, cycle-time compression, core competency, BPR, product rationalization, target costing, and channel/customer profitability.

More recently, new issues for the advanced and mature ABC/M users are emerging; they include the following:

- Integrating the ABC/M output data with their decision-support systems, such as their cost estimating, predictive planning, activity-based budgeting (ABB) systems, customer relationship management (CRM), and balanced scorecard performance measurement systems.
- Learning the skills and rules for resizing, reshaping, releveling, and otherwise readjusting their ABC/M system's structure in response to solving new business problems with the ABC/M data.
- Collecting and automatically importing data into the ABC/M system.
- Automatically exporting the calculated data out of their ABC/M system.

It is evident that among experienced ABC/M users, ABC/M eventually becomes part of their core information technologies.

More specifically, the output data of an ABC/M system is frequently the input to another system, such as a customer order quotation system. ABC/M data also complement other productivity or logistics management tools such as simulation software, process modelers, business process flow charters, executive information systems (EIS), and online analytical programs (OLAP). In the next several years, there will be a convergence of tools as these now somewhat separate software applications become part of the manager's and analyst's tool suite.

Advanced, mature users are also masters at employing ABC/M "attributes," which are scored and graded against the activities. ABC/M attributes allow managers to differentiate among activities. A popular attribute involves scoring

activities along their “high- versus low-value-adding” scale so that teams can focus on the work that is more important. Multiple activities can be simultaneously tagged with these attribute grades, and of course the amount of money trails along as part of the activity data. As an option, activities can be summarized into the processes. Another option is to score or grade each activity by how well the organization performs its work.

Two or more attributes can be combined to gain further insights. A popular combination is the level of importance and the level of performance. With these two independently judged scores for each activity, organizations can see, for example, that they are spending a lot of money doing things they are good at but that they have judged to be unimportant. Some attributes are subjectively scored or graded by managers and employees, and they introduce emotionally compelling business issues. I have often said that, “ABC/M adds the air-conditioning to the ABC/M data.”

Organizational Structure, Behavior, and Value Creation

Organizations are discovering that the business process performance levels necessary for their organization to remain competitive (or to continue to be adequately funded) exceed what is possible from conventional, highly vertical, functional organization forms. The traditional organizational model is becoming less valid as business processes transcend old departmental boundaries.

Future cost avoidance and performance improvement can be achieved only through reconfiguring work activities into fewer, more integrated jobs. Optimizing a stove-piped functional department can be a poor choice for the total organization. On occasions there are competing performance measures: “As I do good, you are adversely affected.” With this new way of thinking, traditional managerial accounting comes up short. It fails to provide data for decision support, and it prevents producing the kind of metrics to serve as inputs into balanced scorecard and performance measurement systems, including shareholder value added (SVA) methods.

How will managers and teams learn how to operationalize and actualize their process-based thinking? How will they measure their processes or ever know whether cost-saving benefits are truly being realized? How will business processes be managed and measured to prove that they are indeed creating value relative to their effort and cost?

One important way to answer these questions is to provide managers and teams with fact-based data in place of assertions and intuitive guesses. In addition, managers can benefit from visual aids that are supported with real and tangible metrics. Organizations will increasingly use diagrams and pictures, not just racked-and-stacked cost tables, to help employees truly visualize, discover, internalize, and learn. The rate of organizational learning is considered by many as today’s primary differentiator between gaining and losing organizations. If the rate

of organizational learning is slow, that can be considered a major impediment to an organization's growth and sustaining power.

ABC/M project managers have been slow to recognize the behavioral change management aspects of the ABC/M data. ABC/M is a socio-technical tool, and the emphasis should be on the social side. Many managers and ABC/M project teams see ABC/M as simply a better measuring scheme or cost allocation method. However, its real value lies in introducing undebatable fact-based data that can be used by employees to build business cases, quickly recognize business problems or opportunities, and test hypotheses. ABC/M has many of the characteristics of an organizational methodology.

Many managers are frustrated by the difficulties in bringing about change within their organizations. Behavioral change management is receiving wider attention, and ABC/M data are playing an important role in change. I encourage you to be part of this change. One description of old age is that it starts as soon as your attachment to the past exceeds your excitement about the future. Since you will live the rest of your life in the future, think young and be progressive.

One technique to consider comes from the great movie director, Alfred Hitchcock. He referred to this method as using the superiority of suspense over shock. Make the audience squirm. Hitchcock would not simply film two men conversing at a table, and—boom—a bomb would go off. He would let the audience know that a time bomb is planted and timed to go off as the two men are conversing. With ABC/M data, I encourage project teams to first have users speculate on the results before they see the real data. For example, have them list who they think might be the unprofitable customers. Whether they guess right or wrong, the users will already have begun to think through many of the cost-and-effect relationships. Either their intuition will be validated or they will be surprised, but either reaction prepares them to better understand how ABC/M supports the correct answer.

A Business Is Multidimensional

ABC/M contends that many important cost categories vary not with short-term changes in output but with changes in the design, mix, and range of a company's products, services, and customers. Once product and service-line costs are identified, employees and managers begin to see the value of understanding the activities and their associated costs.

The primary use of ABC/M shifts from an accounting tool to a management decision support system for operational streamlining and strategic thinking—ABC/M is business intelligence. Information technology gathers and manages this ABC/M information, combining not just cost but also nonfinancial information and performance measures. This enterprise-wide technology is called an activity-based information system. As more managers have become aware of the activity and of the information that is available, additional applications for ABC/M have emerged,

including unused capacity management. ABC/M provides the lens that focuses on an organization's efforts.

ABC/M and the Future

An overarching issue in ABC/M is the perception of it as just another way to spin financial data rather than as mission-critical managerial information. The Information Age can be mind-boggling. In our future, as technology advances, so will the demand to access massive amounts of relevant information. The companies that survive will be those that can answer the following questions:

How do we access all this information?

What do we do with it?

How do we shape the data and put them in a form with which we can work?

What will happen when we apply technologies developed *during* the Information Age *for* the Information Age?

Clearly, as information technology evolves, organizations will increase their effectiveness. Further, as markets change, companies and organizations will run into global competitors that increasingly look to information and information technology for competitive advantage. ABC/M is involved in this broad arena of "outsmartmanship."

ABC/M puts the "management" back into management reporting. For those who are involved with ABC/M projects, the key is to create and orchestrate change rather than merely react to it and attempt to make the best of a poor situation. It will be fun watching organizations move from their learning stages into mastery of building and using ABC/M systems.

STAGES OF EVOLUTION OF COST MANAGEMENT SYSTEMS

In the early 1990s Professor Robert S. Kaplan of the Harvard Business School described four stages of cost management systems. Figure 1.10 extends his stages of evolution with a fifth stage beyond Kaplan's fourth stage, "integrated" cost management systems. The fifth stage that I propose focuses exclusively on decision support. Following is a review of the standard four stages.²

Standard Four Stages of Cost Management Systems

Stage 1: Broken

Stage 1 cost management systems are primitive and fairly useless for managing an enterprise. At an extremely primitive level, an example would be a cigar box being used for cash and coins at a child's lemonade stand. The box serves the two purposes of providing change for customers and determining at the close of busi-

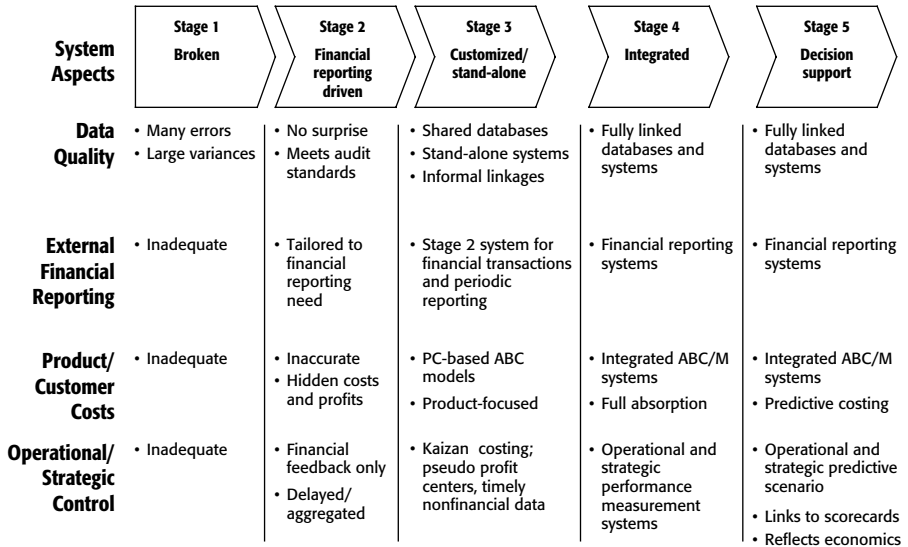


FIGURE 1.10 Stages of Evolution of Cost Management Systems

Source: Stages 1–4, R. S. Kaplan and R. Cooper, *Cost & Effect* (Boston: Harvard Business School Press, 1998). Reproduced with permission from *Management Accounting*, published by the Institute of Management Accountants (IMA), Montvale, NJ, www.imanet.org.

ness if any money was made. If there is more money in the box than when the day began, after allowing for the purchase price of the ingredients, the child knows it made a profit.

A small step beyond that is the small retailer. Its pricing may simply be a cost-plus markup of its purchases to cover operating expenses.

A step above that is the small manufacturer or distributor. Because these organizations may not be able to justify the extra expense to maintain a formal record-keeping system, the quality of their data will likely be inadequate for making decisions.

Stage 2: Financial Reporting Driven

Stage 2 cost management systems are used to comply with external reporting for bankers or owners or to government agencies, such as for tax reporting. The financial data may minimally meet the reporting requirements, but they may distort the true costs and profit margins of the specific products or service lines being sold. This information may be reported weeks or months after the period in which the business was conducted. It also may be too aggregated to draw any insights about where to focus or what to better control.

Manufacturers and distributors tend to focus on the direct material and labor expenses that can be logically associated with products and service lines. The remaining support, distribution, sales, and administrative expenses are either

ignored or loosely linked to the costs of outputs. Simplistic overhead expense allocations introduce distortions that can be large relative to the true costs.

Stage 3: Customized/Stand-Alone

Stage 3 cost management systems are designed to provide reasonable accuracy and visibility for decision making. This is the stage at which activity-based costing begins to emerge. The variety and diversity of the products and service lines of these organizations will have expanded so much that indirect and support overhead expenses will have become a significant portion of the cost structure. Simplistic cost allocations, usually volume-based, are no longer sufficient to reflect how much the individual outputs consume those expenses.

Whether the expenses are direct or indirect, the cost assignments are computed in a parallel or off-line model, not necessarily in a repeatable system. The operational data, such as the basis for tracing the indirect expenses to costs, is usually input as a separate step. For manufacturers, the assignment of overhead for inventory costing may be based on simplistic assumptions, whereas the activity-based costs will be more reflective of use. The two methods produce different results for different purposes. The inventory costing is used for external reporting and the activity-based costing for strategic decision making or pricing.

Stage 4: Integrated

Stage 4 cost management systems are what many organizations aspire to. The databases are linked to the calculation logic that traces the expenses to processes and to outputs. The resulting information can be reported for monitoring performance or simply to more accurately report spending for control or for profit margin performance. The administrative effort to refresh the input data and update the results is much less than in Stage 3. The reporting is highly automated and supported by powerful query and analysis tools. The distribution of the calculated results is more widely accessible to various users throughout the organization.

Fifth-Stage Cost Management System

Stage 5: Decision Support

Stage 5 is my extension of the first four. It represents more of a profit management and value management system. It goes well beyond simply calculating and distributing accurate and relevant cost information, providing information, and the flexibility to configure assumptions, for decision making.

All decisions affect the future, not the past. The past reflects past decisions, good or bad. The Stages 3 and 4 cost management systems originate in historical revenue and expense data. They are descriptive rather than prescriptive. It is too late to do anything about what already happened. What ABC/M accomplishes is

logical and defensible tracing of expenses so that managers and employee teams can gain insights into and make inferences about where to focus and what to change.

The formal step of actually taking actions based on inferences from past information leads us into the broad realm of predictive costing, planning, and re-budgeting (during and after cost overruns). This will be the focus of Stage 5 systems. Today this area resides in diverse pockets of an organization where cost estimating, planning, and budgeting take place. Cost estimating is usually performed as an ad hoc analysis aimed at a single decision, such as a capital investment justification or a make-versus-purchase outsource decision.

Another application of cost estimating may be to determine a price quotation to offer to secure a customer order. In price quoting, there are implicit assumptions about cost rates and whether expenses are fixed or variable. In some cases those assumptions may not be completely valid. A more powerful predictive costing calculation engine and system will allow for more formal and flexible configuring of assumptions of the consequences of decisions, in addition to the specific inputs and outputs of a decision. These assumptions will recognize the impact on capacities, specifically the adjustability of capacity and the resulting increases or decreases in specific expenses during the time periods affected by the decision.

As the Internet continues to shift power to buyers and away from suppliers, a defense for suppliers will be to induce the customers' demands through a variety of option offerings. The various options will be combinations of various products, promotions, and alternative service levels offered at appropriate pricing to stimulate the customer to order and purchase. Much of this will be Web-based and automated. Stage 5 systems will recognize the existing capability and capacity of an organization and take that into account as they support predictive costing. Stage 5 systems will be rule-based. (Chapter 4 discusses the new requirements of twenty-first-century e-commerce that will rely on Stage 5 and ABC/M systems.)

History of ABC/M

ABC/M has gone through a metamorphosis. Figure 1.11 illustrates its various stages. The historians of cost management may someday look back and briefly describe each era in this manner.

Pre-1950s

Following the days after 1492, when the Italian monk Lucas Pacioli documented double-entry bookkeeping, accountants have put a lot of energy into developing methods for better assigning expenses to costs. Many assignment methods, such as project accounting and standard costing, appeared adequate. Some companies

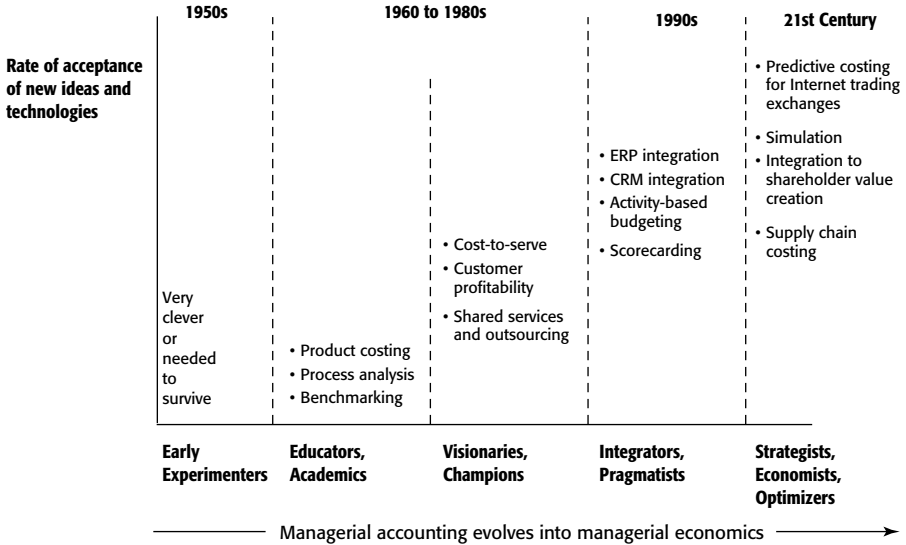


FIGURE 1.11 Chronological History of ABC/M

used industrial engineering techniques focusing on cross-functional work activity analysis.

Early Experiments in ABC/M

The financial controllers at some companies occasionally were clever enough to use cost assignment methods based on “event drivers.” They were basically performing primitive forms of ABC with home-grown business or spreadsheet software.

Educators

A few university faculty began to realize that traditional cost allocations were not adequately causal-based. Often the methods used were political or simply convenient. Professor Robert S. Kaplan of the Harvard Business School received the most attention (and was my personal trainer when he contracted with KPMG Peat Marwick to implement ABC/M systems). However, it is useful to realize that Professor Kaplan did not invent ABC/M; he was a loud voice advocating that organizations apply it.

Visionaries

Initially companies applied ABC/M for more accurate product costing. This allowed a much more credible reporting of profit margins. However, many users saw that there was also utility in the same data that calculated the product costs

to address other problems. The ABC/M data were next applied for process analysis, BPR, and benchmarking. In 1988 Chris Pieper, the founder of ABC Technologies, introduced an inexpensive yet flexible commercial ABC/M software called Easy ABC. This tool allowed for the arterial network of flowing costs, and some of its users became visionaries. It didn't take too long for these people to realize that the ABC/M method could be applied beyond products to other outputs, such as channels and customers. In commercial industry, this led to applying ABC/M for customer profitability analysis.

Integrators

In 1998, the German company SAP, the world leader in enterprise resource planning (ERP) software, purchased a minority equity investment in the world leader in ABC/M software, ABC Technologies Inc. This was a major event, signaling to the world that the large ERP production and planning systems were acknowledging ABC/M as credible and important. Soon other ERP vendors began to announce the availability of ABC/M functionality. ABC/M began to be integrated with other tools as well.

Economists and Optimizers

The thought leaders in cost management have begun to integrate the ABC/M data to support decision making. This involves predictive costing, not simply segmenting and tracing historical costs. Linkages of trade-offs between customer profitability and increases or decreases in shareholder value have been receiving intense scrutiny.

NOTES

1. As quoted in George Selde, ed., *The Great Thoughts* (New York: Ballantine Books, 1985), p. 119.
2. Dr. Robert S. Kaplan, "The Four Stage Model of Cost Management," *Management Accounting* (February 1990).

A Management Accounting Framework: A Taxonomy

“We do not know a truth without knowing its cause.”

—*Aristotle, Greek philosopher (384–322 B.C.)*¹

INTRODUCTION

There is a growing desire by organizations to understand their costs and the behavior of what drives their costs. However, there is also confusion over how to understand costs, competing cost measurement methodologies (e.g., Theory of Constraints, activity-based costing, standard costing, throughput accounting, target costing), and various professional consortia publishing their own custom brands of research.

The result is that managers and employees are confused by these mixed messages. They are confronted with too many solutions for costing systems. We may discover that the solution is not to select a correct choice but to make a blend. Various costing methods do not necessarily compete; they can be reconciled and combined. They are all cut from the same cloth; they measure the consumption of economic resources.

Who speaks for the manager in the organization that so many consultants and university faculty are presumably serving? Managers do not want confusion. They simply want solid support and fact-based data to make better decisions. For specific types of decisions they want to know what assumptions they should make about including or excluding specific costs, and if certain costs should be assumed to behave as variable or fixed relative to changes in other factors.

There is a need for an overarching framework to measure costs. An understandable framework is not rocket science; it can be constructed and articulated. A candidate framework is presented here. Is it a perfect framework? Probably

not. But it is an overarching view that has helped non-financial managers feel more comfortable with their understanding of accounting.

Measuring and Using Cost Data

The sole focus of this section is managerial accounting, not financial accounting. Financial accounting addresses external reporting used as compliance reporting for banks, owners, publicly owned companies, and government regulators. This information is compulsory. Financial accounting is governed by laws and rules established by regulatory agencies.

In most nations, financial accounting follows generally accepted accounting principles (GAAP). Some people jokingly refer to this as the GAAP trap because focusing on these numbers may distract the organization from more relevant numbers or prevent it from finding more appropriate ways to calculate costs and profit margins. GAAP means something to accountants, but to others it sounds like a blue jeans retail store or a space between your teeth.

In contrast, managerial accounting is used internally by managers and employee teams for decision making. If you violate financial accounting laws, you may go to jail. You don't risk going to jail if you have poor managerial accounting, but you run the risk of making bad decisions. And, as frequently noted in this book, the margin for error is getting slimmer as the pressure grows for better organizational performance.

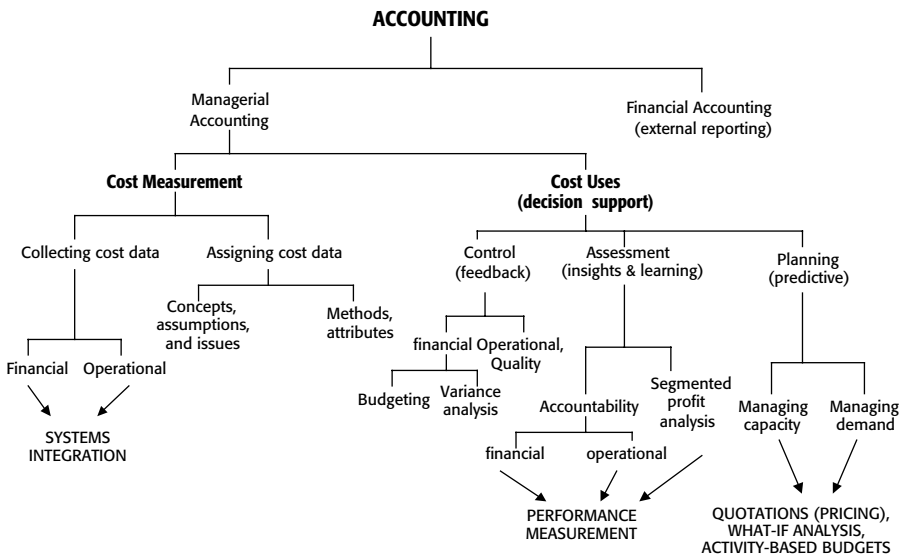


FIGURE 2.1 Management Accounting Framework

At the highest level of managerial accounting there are two broad elements: measuring the costs and using the cost data. Figure 2.1 displays an overarching framework for managerial accounting with a “tree, branch, and leaf” structure. In this framework each branch can be further separated into the following key components:

- **Cost Measurement:** Measuring costs comprises collecting data and assigning the source expenses in a way that is meaningful for the organization.
- **Cost Uses:** Chapter one of many managerial accounting textbooks will usually state that there are three broad purposes for using cost data: operational control, assessment and evaluation, and predictive planning.

By further separating the five elements of cost measurement and uses listed above into their individual parts, we can understand the landscape of managerial accounting. We can visit some of the terminology and highlight key issues.

Using this overarching view, I discuss how managerial accounting involves information systems integration with an ultimate application for assessing performance (organizational execution) and for forecasting costs (strategic and operational planning that supports profit margin management and resource management).

The elements in Figure 2.1 can be separated for closer examination, as shown in Figure 2.2.

Each of the five elements is discussed individually in this chapter. In the Appendix a comprehensive list (using an index number) of the dozens of uses and

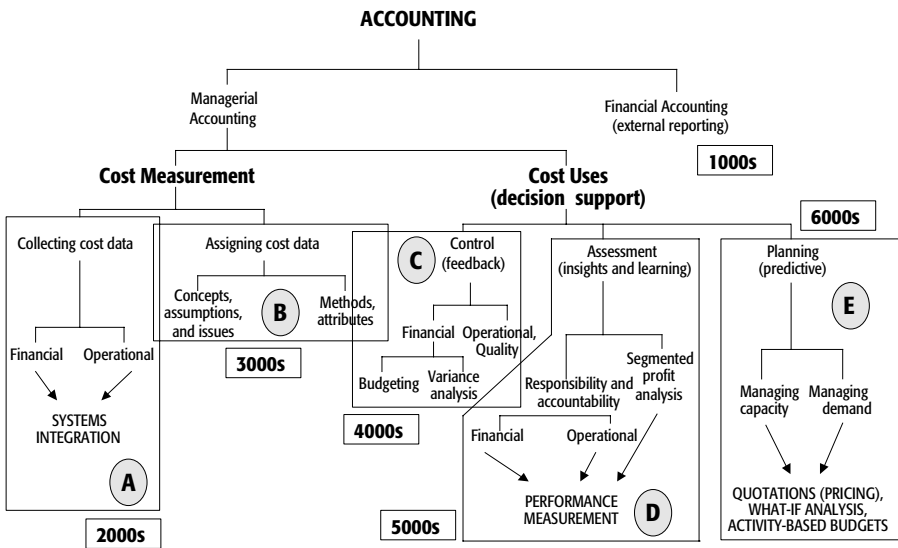


FIGURE 2.2 Management Accounting Framework (Elements Separated)

applications of financial data is cross-referenced against the five elements (2000s–6000s) and financial reporting (1000s) (see Figure A.1). The characteristics of managerial uses of financial data are also compared and contrasted.

Cost Measurement

Collecting Cost Data

This is where measuring and managing costs begins. The source for data can be financial (i.e., strategic) or operational (i.e., shorter-term tactical costs).

- **Financial data collection** is a mature exercise dating back centuries to the days of trading and counting with rocks and gold coins and recording transactions on papyrus. It needs minimal discussion. These expenses were initially cash equivalents directly tied to cash payments for employee wages or to suppliers and contractors.

Eventually accrual accounting was developed to allow for matching the timing of revenues and contracts with when their expenses benefited the revenues. With accrual accounting, cash payments that precede or follow sales and contract events are shifted into assets or liabilities as cash-equivalents. General ledger bookkeeping handles these mechanics. This is all old stuff, with its origins dating back to 1492 when the Italian monk, Lucas Pacioli, first documented double-entry bookkeeping.

- **Operational data** are nonfinancial. This information is measurable in the form of units such as minutes, pounds, gallons, number of events, or “eaches.” These are units of inputs or outputs that are consumed in making and delivering a product or service. Operational data are combined with financial data to produce cost data.

In our twenty-first-century information era, systems integration and technology are used to convert this information for interpretation, use, and decision making.

Assigning Costs

The assignment of costs depends on the managerial use of the data, which usually depends on the more pressing management problems. There is complexity in the assumptions and factors related to the use of cost data. Figure 2.3 displays the methods for assigning costs with some of the assumptions applied for assigning costs or considered when making decisions.

- **Assignment Methods:** In *non-period costing* the time period for which the costs are accumulated is unique to a *specific* product, service line, item of equipment, channel, customer, or cost object. An example is product life cycle costing. The start and stop points (i.e., birth and retirement) for *each* product are as unique as one’s DNA or fingerprints. The cost object, not the processes and their capacities, is the focus and matters the most. The

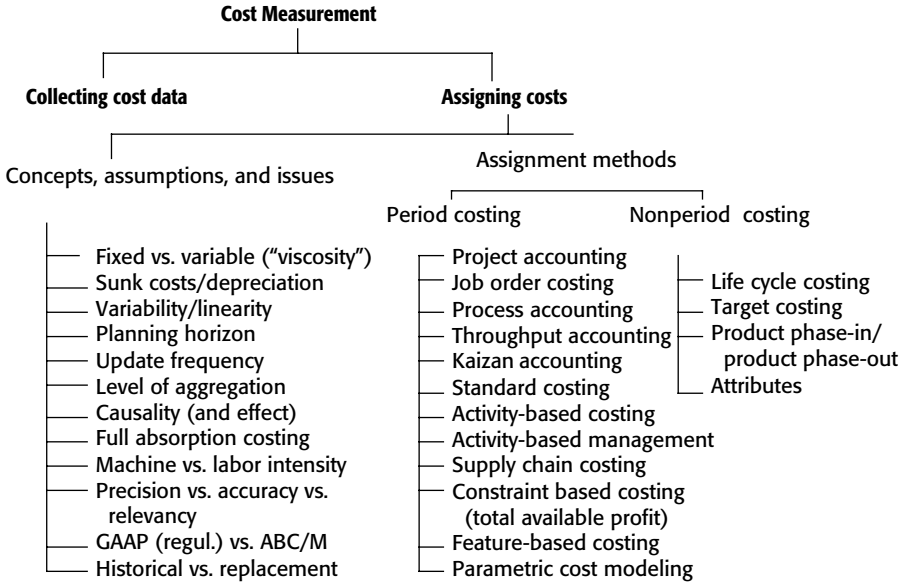


FIGURE 2.3 Cost Measurement/Assigning Costs

accounting and economics professions have not developed mainstream and accepted methods for these life cycle costs, although some engineering professional societies have defined various methods (e.g., parametric cost modeling). Life cycle costing is discussed in Chapter 3 in “Seven Options to Raise the Profit Cliff Curve.” An increasingly popular method of business planning is target costing, discussed in Chapter 3 in “Target Costing Versus Assignment Costing.”

In *period costing*, costs are accumulated at fixed time intervals, and they are linked to a calendar, such as a week, a month, or a year. All the product, service line, and customer costs are reported regardless of whether they had intra-period starts or stops. In period costing, the time frame matters the most, and the focus is the spending for process, not the products and customers using the spending. Life cycle costs of a cost object are not usually important, except for job order costing.

As is apparent from Figure 2.3, there are many methods for assigning costs. What the methods generally all have in common is that they start with the “source expenses” that were captured from the transaction-based systems, such as payroll and purchasing systems. These expenses are initially recorded into general ledger or fund accounting systems.

Organizations are increasingly experiencing confusion about the choice of cost assignment method. In fact, every organization is consciously or subconsciously using a cost assignment method and system. But is it the best method for them? How are they to know?

Each of these cost assignment methods traces the consumption of “source” expenses (i.e., cash outlay expenditures) to a destination (i.e., cost object) that is of interest to management. Where each assignment method differs is in the selected cost object or in assumptions involving how to assign the expenditure costs. Ideally, all expenditures are directly associated with their cost object, but in practice some costs are arbitrarily allocated or absorbed, which may produce misleading results. Most of these cost assignment methods further “reassign” the costs to group them, again to satisfy a management interest. Assumptions also apply to these cost “re-assignments.”

Ultimately all expenses can be accounted for as costs. The accountants and cost engineers know they must accomplish that; the financial books must balance. But have they properly assigned their expenses as costs given the conditions and according to the business problem, need, or interest to management?

- **Concepts, Assumptions, and Issues:** The left branch of Figure 2.3 lists a variety of categories and factors involved in assigning expenses as costs. This is a representative list, not an exhaustive one. These items are both uniquely configured for the cost assignment method and governed by management’s needs or interest. The list reveals that costing and economics are intertwined. The items in this list are the heart and soul of cost accounting. They are key to how accounting data support managerial decision making. In sum, the specific assumptions for each of these depend on the decision being made with the cost data.

Cost Uses

There are three broad uses for cost data: control, assessment and evaluation, and predictive planning.

Control

Controlling expenses has historically been a popular use of cost data, particularly in mature organizations. Frequent reporting of expenses and costs provides a form of near-term feedback for managers to react to. Managers’ reactions to the data depend on their expectations, their intuition, or the formal budget or planned targets.

There is a growing belief that the emphasis in collecting and assigning cost data should shift away from control and toward the other two uses of cost data, assessment (learning) and predictive planning. The reasoning for this shift is that it is usually too late to control a process after the fact with historical expense and cost data.

There is also recognition of and concern about the fact that repeated planning and replanning, with the resulting variance analysis, creates a full-time job for cost accountants performing as accounting police. It is as if each successful

quarterly plan update has as its goal to make unfavorable variances disappear. The focus of all this financial estimating almost becomes managing the plan, *not* performance.

In many cases, knowing a lot about the past is less important than having a reasonable estimate about the future. The more successful organizations are those that understand their true, not planned, profit contribution margins and determine and deploy future levels of resources (i.e., capacity costs) in anticipation of their demand level.

The logic for control is based on a “management by exception” approach intended to aid in focusing. A shortcoming surfaces if the planned targets or standards, from which the variances are measured, are themselves suspicious measures. If they are, then people are misfocused.

- The **financial spending control** branch separates into (1) developing budgets and planned levels of costs and (2) measuring variances of actual (and subsequently assigned) costs against those budgeted targets. There are a variety of issues related to determining the budgeted and planned targets (e.g., ideal, theoretical, average, or standard cost), but in the end there has historically been an interest in knowing how the organization performed relative to its spending plan.

The more popular orientation for financial control is organizational according to the responsibility of people and teams, which is usually hierarchical. As organizations flatten, de-layer, and adopt cross-functional process-based thinking, this view encounters serious complications. New orientations of responsibility are developing that are process-oriented. This view requires innovation because individual employees frequently participate in two or more processes that are likely managed by different individuals. New questions surface regarding the authority to influence individuals. Matrix management is frequently tried as an alternative organizational structure to a hierarchical structure.

An important observation is that there is increasing cynicism about traditional budgeting methods. Activity-based cost management (ABC/M) data provide help to try innovations; however, the traditional general ledger responsibility cost center format is a barrier to process-based thinking due to its structural deficiency. ABC/M introduces a fresh way to think about standard cost accounting; this is discussed further in “The Expanded ABC/M Cross” section.

- The **operational control** branch for control moves beyond the mere control of expenses. Spending is not the sole indicator of control. Examples include productivity and utilization measures. These may use data that rely on cost information in the form of ratios or rates, but these operational measures are specific to a process. Operational control data are frequently used for trend analysis (across time periods) or for comparative and benchmarking analysis (across multiple organizational units).

Assessment and Evaluation

The second purpose for cost data is to assess what is happening and evaluate why. The emphasis here is on gaining insights and learning to better achieve the organization’s goals. There is less emphasis on restricting or modifying behavior or applying accounting police tactics to punish spending violators and those with reported “unfavorable” cost variances.

This purpose for using cost data, as displayed in Figure 2.4, divides into two branches. One branch reports data to assist those who are responsible and ultimately held accountable for performance; the other illuminates the impact of complexity and diversity of what output the organization makes and sells and to whom it sells. Collectively, all of this information is used for performance measurement; it is combined with nonfinancial data to provide weighted scorecard (dashboard) reporting.

- **Responsibility and accountability:** This branch further forks into financial and operational assessment branches. The **financial accountability** uses of cost data are the traditional enterprise-wide measures related to performance, particularly as viewed by the owners and investors. There is increasing interest in measures of wealth creation. As examples, value-based management (VBM) and shareholder value adding (SVA) are becoming popular.

The **operational accountability** use of cost data for learning is to better understand the driving influences that cause costs to occur. Additional uses

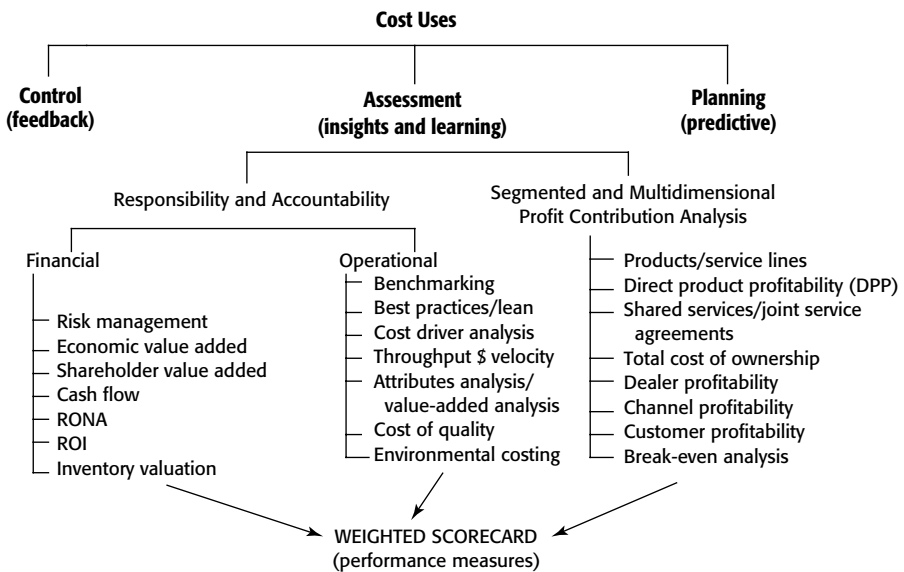


FIGURE 2.4 Cost Uses/Assessment

of these data are to identify where there is waste or misalignment of work effort with the organization's strategy and to identify how well processes and practices are performing relative to benchmarks. One example of benchmarking costs is measuring levels of quality. In the quality management discipline's cost-of-quality (COQ), activity costs are classified across an accepted continuum (i.e., error-free, prevention-related, appraisal-related, internal failure-related, external failure-related). The goal is to reduce the non-error-free costs.

- **Segmented profit contribution:** This branch is the traditional area of cost-volume-profit analysis. A new spin, however, is to further analyze profit contribution by additionally recognizing the impact of diversity and variation, beyond products and service lines, caused by supply chain options (e.g., freight type, route type, order type, channel, and customers' "costs-to-serve"). Recent advances in software technology allow for multidimensional combinations (e.g., by geographic region, by salesperson) to better understand the source of the sales mix of costs with revenues, which intersect to net the profits.

This branch is where ABC/M was first applied. Much of the ABC/M data were then applied in the responsibility and accountability branches.

As previously noted, reporting these financial metrics, along with nonfinancial measures such as customer satisfaction, helps management communicate existing (and changing) strategy for better alignment and execution. Some of the measures also provide leading indicators (e.g., customer service levels) that will subsequently and predictably result in the lagging indicators (e.g., operating profit). The assessment and evaluation branch is directed toward the managers' navigational dashboard: weighted scoreboard performance measures.

Predictive Planning

Predictive planning is increasingly becoming of great interest for using cost data. This branch involves what-if analysis, trade-off analysis, outsourcing decisions, investment decisions, and, more fundamentally, determining the costs associated with a customer quote to estimate the profit margin if that price quote were to be accepted. This fifth and last branch of the managerial accounting framework is best described as cost forecasting. Some might even argue that this does not even qualify as cost accounting.

As earlier mentioned, regarding the other two uses of cost accounting, there can be no debate that the spending occurred. It did. But this third use is about estimating the spending on future resource expenses, not just activity costs. Predictive planning, using historical cost data as its foundation, is becoming a mission-critical capability required by all managers, not simply by accountants and financial analysts.

The prevailing thinking is that an organization should first manage its customer demand and then plan for its level of supply of resources to match that demand. Another way of stating this is that an organization should aim to *maximize*

its creation of shareholder wealth (e.g., SVA) through profit-rich sales growth while *minimizing* the unused capacity of its resources. Predictive planning has branches for managing the supply of available capacity and managing demand. The leaves of these branches cover the traditional cost-volume-profit analysis and cost-benefit analysis. With advances in information processing technology, managers and employee teams will be equipped with more powerful tools and data

Ode to an Activity-Based Project Team

Once upon a time in Organizationland, not so long ago, there was heard a cry from the innermost sanctum, the Finance Executive.

"Bring us ABC," the voice said.

Now, this was quite a revelation, as you can imagine. Not surprisingly, mutterings were heard:

"What's ABC?" cried one.

"What's wrong with what we have?" cried another.

"Not before it's time," grumbled another.

So, a team of intrepid explorers set off to see what they could find.

Many gates were barred to them, by those fearing for their jobs.

Some had heard that this ABC thing identified what resources were used by work activities, and how much they cost.

Along the way, the explorers found a magic cross.

Finally the team met with the man who had dared to ask for ABC. He had a simple request. On a tablet of stone he had written down that the total costs for the products his organization made were between \$X and \$Y.

This information, he said, was not helpful enough to manage affairs. It may not even be accurate, he thought.

Fortunately, the finance and accounting functions were somewhat rebellious in their ways, unusual for their breed. They were open to new ways. They asked the explorers to build them information like what the magic cross instructed.

What was the purpose of this construction?

- It provided a first iteration prototype of activity-based costing.
- It was a proof of concept of the end-to-end activity-based costing design.
- It established initial cost assignment and driver methods.
- It determined the quality and availability of data.
- It allowed them to play with activity-based software.
- It quickly delivered results.
- It served as a basis for improved next iterations.

The explorers were bold. They received no rewards, just the honor of a good deed done.²

that are better structured. More powerful and administrative-intensive tools will be needed based on the nature of the decision requiring the cost forecast.

- **Managing demand:** Demand can be affected via two means: (1) rationalizing product or service line offerings and (2) influencing demand via pricing and non-price-related services. Rationalizing and repositioning products, service lines, channels, and customers is pure strategy. Assessing what is most and least profitable (and fixing problems in that sales mix) is one thing; what to push, what to abandon, and what new kinds of offerings to make or customers to serve is another. Increasing margins by influencing demand involves knowing customer preferences, price elasticity, and the impact of flexing and mixing service levels.
- **Managing capacity:** Managing profits is about the future, not the past. In the short-term, many costs behave as fixed; the existing capacity cannot be easily adjusted. Furthermore, a portion of the resources behaves as step-fixed because resources cannot be added or removed in continuous amounts; they come in lumps or quantum (e.g., another machine, another worker). Therefore, having the proper level of future available capacity, including skills and capabilities, will be central to earning higher profits. Minimizing unneeded, unused capacity will become an imperative. Knowing how costs behave prospectively will be essential to flexing the supply of an organization's resources in sync with expected demand.

The Taxonomy of Accounting

The figures discussed above (Figures 2.1–2.4) are similar to taxonomies that biologists use to understand plant and animal kingdoms. A taxonomy defines the components that make up of a body of knowledge. There is rarely a single way to document knowledge, and there are alternatives to these figures. But this framework attempts to put together the jigsaw puzzle that is currently confusing managers. When it comes to selecting a costing system, a blend is best.

DEPARTMENTS A AND B TRAINING EXERCISE

The fundamental concept behind how ABC/M assigns and traces cost is quite simple. The example in this section describes the basic “pump-and-valve” mechanism that is universal to any form of absorption costing, and to ABC/M in particular. Figure 2.5 illustrates the example. Figure 2.6 illustrates the ABC/M cost assignment methodology discussed in the exercise.

Facilitator: Imagine that you work in a small organization that has only three departments: one support department and two operating departments. The support department is the personnel function, commonly called the human

The process:

The human resources department locates and qualifies new employee candidates for all departments. Their \$100,000 in expenses for the period are allocated to the other departments based on department headcount (avg.). Explain how the allocated costs were calculated.

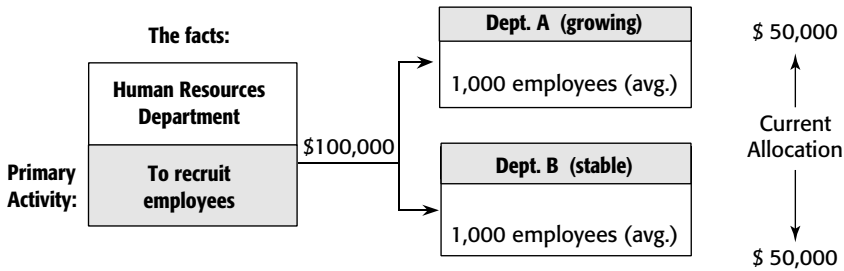


FIGURE 2.5 Departments A and B Cost Allocations

resources (HR) department. The other two departments are Department A and Department B—and pretend that YOU are the manager of Department B.

I am interested in what the charge-back costs of the HR department should be to your Department B. That is, what would your cost allocation from HR be given the following facts? Assume the HR activity for “recruiting new employees” is \$100,000 (they do other work activities, but we are focusing ONLY on this activity cost). Also assume the HR costs are allocated to the two departments based on last year’s average head count in both

The challenge:

Last year if Department A recruited 90 candidates and Department B only recruited 10, is headcount a “good” basis for the allocation? What are alternative allocations?

Assume each recruiting event was equal in duration and effort. If you traced HR’s “recruiting activity” costs in relative proportion to each department, wouldn’t you charge different amounts than \$50,000?

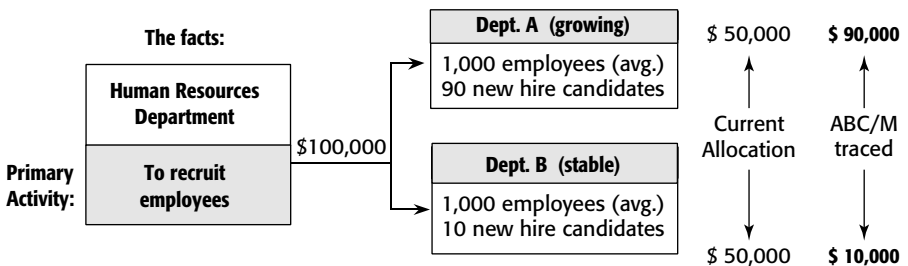


FIGURE 2.6 Departments A and B Cost Tracing via ABC/M

Departments A and B. If during last year Department A's average head count was 1,000 employees and Department B's, your department, was also 1,000, then what would the HR chargeback be to you in dollars? And this is not a trick question.

Team Member: \$50,000.

I have provided the obvious reply.

Facilitator: Correct. How did you calculate that?

If you are unclear why, revisit the earlier discussion about traditional methods of allocating overhead expenses. Understanding these basics will be critical to understanding ABC/M.

Team Member: I took the proportion of the headcount, 50/50, and concluded that my department gets the same proportion of cost as does Department A.

Facilitator: Now, can you or your colleagues describe to me a situation or condition in which you as the Department B manager are getting charged with the \$50,000 and you feel it is unfair to you? That is, you are getting the short end of the stick?

Team Member: Yes. If the other department is having most of the employee turnover (due to growth or departures), or conversely, if my department has minimal employee turnover.

Facilitator: Correct. Why then is the overhead expense allocation unfair to you?

Team Member: Because HR is doing much more of the work for Department A, not for my department.

Facilitator: Correct. And there are some important lessons here. First, costs measure and reflect much more of an effect than a cause. But what are costs, really? If I asked you to go outside the room and bring us all a couple of costs cupped in your hands, what would we see in your hands? What would we visualize as the costs?

The answer is that we can't see anything. You can't describe what is in your hands because costs are not tangible. Costs are abstract, like sonar or radar that gives you a good picture of the real thing but via another medium. The measuring of costs is similar to these imaging systems. Costs are a representation of something else. In this example, the demands on work from both Departments A and B, which specifically are the recruiting events, cause HR's recruiting work to happen. As a result, the costs flow as an effect.

Now let us say that last year Department A recruited 90 candidates and Department B, your department, recruited only 10.

Let us keep our example extremely simple and assume that each recruiting event is equal in duration and time. There is no variation by who is being recruited.

Then is the \$50,000 a good or fair allocation to you? Yes or no?

Team Member: No.

Facilitator: Why not?

Team Member: Because Department B is using much more of the time and effort of the employees in the HR function.

Facilitator: Absolutely correct. What would be a more fair chargeback to you, stated in dollars?

Team Member: \$10,000.

Facilitator: Correct. How did you compute that?

Team Member: I took 10 percent of the HR's cost.

Facilitator: Correct. You took your Department B's proportion of the total number of recruiting events, which is 10 out of the 100, where the 100 is made up of Department A's 90 and your 10. Then you multiplied that ratio times HR's \$100,000 of the work "recruiting employees." That was correct.

The ABC/M methodology will arrive at the exact same answer, but it requires an extra step to get there. However, it is really worth that extra step. Can you tell me what was the cost PER each individual recruiting event?

Team Member: \$1,000.

Facilitator: Correct. You took the \$100,000 and divided it by the 100 recruiting events provided for both Departments A and B. That \$1,000 per event is what ABC/M calls the "activity driver rate." We can next multiply that \$1,000 times our Department B's 10 recruiting events and arrive at the same answer, \$10,000.

The \$1,000 represents the *unit cost of the output of work*. It is very helpful for organizations to discover whether they know the unit costs of things they do.

It is really worth a lot for ABC/M to take that extra step to calculate the chargeback cost to you. This is because most ABC/M users, following their initial start-up, rarely use the data for historical control purposes. They mainly use the ABC/M data for either period-to-period trend analysis of the cost rates or predictive costing and planning purposes using extrapolations with those rates.

For example, let us say that *next* year your Department B expects to have 15 recruiting events and Department A will repeat last year's experience with their 90 recruiting events. What will the activity cost be next year for the HR function for the "recruit employees" activity?

Please keep your thinking simple for now and please do not yet introduce advanced concepts like step-functions, inflation rates, or unused capacity utilization. We're trying to learn the basics.

Team Member: \$105,000.

Facilitator: Correct. How did you compute that?

Team Member: I added the number of next year's recruiting events together (that is, 15 plus 90 to get 105) and multiplied the 105 total by the \$10,000 per event rate.

Facilitator: Correct. So note how the anticipated future demand on work in the form of 105 recruiting events flows into an estimation of costs. In effect, you are calculating ABC/M backward! After initially calibrating the ABC/M

model based on a historical time-slice and determining the activity driver rates, ABC/M can predict the future costs. ABC/M does this by substituting the estimated frequency, intensity, or quantity of the activity drivers from your forecast, then mathematically working backward to solve for the activity cost being consumed.

Here you may argue that despite an increase to 105 recruiting events, assuming that the company did not hire or terminate any employees in the HR function, the company's total costs remained constant and fixed. That is, there would be no change in costs.

This is not a paradox. Expenses and calculated costs are not the same thing. Expenses are the cash outlays paid to third parties or to employees as paychecks. It is money spent. Costs are always calculated. ABC/M immediately recognizes changes in consumption, but changes in spending always lag behind changes in consumption. Consumption and spending rates are not synonymous. In this case, either the HR employees will need to do less of something else, or they will work longer.

Let's reverse the case and now. Next year your Department B will have only 5 recruiting events. Now the HR activity cost will be \$95,000. Did the company save money? The answer is no. What will happen is that the HR function will have the equivalent of \$5,000 of freed-up and available idle capacity. If senior management chooses to remove that unused capacity by terminating the resource (i.e., laying off a person), only then will any expense savings be realized.

Why is this simple math so important? ABC/M really leverages the horsepower of all of the activity driver rates. Activity drivers act like a pump-and-valve. They meter out the source cost or expense in proportion to the "using" destinations (i.e., cost objects). In this example, we were focusing on only a single cost assignment. Typically in a complete ABC/M system, there might possibly be hundreds, perhaps thousands, of these pump-and-valve activity driver reassignments of costs or expenses.

In a less fictitious example there would be Departments from A to Z and perhaps beyond. Each department would receive cost allocations. Also, there would be two or more support functions, like HR in this example. And often the support departments perform work for other support departments in addition to the operating departments. Therefore support departments do work for each other! This may start to appear as if making any cost assignments might become an incredibly complex exercise. But it is really not. Two things simplify tracing ABC/M costs:

1. ABC/M software: Because ABC/M is basically a cost consumption network, commercial ABC/M software memorizes each relationship in the network. As long as each link is logically considered, the ABC/M software does the rest by properly flowing the costs.
2. The "Conservation of Money Law": ABC/M obeys a theorem similar to the "First Law of Thermodynamics" in physics, which is the conserva-

tion of energy law. One cannot create or destroy energy in a physical system. Similarly with ABC/M, one cannot create or destroy expenses in the cost assignment view. In our simple example, we did not trace the \$99,900 or \$100,100 of the \$100,000 of “recruiting employee” expense. It was exactly the \$100,000. It is a full absorption costing view. One does not create or destroy money when reassigning costs. (When analyzing and making decisions, one does not need to assume the inclusion of 100 percent of these costs, but the ABC/M model provides a complete and reliable starting position and framework from which to begin such an analysis.)

In summary, an ABC/M model will be a large network of cost driver assignments, each and everyone behaving just like the “cost per each recruiting event” in the HR department of our fictitious company.

EXPANDED ABC/M CROSS

Activity-Based Costing: The Most Practical Form of Absorption Costing

Figure 1.6 (page 15) displays both the traditional two-step allocation view and the process view of the ABC/M Cross. It captures a summary of the transactions that occur during a period of time. However, it does not display the volatile peaks and valleys when transactions, activities, or events occur within that time period. For example, it will not reveal that many of the expenses might have been booked in the last two weeks of the month.

The ABC/M Cross should be thought of as a template that can be adapted for various purposes. The model should not be thought of as a flowchart of an activity-based costing implementation plan or of business process. Figure 1.6 is meant to be a very basic diagram that allows the reader to gain an understanding of fundamental activity-based costing concepts and relationships.

The ABC/M Cross includes three modules—resources, activities, and cost objects—and two broadly labeled cost assignment methods—resources to activities and activities to cost objects. Due to the simplistic presentation of the ABC/M Cross, it appears as if there may be only a single and direct cost assignment between each of the three modules. In practice, there are multiple cost assignments unique to each driver and (2) intra-module cost assignments prior to the cost assignment exiting a module and entering the next one. The Cross also has two axes, the vertical cost assignment view and the horizontal process view.

The Vertical Cost Assignment View

The vertical axis of the ABC/M Cross deals with the cost assignment view, consisting of the three modules and two cost assignments. This view represents the calculation of the cost of cost objects (e.g., outputs, product lines, service lines, or customers). It is basically a “snapshot” view of the business conducted during a specific time period. In this sense, the cost assignment view can be seen as

the structure and rules by which cost assignment takes place for some specific time period. The time period may capture costs through the end of a month, a quarter, or any other period that may or may not coincide with an accounting reporting period. The cost assignment view reveals how resources and activities relate to cost objects. In short, ABC/M matches customers to resources.

Resources, at the top of the ABC/M Cross, are the capacity to perform work because they represent all the available means that work activities can draw on. Resources can be thought of as the organization's checkbook; this is where all the period's expenditures are summarized. Examples of resources are salaries, operating supplies, or electrical power. These are the period's cash outlays and amortized cash outlays, such as for depreciation, from a prior period. It is during this step that the applicable resource drivers are developed as the mechanism to convey resource costs to the activity.

We must now distinguish between "expenses" and "cost." All costs are calculated costs. It is important to recognize that assumptions are always involved in the conversion and translation of expenses into costs. The assumptions stipulate the basis for the calculation. Expenses occur at the point of acquisition with third parties, including employee wages. At that special moment, "value" does not fluctuate; it is permanently recorded as part of a legal exchange. From the expenses, all costs are calculated representations of how those expenses flow through work activities and into outputs of work.

In sum, resources are traced to work activities. It is during this step that the applicable resource drivers are developed as the mechanism to convey resource expenses into the activity costs.

A popular basis for tracing or assigning resource expenses is the time (e.g., number of minutes) that people or equipment spend performing activities. Note that the terms *tracing* or *assigning* are preferable to the term *allocation*. This is because many people associate the *allocation* with a redistribution of costs that have little to no correlation between source and destinations; hence to some organizations overhead cost allocations are felt to be arbitrary and are viewed cynically.

The activity module is where work is performed. It is where resources are converted into some type of output. The activity cost assignment step contains the structure to assign activity costs to cost objects (or to other activities), utilizing activity drivers as the mechanism to accomplish this assignment.

Cost objects, at the bottom of the ABC/M Cross, represent the broad variety of outputs and services where costs accumulate. They are the persons or things that benefit from incurring work activities. Examples of cost objects are products, service lines, distribution channels, customers, and outputs of internal processes. Cost objects can be thought of as the what or for whom work is done.

Once established, the vertical cost assignment view is useful in determining how the diversity and variation of things, such as different products or various types of customers, can be detected and translated into how they uniquely consume activity costs.

The Horizontal Process View

Activities also *belong* to processes. However, in contrast to the cost assignment view, the horizontal process view displays (in cost terms) the flowchart-like sequence of work activities that are aligned with the business processes over time. The horizontal axis is a process view of work. A process can be defined as two or more work activities, or a sequence of activities. This view facilitates the calculation of the cost of business processes where activity costs belong to a process.

As noted previously, events or other influences that cause work activities to be performed and fluctuate are formally called *cost drivers*. A cost driver, such as a sales or work order, is the trigger that causes the work activity to utilize resources to produce outputs. Activity costs are additive *along* the process and therefore can be accumulated into a total cost of performing the process.

The ABC/M process is also a “snapshot” of the same income statement period that reports what has been or is happening. The horizontal axis describes the sequential or time-based relationships of how individual activities relate to other work activities in a process, and not to cost objects. As mentioned in Chapter 1, this part of the ABC/M Cross reveals how activity costs are initiated by a high-order causal occurrence or event called a cost driver. The cost driver is the agent that causes the activity to exist and to utilize resources to accomplish some designated work. Each time a cost driver initiates work for the process, additional or new outputs will result. Realistic performance measures can then be established so that a tracking of activity results can be monitored and improvements made on a continuing basis.

In summary, the vertical cost assignment view explains *what specific things cost*, whereas the horizontal process view demonstrates *why things have a cost*, which provides insights into *what causes costs* and *how much processes cost*.

The ABC/M basic model displays in a simple fashion that the work activities at the intersection of the vertical and horizontal axes are integral to determining the cost of an organization’s processes as well as the cost of its cost objects. The activity at the intersection schematically represents an individual activity—a very local view. But, from a global perspective, the vertical (cost assignment) and horizontal (process) views may consist of many activities that are networked together based on their relationships to resources, cost objects, and other activities.

Expanding the Two-Stage ABC/M Cross Model

The ABC/M Cross depicts the key relationship between ABC/M and the management analysis tools that are needed to bring full realization of the benefits of ABC/M to the organization. Activity-based costing is a methodology that can yield significant information about cost drivers, activities, resources, cost objects, and performance measures. With data and information from activity-based

costing, an organization has the opportunity to improve the value of its products and services. ABC/M is data and information reflecting how the organization is consuming its resources, and then the data are used as an enabler for inferences and decision support.

The fundamental structure of the ABC/M Cross model appears to have withstood the test of time. But now it is showing some signs of old age, as I discuss later in the chapter. The two primary elements of today’s ABC/M applications continue to be:

- 1. The three cost modules and two cost assignments of the expanded cost assignment view.
- 2. The linking of sequential activities in the process view as processes and sub-processes.

The initial focus of early ABC/M applications was the determination of product costs through better segmentation of resource consumption. Subsequent applications in larger and more complex organizations reveal that ABC/M data have been applied to solve broader problems. For these solutions, the activity-based cost calculation usually required more than a simple so-called two-stage cost reassignment, as indicated by the cost assignment view of the ABC/M Cross. Figure 2.7 illustrates the expansion of the cost assignment network from a two-stage to a multistage network.

ABC is slightly more complex than what we have described up to this point. To segment resource consumption to reflect variety and diversity, ABC models expand somewhat.

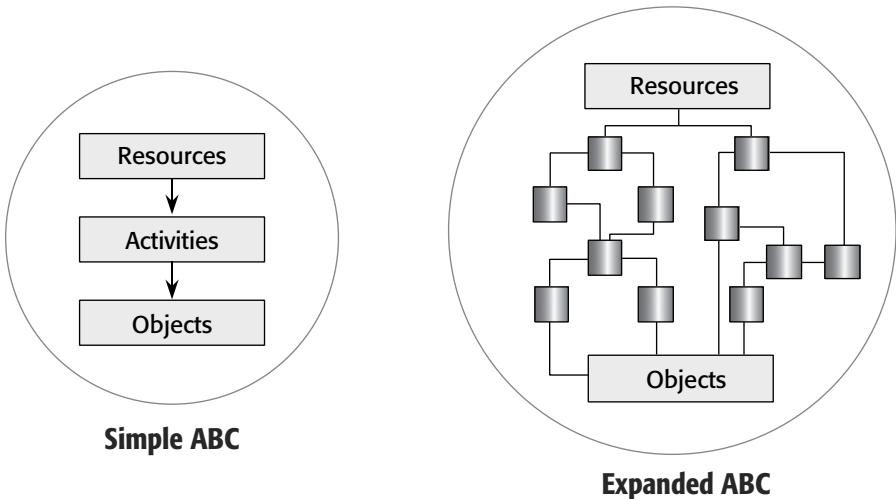


FIGURE 2.7 Multilevel Cost Flowing
Source: Gary Cokins, *Activity-Based Cost Management: Making It Work*, © 1996, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

The expanded ABC/M Cross includes *intermediate* stages of activities, that is, activity outputs that are inputs to successive work activities. Specific usage, not time-based sequence, is the dominant factor for determining this cost assignment structure. These *intermediate* inputs/outputs cannot easily be traced directly to final cost objects (i.e., products, service lines, types of channels, or customers) because there is no causal relationship. As a result, *intermediate* activities are two or more stages removed from a final cost object.

The need for multistage cost assignments, in contrast to the earlier use of a simplistic two-stage assignment, has arisen in part to assure accurate costing. A substantial and material amount of organizational work activity supports the more primary activities that are in closer proximity to products and customer services. Organizations often refer to this support-related work as overhead. These support-related activity costs raise the question, “How much of this activity is consumed by specific products or service lines?” It is virtually impossible to answer this question because the work is simply too indirect and remote from the products to detect or sense any connections. However, these support activities can be traced in proper proportions to other activities that require their work. Such support-related activity costs are eventually burdened into the primary activity costs. These intermediary activities support the work activities that do detect the variation and diversity of the products or service line.

Figure 2.8 illustrates in bare minimum terms the arterial structure of an ABC/M assignment network. It demonstrates full absorption costing where the

ABC as a total system in this example begins with \$70. It then reassigns and accumulates the costs into the final cost objects (outputs) without double-counting.

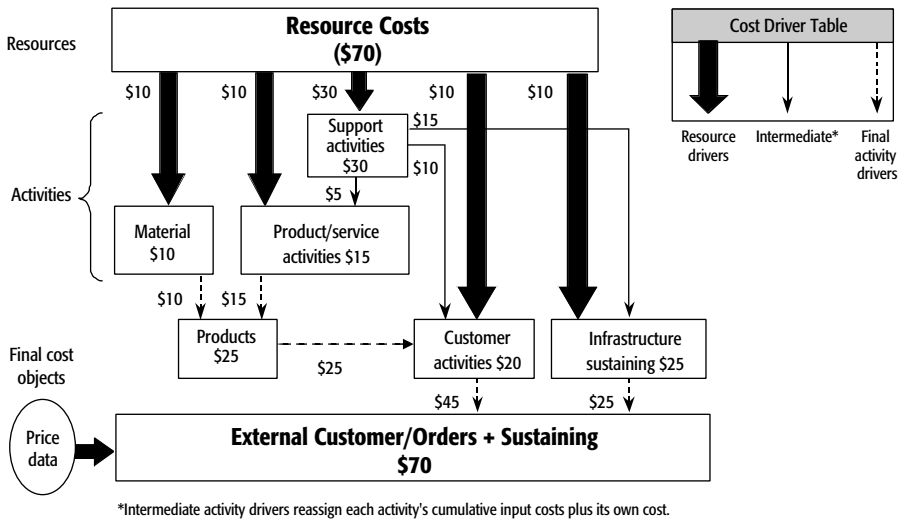


FIGURE 2.8 Multilevel Cost Flowing—The Math

\$70 of resource expenditures traces through the work activities and pile up into the final cost objects. Note that \$30 of support activities goes in three directions. These are of intermediate activities that are consumed by other activities.

Primary Versus Secondary Expenses: Responsibility Accounting

The use of intermediate cost assignments introduces opportunities to more fairly provide managers with responsibility and accountability. Note in Figure 2.8 how the box labeled “customer activities” has an expense assignment from resources (primary) and also receives a cost from the “support activities” (secondary). This distinction makes it easier for managers to plan their future expenses, costs, and budgets.

Primary expenses originate from and are incurred in an activity cost center. For example, a resource driver would assign the salary expenses of employees to it based on their time performing the activity. In contrast, secondary expenses originate elsewhere but can be traced as cost to where the primary expenses have arrived. Secondary expenses become costs to the primary activities, and their tracing is based on activity drivers.

Because the primary expenses are usually associated with resources, their consumption is closely tied to measures of capacity. Capacity only exists in a resource. The primary expenses for any future planned output can be estimated by considering non-varying expenses, such as for tools or uniforms, plus a proportional expense that varies linearly with the output level. The cost rate for the proportional cost can be established based on recent experience. The manager responsible for this activity has responsibility and control of these expenses. In contrast, the secondary expenses arrive as costs, and they come from a place where another manager is responsible for the resource capacity.

Secondary expenses are traced and charged using driver rate logic. Some refer to this as a chargeback or transfer cost. The manager of the primary activities has indirect influence on these expenses and no control or responsibility; that goes to other managers. Managers of the primary activities can control the quantity of the services consumed from secondary activities, but the cost rate is not in their control.

This separation allows the organization to hold different managers responsible for what they control. When under scrutiny of senior management, a manager will be held accountable for what he or she can control—primary expenses—plus usage of secondary (i.e., ABC/M’s intermediate activities) work. The manager will be less scrutinized for the cost rate of secondary expenses; that is someone else’s responsibility.

In summary, the ABC/M uses multiple stages to trace all the costs through a network of cost assignments to the final cost objects. Many activity cost relationships are in reality indirect with respect to the organization’s resources and final cost objects. As a consequence, the network-like structure of the expanded

ABC/M model cost assignment system exists because of the complexity in tracing the consumption of resource expenses to their *final* product or end-customer.

ABC/M Cost Assignment Network: A Key Blueprint

Figure 2.9 shows a generic expanded ABC/M Cost Assignment Network diagram. The main differences between this diagram and the ABC/M Cross in Figure 1.6 (page 15) are the presence of *intermediate* stages of activity-to-activity cost assignments, and cost-object-to-cost-object assignments.

It is helpful to imagine the cost assignment paths of the generic expanded ABC/M model in Figure 2.9 as pipes whose diameter reflects the amount of cost flowing. The power of the expanded ABC/M model is that the cost assignment paths and destinations provide *traceability* from beginning to end—from resource expenditures to each type of (or each specific) customer—the origin for all costs. It may be useful to mentally reverse all the arrowheads in Figure 2.9. This polar switch reveals that all costs originate with a demand-pull from customers—and the costs simply measure the effect.

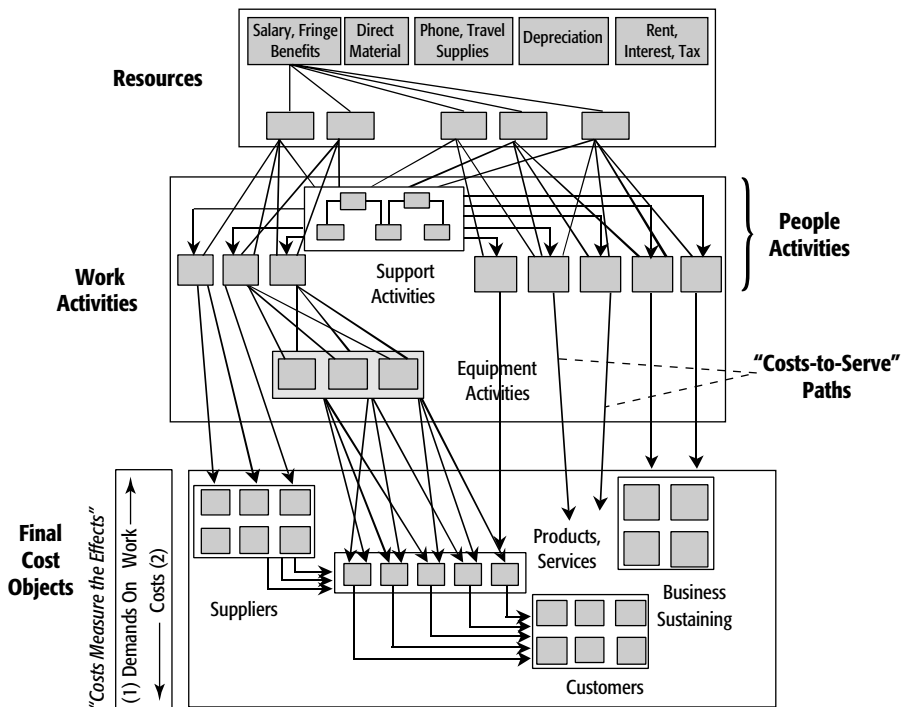


FIGURE 2.9 Cost Assignment Network

Reciprocal Costing Issues

The increased flexibility from having intermediate activity-to-activity assignments has met some resistance. Some people simply do not wish to make the extra effort and assume (if they are aware of it) that the error they are introducing will be immaterial. But there are others who believe in a reciprocal costing technique as an alternative.

In effect, the advocates of reciprocal costing are saying, “If my department is serving you, while at the same time your department is serving me, then we need *simultaneous* costing. Admittedly, this produces an infinite circular loop, but we can use linear programming techniques and computer horsepower to make the numbers come out right.”

The commercial ABC/M software products allow for the modeling of shared services costs. In addition, when these shared services costs are truly reciprocal in nature (i.e., “I do something for you, and you do something for me”), these software tools allow for that relationship to be modeled. The “reciprocal” nature of cost allocation involves three assumptions:

1. “I do things for you and you do things for me.” This means that both departments give and receive costs from each other. But the cost giving may not necessarily be exclusive, so other departments may be receiving the same type of cost from the sender. In many cases *reciprocity* is a less appropriate term; “shared service costing” may be more appropriate.
2. Cost modelers need to have traceability. Just because an organization wants to allocate costs to account for shared services does not mean that it should lose the ability to know where the costs came from.
3. Just as with a traditional profit and loss (P&L) statement, there should be a way to differentiate between direct and allocated expenses. Therefore, good commercial cost accounting software tools offer a modeling environment in which the allocated activity costs from another department can be separated from the direct resource expenses that have been consumed by an activity/department. Again, this allows for traceability.

There are “ABC/M purists” who debate the advocates of reciprocal costing about how to perform what on the surface appears to be a simultaneous cost assignment calculation. The ABC/M advocates support solutions that rely on activity-based thinking and principles. Their solution is to disaggregate the “giving or doing” activity and/or the “receiving” activity into two or more granular activities. This allows the Cost Assignment Network to trace costs at an activity-to-activity level where reciprocity no longer exists. In effect, the consumption properties are driven by diversity and variation of the cost objects. With this structure, the costs continue to flow in one direction.

Those who take a traditionalist approach to cost allocations prefer a mathematical multiple and iterative reallocations approach. With the horsepower of computers, accountants can calculate the circular reallocation loop for hundreds

of loops until the residual unallocated cost becomes nominal. This accomplishes assigning the costs but demolishes any understanding of causal relationships.

For some organizations, particularly in government, the computerized simultaneous equation is preferable to an ABC/M solution because the sources of the fund grants or accounts must legally be audited. The ABC/M solution introduces extreme flexibility to model the answer, but it does have a familiar debit-and-credit appearance that accountants are comfortable with. Commercial ABC/M software supports either solution.

Figure 2.9 also demonstrates how equipment activities are an example of an intermediate activity. Equipment-related activities are work activities, such as “make product” or “deliver the customer service line.” In capital equipment-intensive organizations, the equipment essentially performs the mainstream work that fulfills customer needs. Equipment-related activities usually require support activities to operate effectively. The equipment activity costs are usually assigned to cost objects using activity drivers that are based on

Units of time (e.g., per minute) or
Equivalent input or outputs (e.g., number of units produced), assuming that
the relative processing time per unit-of-output is roughly equal among
products or service-lines

Although some people are initially intimidated by Figure 2.9, it makes more sense the more you work with ABC/M. Also, the ABC/M Cost Assignment Network is related to an observation that has become known as Metcalf’s Law: “The value of a network increases as the number of nodes increases.”

My conclusion about ABC/M, which is reinforced in this book, is that the key to a good ABC/M system is the design and architecture of its Cost Assignment Network. The “nodes” are the sources and destinations through which all the expenses are reassigned into costs. Their configuration helps deliver the utility and value of the data for decision-making.

Tips on Identifying Activity Drivers

The ABC/M Cost Assignment Network is essentially the next-generation absorption costing system. It is much more flexible than the traditional step-down cost allocation schemes, yet it still accomplishes the goal of absorption costing: to calculate the costs of outputs.

Identifying and collecting data for activity drivers is an early challenge for ABC/M project teams. Regardless of which activity driver is selected, it is important to determine to which cost objects the activity’s cost should be traced. Figure 2.10 lists a series of “if-then” questions that address both the “what activity driver” and “to where.”

The question in the figure that is least understood deals with a situation in which there is no final cost object that can directly receive the activity costs. When this condition exists, the implication is that the activity cost must then go

Selecting and tracing activity drivers is much easier after high level final cost objects are defined.

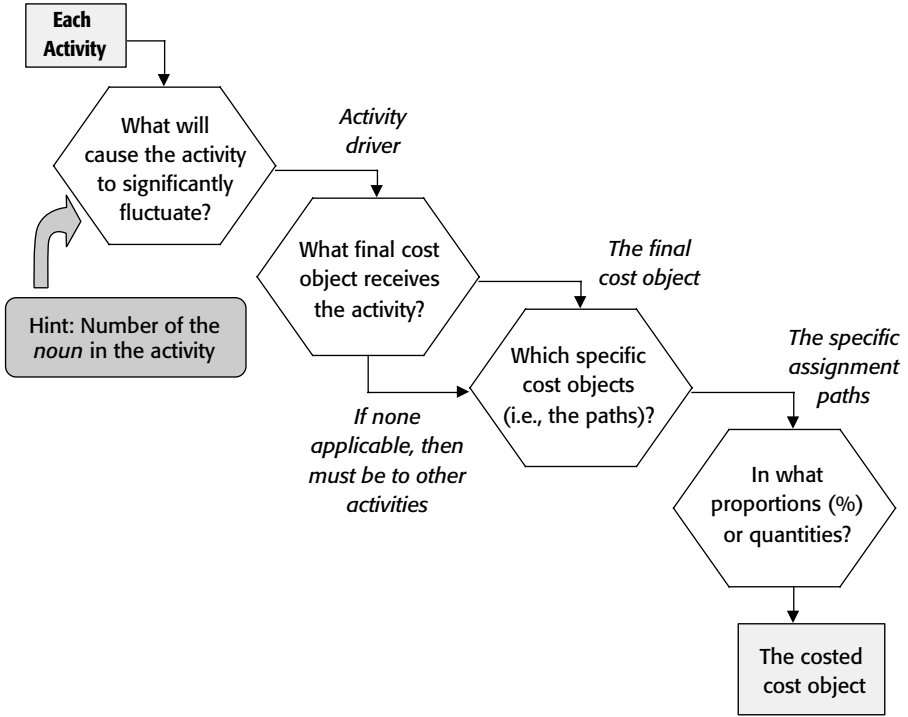


FIGURE 2.10 Assignment Rules for Activity Drivers

into *another* activity (or possibly be traced to a business-sustaining final cost object). In the figure, the answers to the early questions have a greater impact on accurate costing, but unfortunately ABC/M project teams devote a great deal of much energy to the last question, the actual driver quantity measures.

Some organizations are a little too zealous when it comes to selecting activity drivers. Following are guidelines for selecting drivers:

- Avoid activity drivers for immaterial amounts of activity costs (unless the activity cost is large to the cost object).
- Select drivers with a high correlation with changes in the activity.
- Restrain the number of drivers to a vital few to prevent reaching diminishing returns in extra accuracy.
- Choose drivers that encourage improvements in performance.
- Select activity drivers that are easy to measure; and avoid drivers that are not already being measured for other purposes.

The last tip is thought-provoking. The reasoning behind it is related to employee relations: You do not want the new ABC/M to gain a reputation for being

a source of more work. You want the benefits to exceed the costs, so keep the level of effort for using ABC/M low.

In the end, the accuracy of what ABC/M calculates as costs has more to do with the structure of the Cost Assignment Network than with the measures of its drivers. This is somewhat counterintuitive; it is explained in “ABC/M’s Achilles Heel” in this chapter.

ABC/M Is Based on VLBRs; What Are VLBRs?

In short, the ABC/M logic begins with the demands-on-work triggering the need for and magnitude of activities. With ABC/M the demands-on-work are communicated via activity drivers and their driver cost rates. Activity driver cost rates can be thought of as “very local burden rates” or VLBRs. They reassign expenses into costs with a more local, granular level than in traditional systems, and with arterial flow streams, not rigid step-down cost pools-to-pools. Cost behavior is initially determined at the level of work activities, then linked up to the resource level.

Some financial controllers and cost accountants believe that they have implemented ABC/M simply by dividing their existing standard cost system into a few more cost pools with a few additional factors for allocating costs. I call these hybrid ABC/M systems. It is true that assigning of costs moves in the right direction with such revisions, and it partially removes some of the cost distortion from what they had. But is it enough? Figure 2.11 illustrates that there is a critical-mass-like combustion point at which a robust, not necessarily detailed, ABC/M cost assignment structure brings the necessary accuracy, visibility, and understanding for users to draw insights and make better decisions with ABC/M.

Some organizations have revised their cost system design using processes, but the degree is not adequate to make a difference.

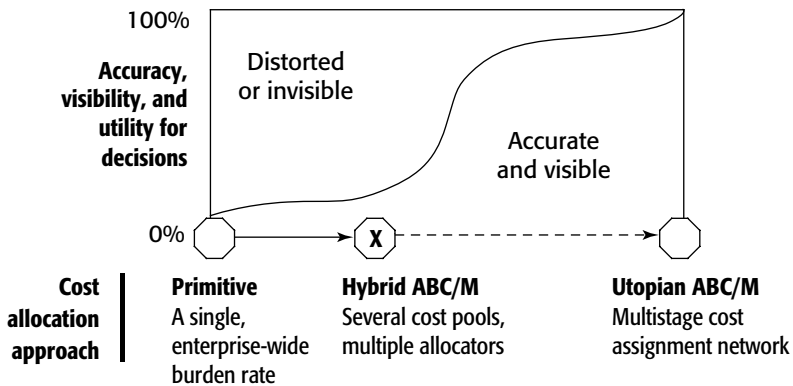


FIGURE 2.11 Hybrid ABC/M System Is Not Enough

Some implementers are intimidated by what appears to be excessive complexity in constructing and maintaining an ABC/M information system. They soon realize that one “hits the wall” trying to calculate ABC/M in spreadsheet software. This is because the racked and grid-like columns-to-rows math of a spreadsheet cannot be configured into a Cost Assignment Network. Fortunately, commercial ABC/M software, such as the Oros software from ABC Technologies, can take the conceptual paper-based model (as in Figure 2.9) and import all the input data to calculate the costs. The calculations from ABC/M software are robust, and they never double-count costs. They continuously foot-and-tie and maintain an audit trail, like an optical fiber network, that connects each output back to all its resource expenses.

One way to think of the ABC vertical assignment is as a network of internal supply value chains that are *locally* finding direct costing process outputs and then *globally* accumulating them—piling them up—into the end-products and services exchanged with third-party suppliers and customers.

In general terms, the cost of the work activities in the expanded ABC/M model’s cost assignment view is sensitive to the diversity relating to the mixes of widely varying outputs and cost objects. In contrast, activity costs in the ABC/M model’s horizontal process view focus on how the activities chronologically relate to each other as elements in a sequence and as an activity-network traversing organizational boundaries.

TEN ADVANCES IN ABC/M MODEL DESIGN AND THINKING

In the early 1990s business process reengineering (BPR), or business process transformation, became popular. Process reengineering meant a radical change in methods, often supported by information technologies. By extending the simple process view of the ABC/M Cross to a series of interrelated activities, ABC/M revealed that it could also support process-based thinking. This meant that ABC/M data were being used as an enabler to better manage operations. ABC/M is not simply a strategic tool. This section addresses the significant enhancements and advances in ABC/M system designs and ABC/M thinking since the 1990s that will be prevalent in the twenty-first century.

Businesses and not-for-profit organizations (e.g., governments) are discovering that traditional stove-piped functional department structures have become less valid as business and administrative processes are increasingly viewed as transcending departmental boundaries. The ABC/M Cross structure provides a reasonable approach for dealing with this situation, by combining activity-based costing and business-process management. Unfortunately many perceive ABC/M as merely a better cost accounting system and business process management as a fad. Some see ABC/M as simply a way to better view historical costs, not as information to realize upside potential for more revenues, profits, or greater budget funding. They see business process management as simply a 90-degree tilting of the organizational chart that will not necessarily solve the orga-

nization's problems. Although they both describe the similar effects of work activities, activity-based costing and business process thinking are initially approached in isolation from each other; however, each has the potential to leverage the other's strengths.

As businesses and governments flatten their organizational structure and strengthen their commitment to the interests of customers, effective business processes become critical to improved performance—if not also to survival. This helps achieve higher customer satisfaction. A business's processes are the integrating theme for an organization's work, and business processes are the vehicles that ultimately achieve value for customers. Managing business processes and their outputs requires understanding what these cost as well as knowing what value is perceived for them in the marketplace. That brings us to the reason that a more effective measurement of costs is becoming so important.

Although the methodology of ABC/M was written about and practiced as early as the late 1800s, ABC/M did not begin to receive attention and serious application until the early 1980s. By the late 1980s ABC/M had received enough attention to generate its first wave of business journal articles and seminars describing what it is and, for the bold, how to implement it in their organizations.

Since the late 1980s, much more has been learned about ABC/M through experience. Ten significant advances in ABC/M thinking that will become standard ABC/M practices in the twenty-first century include the following:

1. Evolution of the expenditure and cost assignment views
2. Transformation of general ledger data for decision support
3. Reaffirmation of the two views of costs
4. Development of a three-level ABC/M Cross through leveling and disaggregation
5. Time-phasing of activity-based costing into activity-based management for a process view
6. Business process visualization of costs
7. Integration of ABC/M data with strategy and measurement of performance
8. Emphasis on predictive costing
9. Identification and treatment of organizational sustaining costs
10. Shortened time interval between ABC/M recalculations

By applying these insights about ABC/M, organizations have been more successful in implementing their ABC/M systems and more effective in using their ABC/M information for decision support.

1. Evolution of the Cost Assignment View

This first advance has already been discussed because of its importance (in "The Expanded ABC/M Cross"). In summary, in the late 1980s activity-based costing was initially described as a two-step overhead cost allocation scheme to more accurately calculate how resources convert into product costs. Activity-based

costing cost assignment structures are now recognized to have multistage reassignments, not just two steps. There are activity-to-activity assignments for overhead and support costs, which cannot directly reflect variation from final cost objects, and there are also cost object-to-cost object assignments. An example of the latter assignment type is the cost to process a special order (versus a standard order) traced to a specific customer or a group of customers consuming a unique quantity and mix of products, services, or outputs.

The model in Figure 2.12 is analogous to Charles Darwin’s model for the evolution of the species. The left graphic is like a single-celled paramecium. The middle graphic is like reptiles, amphibians, and snakes. The right graphic is like humans beginning to walk upright.

The evolution of the vertical activity-based costing cost reassignment network starts with the simplistic allocations of the traditional accounting system, and it ends with a multistage network of costs flowing through activity-based costing’s three cost modules. This multistage arterial costing network is capable of detecting greater diversity and variation not only in product costs but also in all final cost objects, including different types of customers.

In Figure 2.12 the left graphic is primitive. It represents traditional accounting’s “cost allocation” method, which simply redistributes the source costs into destinations such as product costs without regard to logical causality. Many financial controllers still allocate costs this way. This method of allocating costs does not question whether any cause-and-effect correlation exists; it uses an allocation factor or basis that is often convenient, like the number of labor hours

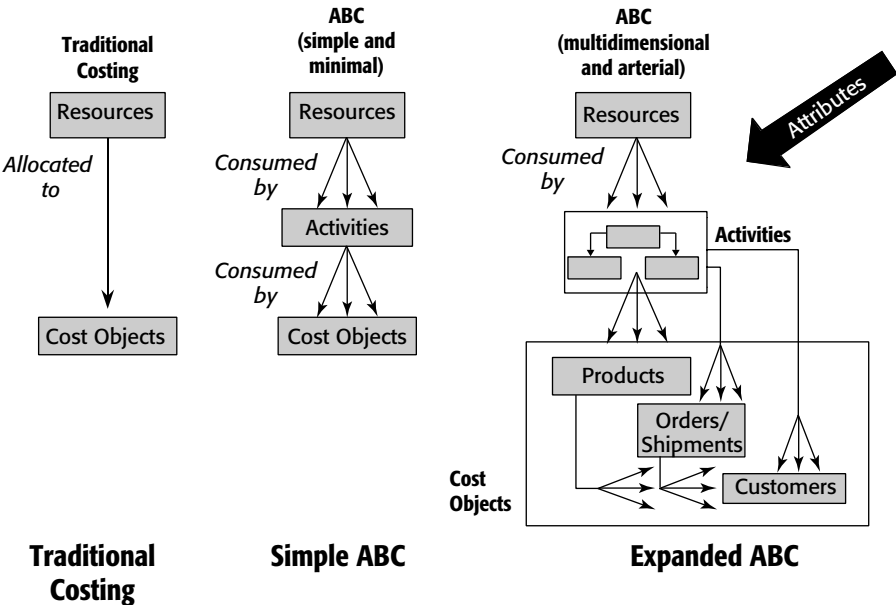


FIGURE 2.12 Darwin’s Evolution of Cost Accounting Methods

used or units produced. But without any causal relationship, there is an expected, undesirable error in calculating the costs of cost objects. The results are inaccurate costs. The financial controllers who continue to allocate costs this way are misleading their end-users with flawed data.

The middle graphic in Figure 2.12 represents the ABC/M Cross model, in which the expenditures for resources are assigned at the work activity level, not at a department level (i.e., using verb-adjective-noun grammar to define activities). At the work activity level, the amount of activity costs varies linearly with changes in the quantity of their activity driver. In the ABC/M Cross model, the use of multiple resource and activity drivers reflects the unique consumption relationship between resources, activities, and cost objects. As a result, with activity-based costing the calculated costs of the cost objects are more accurate. This is the minimum entry into activity-based costing, but it is too simplistic to be adequate.

The right-hand side of Figure 2.12 symbolizes the activity-based costing vertical cost assignment as a multistage Cost Assignment Network with an expanded structure that allows for intermediate activities and activity drivers and cost objects being traced into other cost objects. This graphic is labeled as the expanded ABC/M model to distinguish it from the obsolete two-stage ABC/M Cross model. Thus, the three modules of the ABC/M Cross model have now matured to become a multistage network of activities and objects. This Cost Assignment Network has the flexibility to link resources to their cost objects—and the tracing relies on cause-and-effect relationships. Hence, the complete Cost Assignment Network leads to much greater accuracy of cost object costs.

2. Transformation of General Ledger and Fund Accounting Data for Decision Support

ABC/M is now considered to be an analytical application by information technologists. By definition, analytical applications transform or draw on summary data from transaction-intensive operational systems. Analytical applications, such as ABC/M, are separate and apart from the transactional systems.

ABC/M's popularity is partly due to problems with using general ledger data for decision making. The general ledger's chart-of-account scheme is now recognized as being structurally deficient for cost analysis (other than for historical spending control against budget or fund account) because the account balances do not reflect the variability of costs with activities. ABC/M's chart of activities, a listing of work activities worded in verb-adjective-noun grammar, resolves that deficiency. Figure 2.13 illustrates that there are three levels of business computing software evolving. Number 2, the analytical applications, is where ABC/M and several other analytical tools reside.

The transaction and large volume software vendors, such as the enterprise resource planning (ERP) vendors, design and wire their software code for speed. As a result, their core competency has not been providing the middle summary level so critical to reporting and analysis.

The “data mining” analytical tools in the solution space extract data from transaction-intensive systems and deliver them to the reporting and viewing tools.

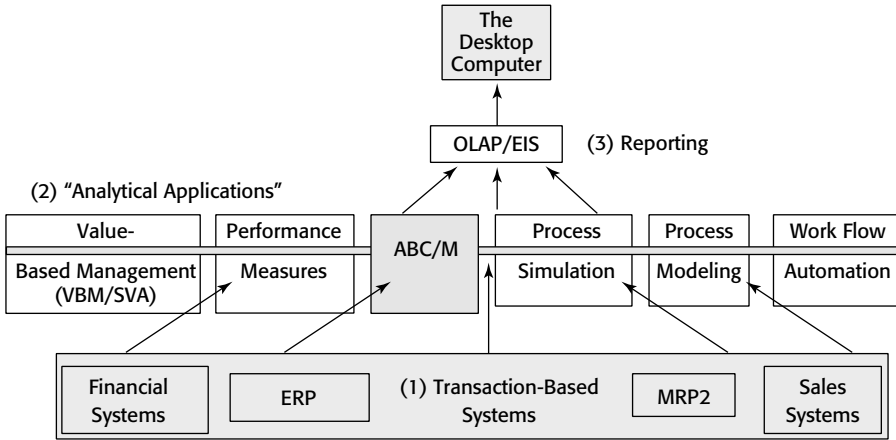


FIGURE 2.13 The Technology Landscape

The tools in the top level—the online analytical processing (OLAP) tools—are mainly viewing tools. The heavy lifting and data transformation is done with the analytical applications in the middle level. The OLAP tools provide the flexibility to display the data in multiple ways. The output of ABC/M is excellent input to OLAP tools. (These tools are discussed further in Chapter 7.)

3. Reaffirmation of the Two Views of Cost

This section is intended to assist ABC/M design teams to more correctly design their Cost Assignment Networks and process views at the outset—not later when the ABC/M system is large and making changes is difficult. Managers fail to recognize that system design will force certain behavior. To be clear, I am not referring to the project plan to implement ABC/M. I am referring to the design of the ABC/M Cost Assignment Network, its structure, and its cost elements.

Initial ABC/M system designs attempted to calculate both process and product costs (i.e., final cost objects, such as products) using a single system. In practice, two separate views are needed. The problem originated in the cost assignment view when the work activities for various business processes were first clustered as cost pools. Each process’ cost pool was then traced to cost objects using a single activity driver. This compromised the accuracy of the cost objects, because uniqueness exists at the activity level within each process (i.e., multiple activity drivers are required). In addition, improper aggregation of cost pools also resulted in incomplete or inaccurate calculations for the cost of the total business process. This is because business processes are a chain of activities.

The expanded ABC/M requires two separate cost assignment structures: (1) a horizontal process cost scheme governed by the time-sequence of activities that belong to the various processes, and (2) a vertical cost reassignment scheme governed by the variation and diversity of the cost objects. In effect, think of this as the ABC/M cost assignment view being *time-blind*. The ABC/M process costing view, at the activity stage, is output *mix-blind*. The cost assignment and business process costing are two different views of the same resource and activity costs.

The work activity costs at the intersection of the ABC/M Cross are shared and common to both views. As stated previously, activities belong to processes. These activity costs at the intersection are the starting point of their two alternative route network for flowing costs, one diversity-based and the other time-sequence-based. The activity costs are the *initial* translation of the general ledger expenditures that represent their resource consumption. After the work activities are costed from the resources via resource drivers, the activity costs may then either:

- Be added across time for the process view, or
- Be reassigned [R = A = FCO] with their eventual accumulation into the products, service lines, channels, or customers for the view of the mix of final cost objects.

Figures 2.14 and 2.15 illustrate these two views of activity costs. After the resource costs are assigned to and translated into activity costs, one may prefer to

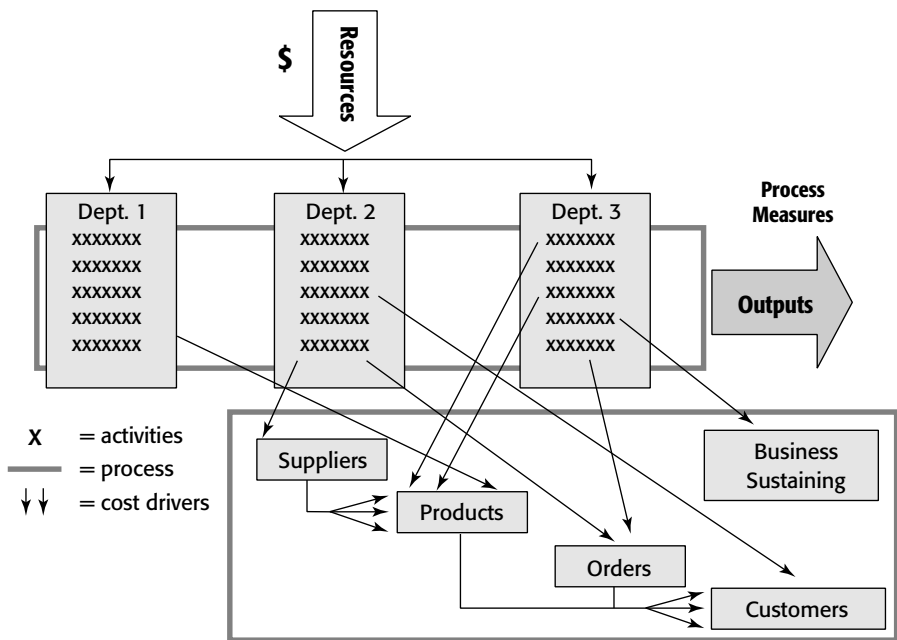


FIGURE 2.14 Cost Object View

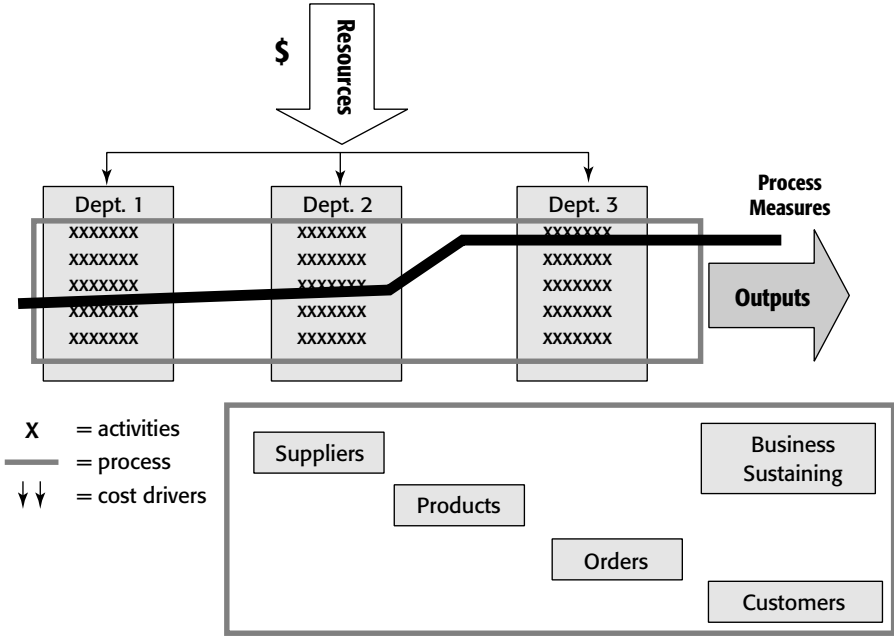


FIGURE 2.15 Cost Process View

think of the activity costs at the ABC/M Cross’s intersection as being on a pivot. In Figure 2.14 each activity cost is pivoted in the direction of diversity and variation; the activity costs are aimed at the cost object that is the originating source of that diversity. One way to think of the ABC/M vertical cost assignment view is that end-customers “place demands on work” in one direction, thus consuming the resources. Then the costs flow as a result (“costs measure the effect”) in the opposite direction. These relationships preserve the basic tenets of a full absorption costing system.

I noted previously that cost amounts flow from resources to activities to cost objects. Thus, activity-based costing’s vertical view is actually a cost reassignment system. The reassignment system is a “closed-cost system.” That is, the initial total resource costs remain as a constant amount of total cost as they eventually transition their way through both the vertical and horizontal views of an ABC/M model and accumulate into cost objects or sequence into process costs. No new resource costs are created by activity-based costing; no existing resource costs are destroyed by activity-based costing. Cost equivalence is maintained.

In Figure 2.15 the activity costs are pivoted in the direction of time, the ABC/M horizontal process view. Managers and employees generally find the ABC/M process view easier to understand because it aligns with time. Managers are comfortable with a flowchart view of their processes.

The expanded ABC/M model's vertical cost assignment view reveals how the segmenting of activities relates to the variation and diversity in the mix of products and services produced, type of distribution channel, and end-customers (i.e., the final cost objects). It has been said that to use ABC/M's vertical cost re-assignment view, "One must adjust one's thinking." You may now better appreciate why.

As a summary, in the ABC/M Cross, the total cost of the same activities going horizontally (i.e., total business process costs) and the total costs being assigned and causally traced vertically (i.e., total product, customer, receiver, or business infrastructure-sustaining costs; see "Identification and Treatment of Organizational Sustaining Costs" in this chapter) must equal each other.

$$\begin{array}{l} \sum (\text{Activities}) = (R = A = FCO) \\ \text{[horizontal view]} \quad \text{[vertical view]} \end{array}$$

Although the ABC/M Cross is intended to communicate this phenomenon, its simplicity often eludes this subtlety. This is because tracing and measuring costs to their cost objects involves a different combination of activities than chain-linking those same activities and their costs in time along business processes.

4. Development of a Three-Dimensional ABC/M Cross Through Leveling and Disaggregation

A question frequently asked by organizations implementing activity-based costing is, "How *many* activities should we include in our activity-based costing system?" There is no correct answer because the number of activities is dependent on the answer to several other questions, such as, "What problem are you trying to solve with the activity-based costing data?" In other words, the size, depth, granularity, and accuracy of an activity-based costing system are dependent variables, determined by other factors. The level of detail and accuracy of an activity-based costing system depends on what decisions the data will be used for.

One of the challenges ABC/M poses for implementation teams is determining the level of detail to build into the system, specifically, how many activities to use. More refinement usually leads to more activities and greater disaggregation of activities (i.e. levels, or depth) that in turn results in increasingly larger ABC/M systems despite accounting for a constant amount of expenditures. Greater size implies greater administrative effort but not necessarily more usefulness from the additional data. Thus, the ABC/M Cross can be displayed as layers that lie immediately below the single "box" for each of the three modules of the expanded ABC/M model. The "three-dimensional" view in Figure 2.16 shows the ABC/M Cross as having depth and layers of detail.

It is now known that the degree of ABC/M information detail, and its accuracy, depends on its uses (e.g., types of decisions to be made using activity-based costing data). High accuracy in the cost of cost objects is not automatically achieved with additional disaggregation (i.e., depth); in fact, it may hamper

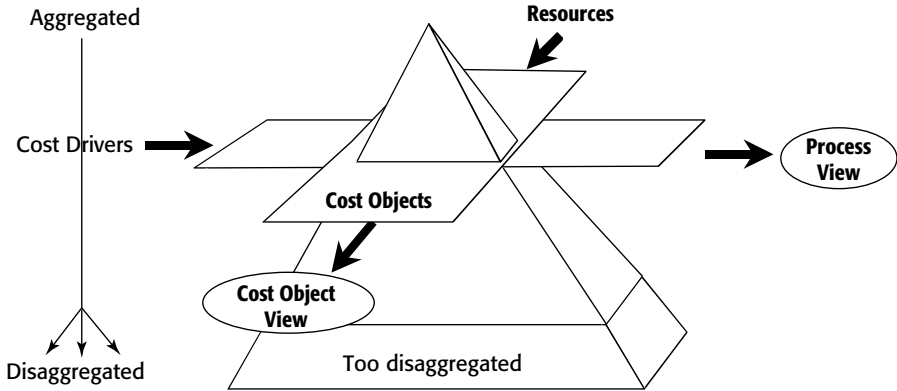


FIGURE 2.16 Leveling and Disaggregation Brings about a Three-Dimensional ABC/M Cross

sustaining an ABC/M system. Controlling the levels (i.e., depth) and size of an activity-based costing system is an important ABC/M system design decision that affects how easily an activity-based costing system can be maintained for updated reporting.

A well known and painful lesson about activity-based costing is that when a system implementation fails, it is often because the system was over-engineered in size and detail. The ABC/M system usually quickly reached diminishing returns in extra accuracy for incremental levels of effort, but this was not recognized by the ABC/M project team. The system was built so large in size that the administrative effort to collect the data and maintain the system was ultimately judged to be not worth the perceived benefits. These are “death by details” ABC/M projects; they are unsustainable.

The three-dimensional view is a logical extension of the ABC/M Cross. It can visually suggest that the dual cost-equivalence of the total cost assignment and process costs exists. The Cross can be displayed as layers that lie immediately below the single “boxes” for each of the expanded ABC/M model’s three cost modules. The view in Figure 2.16 reveals what the Cross looks like with depth and layers of detail. Not only are there always two or more specific resources, activities, and final cost objects, but any one of these can be decomposed (or disaggregated, as in an indented “bill of cost”).

Looking closely at Figure 2.16, the level of detail in the Cross’s pyramid for any one of the five “boxes” from the expanded ABC/M is displayed at a different level of depth. The level of detail for each module depends on the use of the data. (“ABC/M’s Achilles Heel: The Leveling Problem” in this chapter discusses that problem in the context of ABC/M model design and architecture.)

5. Time-Phasing of Activity-Based Costing into Activity-Based Management for a Process View

After an organization understands how the diversity and variation of its outputs creates its cost structure, the same activity costs can be oriented with the time-based horizontal process view. This facilitates “process analysis.” Figure 2.17 indicates that organizations should first perform cost assignments vertically to discover how diversity and variation in products, service lines, and customers relates to complexity and thus higher support costs. With that knowledge, they can next view the same activity costs in the context of the business process flowcharts.

With ABC/M’s cost assignment view, employee teams can first examine the work activity costs on a per-unit cost element of the output basis. Comparisons can be made between and among identical work activities and their costs, on a per-unit-of-work basis, as well as for different kinds of outputs. Some approaches that were practiced when the BPR movement was at its high point simply calculated a one-step allocation of the general ledger into activity costs—and stopped there. The activity costs were immediately applied as costs across the processes, but they were without the emotional charge from also seeing the unit costs of the variety and mix of the outputs from those same business processes.

Some organizations have business process flowcharts on their team meeting conference room walls, yet many of them have not committed to significantly

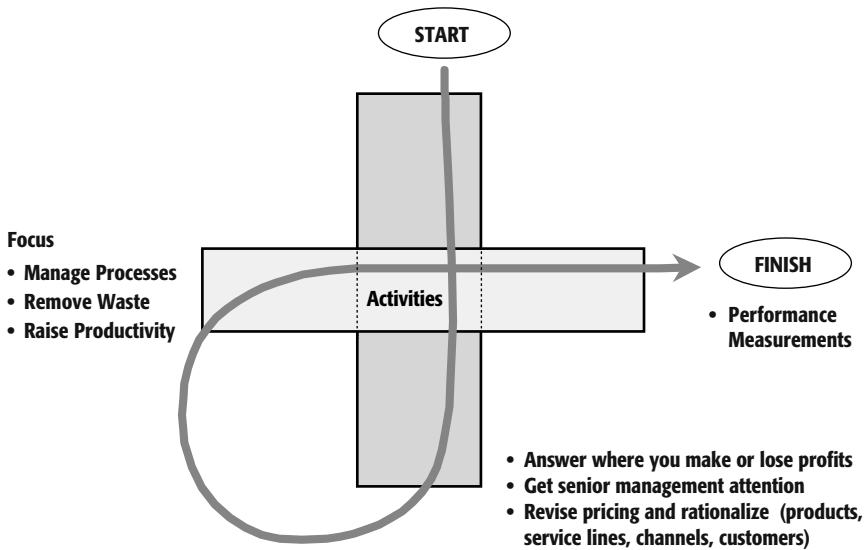


FIGURE 2.17 Time-Phasing ABC into ABM for a Process View to Manage

changing their processes. When ABC/M data reveal the true per-unit cost of each output, including intermediate outputs, “organizational shock” often sets in. Then genuine “root-cause analysis” problem solving begins. Fortunately ABC/M provides fact-based data at this point to assist the project teams.

After activity-based costing data have been analyzed, the project teams can dive deeper into the cost structure to better manage the organization’s activities and business processes.

6. Business Process Visualization of Costs: Vertical Assignment Thermal Heat Maps

The entire ABC/M vertical cost assignment network forms the logical activity-based costing paths to reassign the costs that are in reality governed by the diversity and variation of the cost objects. In contrast, the ABC/M horizontal view, depicted in Figure 2.18, sequences the work activities across business processes. ABC/M’s vertical cost assignment view is diversity-sensitive, where activities are individually traced without regard to their before-and-after-in-time neighbor activities. Again, in contrast, ABC/M’s horizontal process view is sequence-sensitive in time with activity costs additively accumulated across business processes.

As organizations flatten and employees acquire more skills and flexibility, the hierarchical structure of the general ledger’s expenses (i.e., collected by cost centers, then by expenditure accounts) restricts viewing of the cross-functional business processes. ABC/M’s process view provides this visibility. Combining ABC/M data (including ABC/M attribute scores and tags) with flowcharting software, including three-dimensional depictions, allows improvement teams to visualize their costs in the context of their processes.

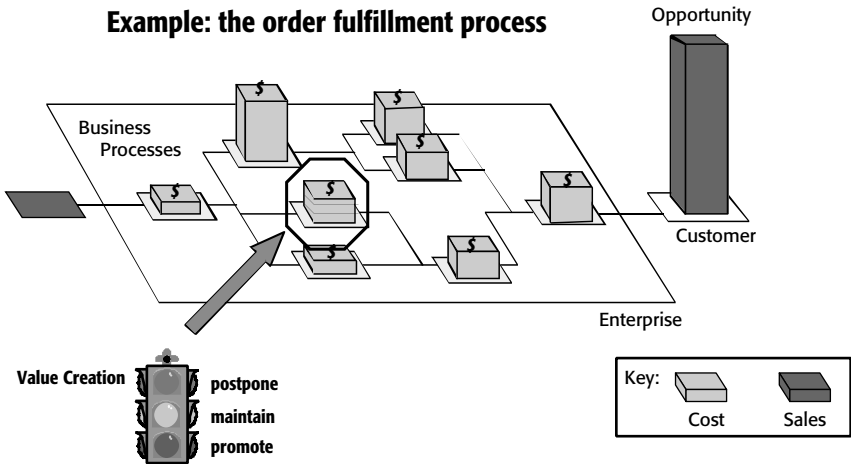


FIGURE 2.18 Business Process Visualization of Costs

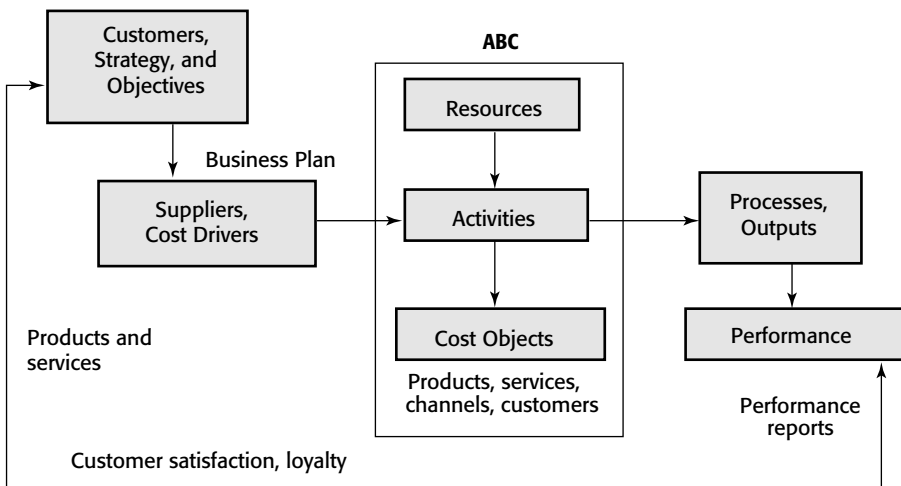
With the activity costs now sequentially aligned along their business processes, a variety of ABC/M techniques can be applied to further focus and seek out root causes of problems or special cases.

7. Integration of ABC/M Data with Strategy and Balanced Scorecard Performance Measures

The goal for ABC/M in the early 1990s was simply to calculate the cost of outputs (e.g., products, service lines, customers) and/or processes. Expanded ABC/M systems now integrate this information with broader management tasks of identifying and executing strategies (i.e., goal alignment) followed by measuring actual results against planned key performance indicators (KPIs). This helps quickly answer the question “how are we doing on what’s important?” for all levels of the organization.

One of the more important issues in ABC/M is convincing the organization to use the data. Figure 2.19 provides an extension and broader context for the use of ABC/M data. A predefined strategy in the figure is placed at the upper left and performance measures at the lower right. The strategy establishes the level of resources provided the organization, and the performance assists as the “dash-board” to monitor how well results are aligned with the strategy.

Figure 2.19 begins and ends with customers, but it ultimately describes how the creation or destruction of wealth is a result of the organization’s efforts. At the center of the model is the ABC/M Cross. The end game of the model is for the organization to continue to increase the financial wealth of its stakeholders.



Beyond the scope of the ABC/M Cross is a broader framework that includes defining strategy and measuring the alignment to it.

FIGURE 2.19 Integrating ABC/M Data with Strategy and Performance Measures

In life, the organizations that excel in learning win—but there is no finish line. (Figure 2.19 is discussed in more detail in Chapter 5.)

8. Emphasis on Predictive Costing and Budgeting

Traditional costing, including activity-based costing, takes a historical view of time and experience. It is akin to a cost autopsy. The management accountant basically strives to segment how past resource expenditures either directly trace or are fairly allocated to final cost objects. But all decisions, by definition, affect the future. The advanced and mature users of ABC/M data have moved on to applying their information for predictive planning purposes, budgeting, and evaluating what-if scenarios.

The majority of initial ABC/M systems were aimed at segmenting historical period expenses to assess how an organization expended its resources, and where. This provided insight, but its focus was mainly on what costs had already been incurred. Some commercial organizations applied ABC/M’s activity driver rates to quoting orders for customers—an early predictive use of ABC/M cost data. Now, with expanded ABC/M, organizations believe it is increasingly more important to test their decisions for the future than simply to understand their past. They are estimating and predicting future costs for a broader array of decisions, such as evaluating privatization and make-versus-purchase outsourcing decisions.

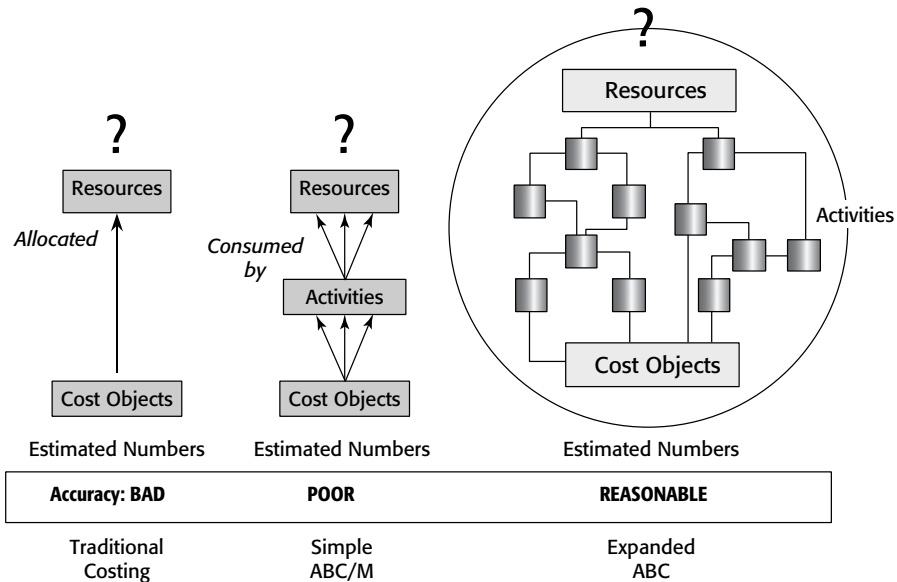


FIGURE 2.20 Emphasis on Predictive Costing

The most basic approach for these ABC/M practitioners has been to use the activity cost rates that have been “calibrated” in their existing ABC/M systems. They simply estimate the future quantities of the cost objects and multiply them by the cost rates to determine their projected costs and expenditures. Figure 2.20 illustrates how this “extrapolation” technique is somewhat like calculating activity-based costing in reverse.

Unfortunately, simply using historical cost rate experiences to predict future outcomes is problematic. There are many assumptions involved. For simple decisions, cost rates derived from the past can be extrapolated to the future and still provide good decisions. The estimated costs are based on the forecast quantities and volumes of products, service lines, and specific customer needs. These are directly applied to the cost rates determined from the past to the future volumes. This method is sort of a “backflush.” But some major implicit assumptions are being made with regard to the variable behavior of costs relative to changes in volume. These assumptions involve the resources, which come in discontinuous amounts (one cannot purchase one-third of a machine or hire one-fourth of an employee). Further, committed capacity is difficult to adjust short-term but more easily adjustable longer-term. Predictive ABC/M techniques are now in place to handle these nuances. These will make activity-based budgeting (ABB) the reality that was once expected when it was in the embryonic zero-based budgeting (ZBB) stage of talk but no practical action. (Chapter 8 discusses fresh thinking about ABB and how to estimate costs when the mix and volume of the forecast future outputs are substantially different from recent past experiences.)

9. Identification and Treatment of Organizational Sustaining Costs

Many activities in an organization do not directly contribute to customer value, responsiveness, and quality. That does not mean those activities can be eliminated or even reduced without doing harm to the business entity. For example, preparing required regulatory reports certainly does not add to the value of any cost object or to the satisfaction of the customer. However, that activity does have value to the organization because it enables it to function in a legal manner. These types of activity costs are usually traced to a “sustaining cost object” group. This separates these organizational sustaining costs as not being involved with making or delivering a product or serving a customer.

In early ABC/M cost assignment structures, activity-based costing teams conveniently allocated all support and general administrative expenses to activities or directly to final cost objects (e.g., products, service lines) despite a lack of cause-and-effect relationships. This overstates the true costs of those cost objects.

Figure 2.21 illustrates how some activity costs trace into business sustaining cost objects. The structure of expanded ABC/M systems leverages the use of sustaining activities traced to sustaining cost objects to segregate product and service-recipient related activity costs or to segment product or customer activity costs that cannot be identified as specific to unique products or customers. Also,

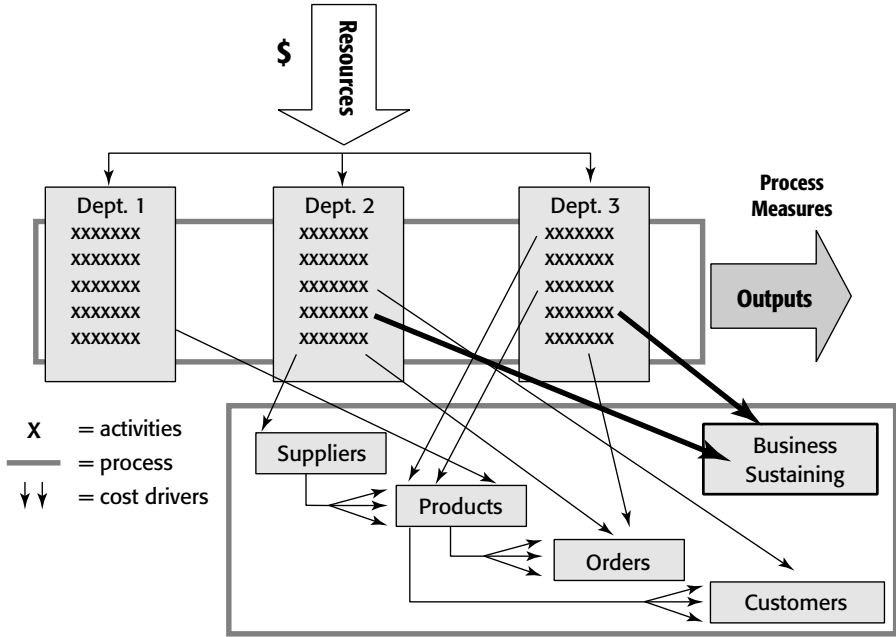


FIGURE 2.21 Identification and Treatment of Organizational Business Sustaining Costs

“sustaining costs” can be included or excluded in the final cost of cost objects depending on the nature of the decision to be made; that is, the assumption of applying full versus marginal cost absorption is decision-dependent.

Business or infrastructure sustaining costs are those costs *not* caused by products or customer service needs. The consumption of these costs cannot be logically traced to products, services, customers, or service recipients. One example is the accounting department closing of the books each month. How can one measure which product caused more or less of that work? One cannot.

Another example is lawn maintenance. Which customers or products cause the grass to grow? These kinds of activity cost cannot be directly charged to a customer, product, or service in any fair and equitable way; there is simply no “use-based” causality originating from the product or customer. (Yet overhead costs are routinely and unfairly “allocated” this way despite the result being misleading costs.) Recovering these costs via pricing or funding may eventually be required, but that is not the issue here; the issue is fairly charging cost objects when no causal relationship exists.

Refer back to Figure 2.9 to see where these types of costs are located in the activity-based costing Cost Assignment Network. Business sustaining costs (or organization sustaining for governments and not-for-profit organizations) can eventually be “fully absorbed” into products or customers, but such a cost allo-

cation is blatantly arbitrary. There simply is no cause-and-effect relationship between a business sustaining cost object and the other final cost objects. If and when these costs are assigned to final cost objects, organizations that do so often refer to them as a “management tax” representing a cost of doing business apart from the products and service lines.

Examples of final cost objects that comprise business sustaining cost objects include senior management (at individual levels, such as headquarters, corporate, division, and local) or government regulatory agencies (such as environmental, occupational safety, or tax authorities). In effect, these organizations via their policies and compliance requirements, or via their informal desires such as briefings or forecasts, place demands on work activities not caused by or generally attributable to specific products or customers.

Other categories of expenses that may be included as business sustaining costs are idle but available capacity costs or research and development (R&D). R&D costs might be optionally assigned into the business sustaining costs so that the timing of the recognition of expenses is reasonably matched with revenue recognition for sales of the products or service lines. Because activity-based costing is managerial accounting, not regulated financial reporting, strict rules of GAAP do not need to be followed; however, they can be borrowed.

10. Shortened Time Interval Between ABC/M Recalculations

In the early ABC/M period, many organizations recalculated their models only on an annual basis. As organizations lowered their administrative costs to refresh and update their systems, and as end-users requested more frequent reporting of more recent results, the frequency of calculating and reporting ABC/M data during a year substantially increased.

In the early 1990s relatively few organizations recalculated their ABC/M data more frequently than once a quarter, if even that often. Some simply recalculated their systems annually, similar to the standard cost setting habits of manufacturers.

Now ABC/M systems are often being recalculated monthly, in sync with the financial period-end accounting close. Not all the driver quantities are necessarily updated; those metrics from the prior period’s recalculation are simply reused if it is felt there was not a substantial shift in the driver distribution. (Activity-based costing driver assignments normalize to 100 percent, so it takes a substantial shift to adversely affect cost accuracy.)

Applying ABC/M: Not Just Calculating It

As widespread acceptance of ABC/M data emerges, it is apparent that there is a shift in the focus for implementing ABC/M—from excessive time wasted on designing and collecting data for the system to time spent anticipating the uses of the new data.

As organizations apply ABC/M data in more types of decisions, there will be broader recognition of the interdependencies that exist, which will promote more integration of data systems and processes. Cost data are rarely used in isolation. After an organization's strategy and mission are defined, the organization's core business processes take over as the mechanism that delivers value. Time, service level, quality, flexibility, and costs are all derivatives of a process and should rarely be viewed in isolation from one another. The need to better integrate cost data with the suite of metrics and performance improvement initiatives is growing.

Advanced and mature users of ABC/M will continue to grow in numbers and will demonstrate how ABC/M data are linked to the diverse yet interconnected aspects of managing for continuously better results.

ABC/M'S ACHILLES HEEL: THE LEVELING PROBLEM

In ABC/M, poor model design leads to poor results. When ABC/M systems fall short of their expectations, often the system was overdesigned in size and detail, well beyond diminishing returns in accuracy for extra increments of effort to collect and apply the data. The illusion that more detailed and granular data provide higher accuracy is part of the explanation for this behavior. But the other explanation for oversized ABC/M models is that at the outset of an ABC/M project it is nearly impossible to determine what levels of detail to go to.

There are so many interdependencies in an ABC/M model that, as a result, it presents a problem. It is almost impossible to perform one of the earlier worksteps of the traditional information technology (IT) function's systems development project plan, "data requirements definition." Why is this workstep so difficult to apply when designing an ABC/M system? Why do implementation teams fall into the trap of building excessively large models?

As discussed earlier in this chapter, ABC/M models often are initially over-engineered in size and detail. It would be easy to recommend following the keep-it-simple-stupid (KISS) rule for building ABC/M systems, but that rule is not applicable. ABC/M model designs are not simple, but they are logical. The key is to understand the properties of the Cost Assignment Network.

One of my ambitions is to take ABC/M from being a loose art form to a craft. It is true that all ABC/M models are stylized, and two separate ABC/M teams will design somewhat different models for the same organization based on their varying assumptions. But in the end ABC/M model design is a craft, and we should understand it as a craft. That is the purpose of this section.

Death by Details

One of the problems plaguing ABC/M is leveling. No one can ever know beforehand how large or detailed the ABC/M system should be. Unfortunately, in the absence of any guidance, the ABC/M project team's initial design of the

ABC/M system tends to err on the side of too much detail, and this invariably spells trouble. Revisit Figure 2.16, which depicts a three-dimensional view of the ABC/M Cross. The added dimension, the depth of the three ABC/M modules, is where the leveling problem lies. Overdesigned ABC/M systems, which are too deep relative to their intended use, are noted at the bottom of the pyramid.

One solution to finding a reasonable level of detail for the ABC/M system is to work backward with the end in mind, as opposed to assuming in advance how detailed and accurate the ABC/M data must be. However, there is a double-meaning in the phrase “working backward with the end in mind”; it does not only mean considering the business problem to be solved, such as attempting to measure and understand customer profit levels. It also literally means knowing the key characteristics about the final cost objects—those items targeted by ABC/M to be costed by assigning to them the actual costs consumed from their work activities.

Using an analogy, by knowing in advance the thickness of a glass sheet, one can sense how hard one must strike it to break it. The glass determines the effort. This analogy applies to sizing the number of activities with ABC/M, taking the breadth of diversity of the cost objects for the thickness of the glass in the analogy. We need to explore the meaning of *diversity* and why it is so important to ABC/M model design and architecture. We will discover that diversity, variety, and variation of cost objects govern the size and depth of ABC/M systems.

In conventional IT systems development, one of the initial project work-steps is the data requirements definition phase. Although that phase may be appropriate for developing a typical information system, such as an invoice and billing system, in ABC/M it is very difficult, perhaps nearly impossible, to pre-define the system because there are too many interacting variables, including the work activities, their drivers, and all of their outputs to be costed. In contrast to conventional systems development, defining and developing ABC/M systems is more effectively accomplished using Rapid Prototyping, a technique in which the information system is quickly mapped and then constantly and iteratively adjusted to meet the users' requirements. Similar to a military ballistic cannon crew, who repeatedly shoot and re-aim to get closer to their target rather than try to aim precisely once, ABC/M Rapid Prototyping achieves quicker results than trying to get it perfect from the outset. (Chapter 9 discusses ABC/M Rapid Prototyping.)

ABC/M Rapid Prototyping works because ABC/M models are scaleable. The implication is that one can quickly initially build a model with activities and product or customer families at a more aggregated level. The input data can originate from estimates provided by a few knowledgeable employees rather than from transaction-based databases. The results will yield a good first cut.

Given this first-cut ABC/M model, it is substantially easier to iteratively modify and adjust the level of detail of the successive ABC/M models based on relevance to the uses of the data and the accuracy requirements of those uses. Each prior model can be examined to determine where it is more or less sensitive

to error. In short, ABC/M Rapid Prototyping is a highly managed “trial and error” technique. This quick alternative for implementing ABC/M works largely because of the ABC/M model design principles discussed in the next section.

Solving the ABC/M Leveling Problem

The ABC/M leveling problem can be solved not just through trial and error but also through better thinking. As the designers construct their ABC/M information system, they usually suffer from a terrible case of lack of depth-perception. There is no perspective from which they can judge how high or low or summarized or detailed they are. Because the implementation of ABC/M systems is usually influenced by accountants, human nature is one of a “lowest denominator mentality.” Accountants usually assume a detailed and comprehensive level of data collection based on the premise that if you collect a great amount of detail everywhere, and from everybody, and about everything they do, you can then always “roll it up” and summarize anywhere. This is a “just in case” approach in anticipation of any future remote questions. As a result, ABC/M models tend to become excessively large. Ultimately they may become unmaintainable and not sustainable. Eventually the ABC/M system does not appear to be worth the effort.

This outcome is unfortunate because ABC/M systems do not need to be excessively detailed to be useful for decision making. What is not well understood is that ABC/M systems are scaleable in detail without much distortion. (Scientists call this expansion property “re-normalizable.”) This is very important because it means that with ABC/M you will see the same things that you can from a 50,000-foot view, only with better resolution, from a 20,000-foot view. The elements and components of an ABC/M system can be continuously subdivided and decomposed, yet all costs will remain reasonably constant in their proportions relative to each other for a given time period.

I am not criticizing or attacking accountants. Years of training reinforce their high need for precision.

Diminishing Returns in Improved Accuracy

When people who are first exposed to ABC/M hear the phrase, “It is better to be approximately correct than precisely inaccurate,” they smile because they know exactly what that means in their organization. But they usually do not know what causes ABC/M to produce substantially better accuracy relative to their existing legacy cost system despite its abundant use of estimates and approximations. To design effective ABC/M systems, it is crucial to understand why, how, and where an ABC/M model can produce greater or lesser cost accuracy. Knowing ABC/M model properties is important because a reasonable level of accuracy of product and other types of costs can be economically achieved simply with good ABC/M model design and less reliance on having perfect input data. This seems impossible, and certainly counterintuitive, but it’s true.

Just as chiropractors do, ABC/M designers benefit from knowing where the error-sensitive pressure points are. That is, it is helpful to know roughly where an ABC/M model is more or less sensitive to error. The error and accuracy of costs are not evenly or consistently affected throughout an ABC/M Cost Assignment Network.

With ABC/M, imprecise inputs do not automatically result in inaccurate outputs. That is, precision is not synonymous with accuracy. In ABC/M's cost assignment view, estimating error does not compound, it dampens out. After all, what is the real consequence of error when reassigning a source cost to its cost objects? The result is that some destination cost objects may be over-costed while the remainder must be under-costed. Cost allocations are a zero-sum-error game, and in the end 100 percent of the source costs are always completely assigned for each and every source assignment, no more and no less. To an enterprise-wide ABC/M system, this means that ABC/M is a closed system. The total resource costs *must* equal the total activity costs, which in turn *must* equal the total final cost object costs. (As previously stated, final cost objects are defined as the end-destination or output of an activity cost.)

Figure 2.22 shows a simple $3 \times 4 \times 3$ cost assignment (i.e., three types of resource costs that produce four activities and are used by three products). The dispersion of estimating error for determining any single activity cost may be unacceptable in isolation. However, as multiples of different activity costs pile up

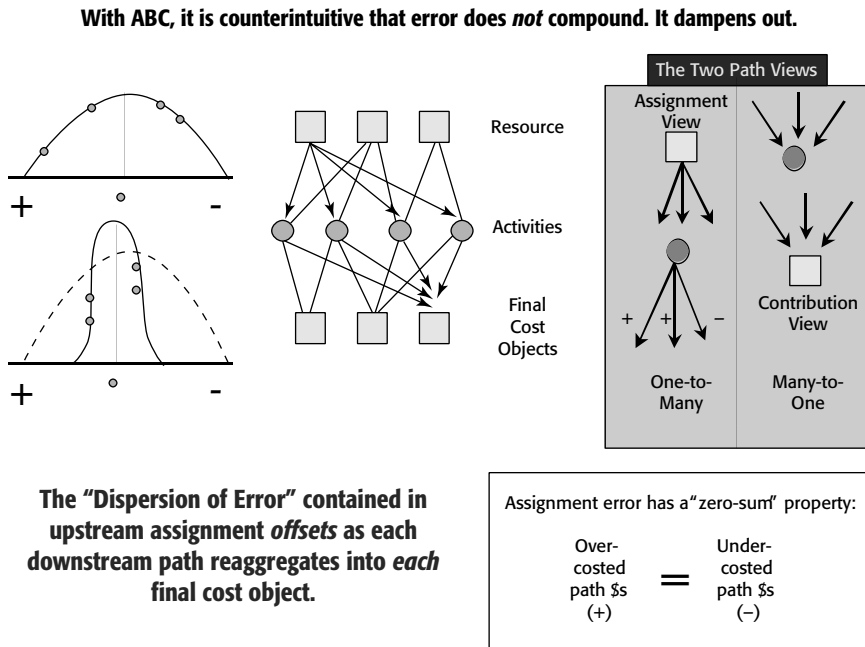


FIGURE 2.22 ABC Error Has "Offsetting" Properties

into a single product's cost, any estimating error begins to offset itself. As a result, the dispersion of error contracts for each individual product. Consequently, the cost error level (relative to perfection) is reduced to potentially well within the comfort level of any decision maker who may use the data.

How does the estimating and data collection error dampen out? With ABC/M, the recorded general ledger expenses (which start out being error free) are first segmented and traced to their activity costs. These activity costs are then further traced proportionately to reflect the diversity of the consumption effect that each of their cost objects (e.g., products) is placing in the form of demands on the activities. That is, *all* the activity costs are reassigned back into the cost objects consuming the activity costs after the activities have been segmented. Each activity's assignment to all of its cost objects may incur some modest error. But from the cost contribution point of view for an individual destination cost object (e.g., an output, product, standard service line, or customer), the costs are accurate. All the cost assignments are aimed at the individual cost object as if the cost object is a bull's-eye target; some of the assignment errors will be plus and some will be minus. But collectively the accuracy of the cost objects' assigned costs will be fairly reasonable.

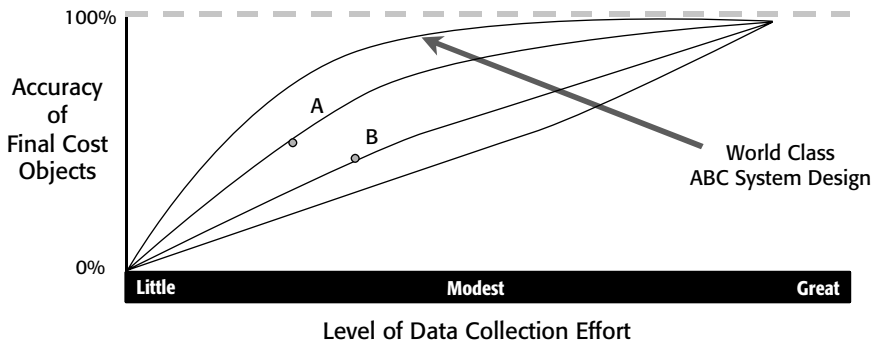
As the activity costs recombine back into each cost object, any earlier and upstream error tends to offset and partially cancels out. In effect, the "law of offsetting errors" has kicked in. Any upstream estimating error that produces the under- or over-costing has a canceling effect; hence error dampens out. These are properties of statistics found in equilibrium networks (i.e., the amount of costs remains constant). And ABC/M is a cost reassignment network, as illustrated in Figure 2.9, much more than it is an accounting system.

This property of a Cost Assignment Network is very relevant to ABC/M. By understanding this property, the excessive administrative effort to collect and report worker timesheet data can be tremendously reduced and the data collection will be much less invasive for employees. Generally employees do not enjoy completing daily or weekly timesheets. In ABC/M, if the "vital few" employees estimate on behalf of all the employees, the cost objects may not be materially different than had everyone completed the timesheets. If a portion of that saving is applied to better tracing of the activity-to-cost objects, the entire ABC/M model becomes more accurate with much less overall effort.

Effective Right-Sizing of the ABC/M System

Figure 2.23 shows several curves that all have the same destination: 100 percent perfectly accurate cost results, where the accuracy level is represented by the vertical axis. The horizontal axis represents "the level of effort." As explained previously, for each incremental level of effort to collect more and better data, there is proportionately less improvement in accuracy. So the phrase, "Is the climb worth the view?" is truly applicable to ABC/M. Figure 2.23 also draws attention to efficient and inefficient performance levels exhibited by ABC/M project teams to find

When the goal of the initial ABC system is profitability reporting, more poorly designed and misleveled ABC systems will yield less accuracy despite greater effort!



ABC Project Team A is achieving higher accuracy with much less effort than ABC Project Team B.

FIGURE 2.23 Balancing Levels of Accuracy with Effort

the right combination of accuracy and ABC/M administrative effort. There will always be a balanced trade-off of more data for higher accuracy. But an appropriate question being raised here is, “Which data, and what is the effort to collect that particular information?”

Unfortunately, most ABC/M project teams perform too far to the right on Figure 2.23 and usually on a much lower “frontier curve.” That is, their intersection of both axes in the figure means they have put in a much greater effort than was needed and they received less accuracy in costing than they could have achieved if they had been more clever. The challenge for today’s ABC/M teams is to determine how to right-size their ABC/M models, and do so economically. Few organizations can afford excesses. Excess ABC/M model structure—such as number of activities and drivers—saps the strength of ABC/M in the initial stages.

Determinants of Accuracy

What is missing in most ABC/M implementations is a good understanding of what factors actually determine the accuracy of the ABC/M-calculated outputs. Whenever there is uncertainty, it is human nature to collect more than what may be needed. But in ABC/M the producers of information must take into account the accuracy requirements of the users of the data. Accountants and engineers tend to be driven by a desire for precision. However, there are trade-offs among accuracy, relevance, and effort.

Six determinants help properly level and improve the accuracy of an ABC/M model's results, and their impact is roughly in the following order ranked by decreasing impact on achieving higher cost accuracy:

1. The breadth of diversity, variety, and variation of the final cost objects.
2. The level of disaggregation of the activities (this is where cost materiality is considered).
3. The assignment relationship between the source cost and its destination cost objects (i.e., which objects are consuming).
4. The correlation of the activity driver to its activity (how linearly variable it is).
5. The accuracy of both the resource and the activity driver quantities.
6. The accuracy of the ledger expense data (which are usually error free).

Ironically most ABC/M project teams start constructing their ABC/M model at the wrong end of the Cost Assignment Network. They like to begin with information that they already know and are comfortable with: the expenses that have already been accumulated in their accounting ledgers. By starting with these expenses as a source (i.e., in the resource module of ABC/M), the ABC/M project teams initially define and compute the costs of activities. Although work activities are the main players of ABC/M and are central to what an organization does, a highly desirable objective is to construct an ABC/M system of the right size. (I wear a size 40 suit, but I do not buy a size 42 or 44 suit so that I can get more for my money.) There is a better and more pressure-sensitive place to begin determining the ABC/M model design.

Although it is not obvious at first glance, ABC/M models are extremely sensitive to the diversity and variation of the eventual destination of costs: the final cost objects. An ABC/M project team should begin understanding its "leveling" requirements at the final cost object, not at the resources located at the opposite end of the ABC/M network. Accountants may be more comfortable with the ledger costs that they are already familiar with, but traditional cost ledgers simply give the accountant a perfect view of where the organization has already recorded expense data. They are looking at the wrong end of where and how costs flow. The idea is to understand the costs of outputs as seen through the costs of work activities. Costs originate with final cost objects that place demands on work activities of people and equipment.

Following is a discussion of the six determinants of ABC/M accuracy, ranked by decreasing impact on achieving higher cost accuracy.

Breadth of Diversity, Variety, and Variation of Final Cost Objects

The final cost objects are the least understood part of an ABC/M system, but they are probably the most important of the three ABC/M modules. The final cost object module that houses the final cost objects consists of (1) the final cost objects themselves and (2) the interrelationships among the final cost objects. (Final cost objects are defined as the end-point destination of the consumption of activity costs.)

Refer back to Figure 2.9, which displays the ABC/M assignment network. The bottom module, the final cost object module, reveals the “predator food chain.” For any organization, there will always be an “end-customer” that ultimately consumes everything produced. It can usually be said that these customers are the reason the activity cost structure exists in the first place. This “end-customer” cost object is referred to as the *final-final cost object*. Most of the items that this “end-customer” consumes are themselves also consumers of work activities, and these upstream cost objects of the customer are referred to as *final cost objects*. (A way to think of final cost objects is that they are the end-of-the-line for activity cost reassignments.) The remaining “customer” costs, not consumed from final cost objects, are referred to as “*costs-to-serve*,” and they are directly caused by the customer’s behavior, such as “placing orders.”

In ABC/M, it is critical to initially identify the final-final cost object. This element in an ABC/M model design becomes the ultimate destination for costs and is mainly why the entire cost structure exists in the first place. After 100 percent of the activity costs have been fully assigned into final cost objects, these end-customers (i.e., the final-final cost objects) consume various mixes of all the final cost objects that are upstream from them. Many ABC/M project teams do not even have a name for the driver assignments that come after all the activity costs have been 100 percent assigned. They are properly called *cost-object cost drivers*. The sales register’s quantities of items purchased is a good example of a cost-object cost driver: Customers consume various mix quantities of products and service lines, for each of which ABC/M has already calculated the cost.

The critical leveling factors are:

- **Identifying the final cost objects** (i.e., the members of the “predator food chain”). As in the prior examples, these tend to cluster naturally by examining “who” the work activities are serving.
- **The magnitude of the range of diversity and variation of the per-unit costs of the final cost objects.** For example, if the breadth of variation for a final cost object has a fairly narrow range of cost diversity (as it places demands on work activities), then there is less need to squeeze out differentiated costs for that final cost object. This means it will not be worth much in gaining greater accuracy to spend a great deal of effort considering the remaining determinants of accuracy, which follow for *that* final cost object. The additional benefits would only be marginal. Therefore, simply calculate some reasonable per-unit costs for each type of this final cost object. Conversely, if a final cost object has a broad range of variation, it is possible that even relatively lower activity spending could have a large impact on a relatively lower-volume final cost object. For these cases, invest more effort.

During ABC/M Rapid Prototyping one of the best techniques for deriving accuracy sensitivity is to define “profiles” of the cost objects that are at polar extremes. There is a method to quickly profile final cost object groupings to pre-segment based on diversity and variation. This assures that the activity costs

will more easily assign only to the specific consuming cost objects. (The technique for defining “cost object profiles” is discussed further in Chapter 9.)

At the lowest possible level in the final cost object module, the individual cost objects themselves, this profiling technique is ultimately displaced by the real thing: each cost object. Profiling is useful for defining the right drivers and correct level of activities before the ABC/M model becomes too large, which would make it more difficult to change.

Level of Disaggregation of Activities

This property is why ABC/M originally became popular. It led to the rise in ABC/M. Traditional costing (and its simplistic cost allocation methods) conventionally allocates support department overhead costs either to other departments (i.e., using the department-to-department step-down allocation method) or directly to products or service lines. These allocations are usually too aggregated.

Over the years, the broadening diversity of products and service lines has required that, to improve costing accuracy, the work performed *within* departments must first be individually identified, then each work activity must be traced to its destination cost objects. The result from this superior cost allocation method is that each final cost object’s accuracy improves significantly. Hence, we realize the value of ABC/M.

Figure 2.24 contrasts a single activity cost traced to its products with disaggregating that same activity into three components and then uniquely tracing each subactivity to the same products. For this, three unique drivers and their quantities are needed in place of the original one. This increases the accuracy of each cost object because each driver will reflect its own unique consumption pattern.

Figure 2.24 reveals that

1. The dispersion of error narrows with disaggregation based on the “law of offsetting error” and
2. Each additional disaggregated subactivity can now rely on a more correlated relationship. This means there is a tight link between how the activity costs vary or flex with increases or decreases in the quantity, intensity, or frequency of their drivers.

Obviously cost materiality is also a factor. If an individual activity’s costs are substantial, one should pay greater attention to it than if its costs are small. This is because even minor relative misallocations from big spending can result in potentially large costing errors at the product level. And, of course, the converse is true. If the volume for a single product is low relative to all the other products, then a relatively small amount of activities costs can potentially result in major error at this particular product level. This can occur if that particular product disproportionately uses a dedicated activity or major share of one or more specific activities. This condition can be referred to as diversity-skewedness.

The accuracy of the final cost objects can be additionally improved by shifting the lever for the segmenting closer to the work activity—that is, disaggregate the activity.

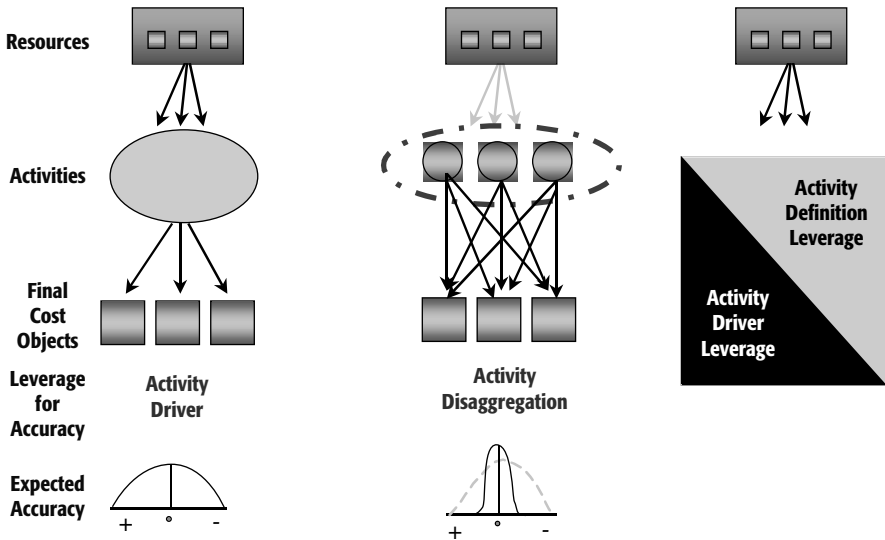


FIGURE 2.24 Improved Accuracy via Disaggregating Activities

Assignment Relationship Between the Activity and Its Cost Objects

Following are four methods of assigning expenses or costs to other costs:

- Project or work order accounting
- Standard cost accounting
- ABC/M assignment based on causality
- Traditional and less-discriminating “allocation”

The sequence is relevant. They are ranked by how accurately the final costs can be calculated, from most to least accurate. However, they are also ranked by the level of administrative effort to calculate the costs, from greatest to least. The last method, cost allocations, is discouraged. There is no great mystery here: If the activity was not consumed by or has no consuming relationship with its source, then no meaningful assignment path can exist. Allocating those activity costs should be a last resort. Selecting project accounting or work order accounting is appropriate when the workload is nonrecurring, such as in an engineer-to-order, one-of-a-kind environment. These four cost assignment methods are discussed in depth in Chapter 6.

Correlation of the Activity Driver to Its Activity

The next less critical determinant for increasing cost accuracy is one that assures that there is a variable relationship between the source activity cost and its destination cost objects. That relationship’s conduit is via the activity drivers. This relationship assumes that changes in activity costs vary somewhat linearly with changes in the quantity of the driver.

The key here is to shift to a cost object’s use-based assignment, in contrast to traditional accounting’s false dependency on an end-output, volume-based allocation basis (e.g., direct labor hours used, units of output per hour, direct departmental expenses).

Figure 2.25 shows that one does not need to collect transaction-based driver data for every driver assignment in the ABC/M model. In fact, as long as a “vital few” of these more fact-based measured drivers are imported as period totals from operating systems, based on a combination of materiality and the diversity-skewness of their cost objects, the remaining cost driver assignments can simply be collected as estimates. These estimates come from key employees who are familiar with that portion of the ABC/M model that is mirroring their organization.

A key rule is to stay away from using traditional allocations where there is little or no cause-and-effect relationship. As time passes, by performing sensitivity analysis with regard to error on the existing ABC/M model, one can determine which of the employee-estimated driver quantities would be the next best candidate

Only the “vital” few activity drivers need to be downloaded from feeder databases. The remainder can come from estimates. Stay away from illogical allocations.

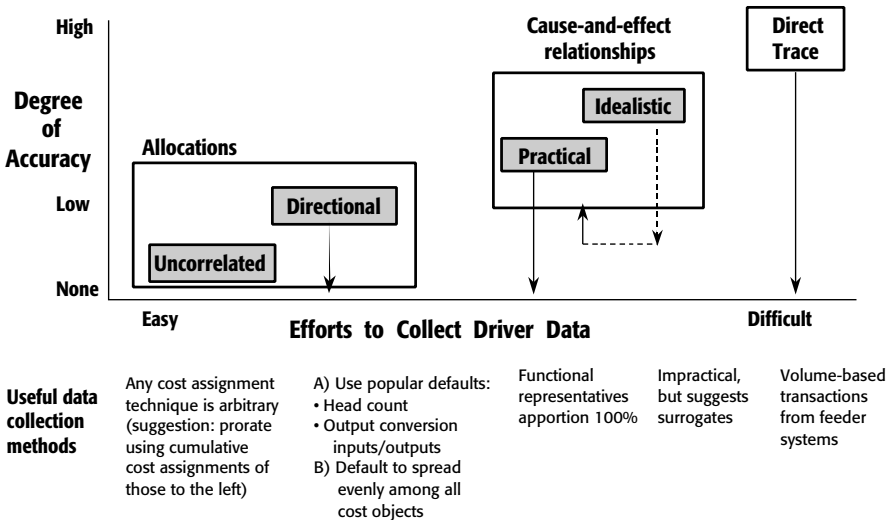


FIGURE 2.25 Ladder of Activity Cost Driver Assignment Techniques

Source: Gary Cokins, *Activity-Based Cost Management: Making It Work*, © 1996, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

to move up into the “vital few” to be input as a transaction-fed driver. This approach to data collection is in stark contrast to that used by those who want to collect *any* and *all* driver data just because it exists, whether it is relevant or appreciably adds greater accuracy relative to the higher costs to collect that information.

Accuracy of the Resource and Activity Driver Quantities

The last resort for achieving accuracy lies with the most obvious cost assignment approach: using period-end totals of transaction-based measures as the assignment basis. The main issue that would affect accuracy here is the data integrity of the actual labor timesheet estimates and the driver quantity volumes used in the period-end totals. Assuming that data integrity is not a problem, the reassigned costs will trace to cost objects in direct proportion to their use via the drivers.

Types of Drivers

A remaining issue regarding cost accuracy surfaces here only if the range of the cost objects' processing or usage times is substantially broader than the average time. When ABC/M uses a transaction-based count measure, it assumes that the vast majority of the events require roughly the same and equal time. After all, an ABC/M cost reassignment system is basically apportioning or metering-out “rented” time of the resources' work activities. By restating time-usage with unit-event equivalents, all that one needs to count are the event occurrences, which is much easier than measuring the time duration of every single event. (These event counts also enable a quick assessment of an activity's performance by evaluating the activity's driver cost rate. For example, does the cost per each output seem extraordinarily large?) When the range of the actual processing times for each event is quite broad, then one must either disaggregate the activity into its component work activities to segment the time breadth (e.g., “processing quick jobs” versus “processing long jobs”) or revert back to using processing time measures instead of the unit-event quantity.

Clustering Cost Objects

Another secondary problem regarding cost accuracy can arise if the number of cost objects is quite substantial, perhaps 20 or more (and sometimes hundreds or thousands, as in product part numbers, SKUs, and customers), and the activity driver quantities are not transaction-based measures but are estimated by a functional representative. Almost anyone would have difficulty apportioning percentage estimates to 20 or more destinations.

A convenient solution that is consistent with ABC/M's 80/20 rule is to use a localized two-step cost assignment technique. After grouping the hundreds or thousands of destination cost objects into between 10 and 20 groups or families, the functional representative estimates the percent apportionment for each activity cost to each of those groups, not to their detail level. This will capture the

segmented diversity of consumption to the group level. Next, the computer can further retrace each group's costs onward to the hundreds of cost objects within each group using a volume-based measure, regardless of its correlation with the activity. This technique is called "fanning (the last bit)." Although this technique appears to be the old-fashioned cost allocation with all its distortions, it is very far from it in terms of impact on accuracy. The initial assignment stage of costs-to-groups, based on the estimator's informed knowledge, captures the vast majority of the consumption segmentation and variation; the second stage of cost assignment simply moves those preapportioned costs into the detail. Within each segmented group, there may now reside nominal zero-sum error, but it should be insignificant to most decisions.

Accuracy of the General Ledger Expense Data

The final determinant in the ABC/M Cost Assignment Network is the ledger balances that are accumulated in the transaction-based accounting system into period-end totals. Assuming that conventional controls exist and that years of auditing have minimized errors in this area, this information can be assumed to be reasonably error-free. In effect, ABC/M starts out with extremely accurate resource costs that were collected (and "bucketed" into the general ledger account balances) throughout the period by the ledger system. It is from here that ABC/M begins segmenting and reassigning. ABC/M does not replace the ledger system; it translates the ledger totals into information that reflects variability with causal drivers. The ABC/M data are structured for decision support; they serve as a solid foundation.

Inherent Source of Accuracy

The following assertion will likely be counterintuitive not only to accountants but also to everyone who designs and builds ABC/M systems. ABC/M's substantially improved accuracy relative to traditional approaches actually resides more in the ABC/M Cost Assignment Network than in the cost drivers and the cost driver quantities. That is, the reason that the products, service lines, channels, and customer costs are so reasonably accurate has less to do with their input data than with the architecture of the cost flow paths that make up the ABC/M Cost Assignment Network. Why? How can this be?

In the ABC/M Cost Assignment Network, the activities are being direct costed only to those (also more granular) cost objects consuming them, not to those that are not. In short, the accuracy is inherent in the network itself; it's mainly in the piping. After the ABC/M Cost Assignment Network is complete and you can compute reasonable costs, you can significantly change several of the resource driver quantities, recalculate, and the cost object costs will barely wiggle. The assignment network itself has rigidity.

Sustaining an Activity-Based Costing System

When ABC/M system builders better understand the properties of ABC/M's work activities, all of ABC/M's cost driver types, and the ABC/M Cost Assignment Network itself, they are more successful. The ABC/M project team can be more effective at right-sizing the ABC/M system to balance simultaneously its level of detail, relevance, and accuracy.

To truly sustain an ABC/M system, an organization must secure organizational buy-in from managers and employees who will use the data and achieve a mastery of (or at least reasonable proficiency in) understanding how the properties of the ABC/M Cost Assignment Network work.

Achieving success with ABC/M initially begins with overcoming the ABC/M leveling problem—right-sizing the model to a proper level of detail. Once the appropriate levels are stabilized at a Goldilocks level, not too detailed nor too summarized, then the connection of the ABC/M data to business problems, their analysis, and ultimate solutions can follow. In the end, the payback from ABC/M can be accelerated.

USING THE ATTRIBUTES OF ACTIVITY-BASED COSTING

The business community must identify which work activities are

- Not required at all and can be eliminated (e.g., a duplication of effort);
- Ineffectively accomplished and can be reduced or redesigned (e.g., due to outdated policies or procedures);
- Required to sustain the organization (i.e., the work is not directly caused by making product or delivering services through channels to customers), and therefore it may not be possible to reduce or eliminate the work activity (e.g., provide plant security, compliance with government regulations, etc.); and
- Discretionary and can be eliminated (e.g., the annual employees' picnic).

ABC/M systems provide for distinguishing these work activities either by including them in a cost assignment structure (i.e., sustaining cost objects) or by tagging their costs as an overlay (i.e., attributes).

Organizations have very little insights about how their individual costs—whether in products, customers, or business processes—vary among themselves aside from the amount of the cost. Traditional cost accounting methods do not provide any way for individual costs to be tagged or highlighted with a separate dimension of cost other than the amount that was spent. An example of a range of a tag that can be scored for activities is “very important” versus “required” versus “postponable.” These are popular ways of measuring how much value-added costs exist and where they are located.

In short, traditional accounting simply provides racked-and-stacked numbers; aside from the cost amount or emphasis in the appearance of the numbers,

one cannot differentiate one cost from another. This is true whether one is examining resource expenditures or their calculated costs of activities, processes, and final cost objects (i.e., workflow outputs, products, or customers). Attributes solve this money-level-only limitation of traditional costing. One can think of attributes as offering many other dimensions to segment costs that are different from absorption costing's single dimension, which only reflects variation and diversity consumption of cost objects like outputs, products, service lines, and customers. Attributes can be used as a grading method to evaluate the individual activities that contribute to a process output's goods or services. ABC/M attributes allow managers to differentiate activities from one another even if they are equal in amount.

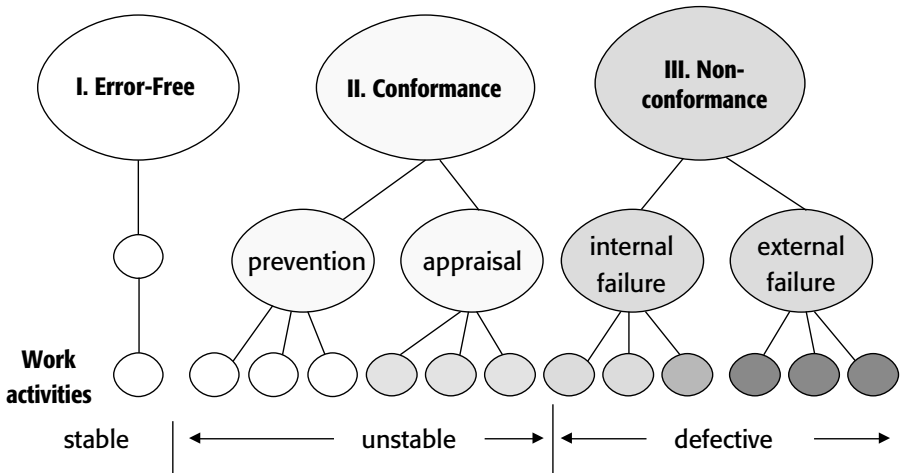
Analyst's Dream

Some practitioners of ABC/M believe it is the use of "attributes" that really brings power to ABC/M analysis. This implies that the attributes information may be more important than the traced and assigned cost data that are so fundamental to what ABC/M is doing: calculating the unique costs of work activities and their consuming outputs. In contrast to ABC/M's objective reporting of the facts, attributes take the ABC/M data an additional step by making the data very suggestive of what actions to take. Attributes have been referred to as the "air conditioning" for ABC/M.

With attributes one is no longer just tracing or adding up costs as an accounting exercise. To serve an alternative purpose, one is differentiating among the costs that reside within outputs, such as standard service lines and/or customers, or within business processes. The differentiating is based on something other than the amount of costs.

Monetary information alone about what an output, product, or service costs does not necessarily convey to anybody what to do or how to improve. Just knowing the amount of costs may not be sufficient to analyze the results and make judgments. You may want to know more about various types of costs as well. The monetary costs have not been differentiated from each other except in their relative magnitudes. Types and attributes are synonymous. The activity monetary costs can be further differentiated into user-defined categories to facilitate managerial analysis. Without additional differentiation, the activities will all look the same except for their description and dollar amount.

ABC/M attributes are frequently scored and graded against the work activities. The number of different attributes is unlimited, but many organizations settle on their favorite half dozen or so. Examples include the level of importance and level of organizational performance. The quality management community uses attributes to calculate the cost-of-quality (COQ). Figure 2.26 illustrates the three popular COQ categories for grading work activities. Categories themselves can be broken down into subcategories for more refined reporting.

Example: Cost of Quality (COQ) Classification Scheme**FIGURE 2.26** ABC/M's Attributes Can Score and Tag Costs

Category 1 in the figure means a good and stable process. Category 2 has quality-related costs because the process is not sufficiently stable to trust it, so you inspect and test. Category 3 has quality-related costs because something is already defective or not conformed to specifications defined for or by the service-recipient. With rigor like this, quality teams can pursue stronger improvement programs and shift their time and emphasis away from documentation and reporting to taking corrective actions.

Multiple activities can be simultaneously tagged with these grades and, of course, the money amount trails along, first at the work activity level and then into the cost objects or into the processes that the activities belong to. Attributes can also be directly tagged on resources as well as final cost objects, but tagging activities is the most popular.

When attributes are tagged to activities, each cost object will consume multiple grades of a select attribute and, as a result, will reflect different blends. An analogy would be the different gallonage (cost amount) of different colored paint (an attribute's different score) being poured (activity driver) into an empty paint can (cost object). As each empty can is filled, the color of the paint will be different, even if the cans are filled to comparable levels (same amount of cost). (How ABC/M supports quality management is discussed further in Chapter 6.)

Popular Attributes

Advanced, mature users are masters at employing ABC/M attributes. A popular attribute involves scoring activities along their “high- versus low-value-adding” scale. The idea is to eliminate low-value-adding activities and optimize higher-value-adding activities, thus enabling employees to focus on the worth of their organization’s work. Employees can see how work really serves customers and which activities may be considered wasteful. Focus and visibility are enhanced because people can more easily see where costs are big or small and also which costs can be managed in the near term. Scoring costs with attributes invokes action beyond just gazing at and analyzing costs.

In the early days of ABC/M the scoring choices for value-adding were limited to either value-added (VA) or non-value-added (NVA). This either-or choice created problems. First, it was considered a personal insult to employees to tell them that part or all of what they do is non-value-adding. Employees are not real happy to hear that. But even more restrictive is the ambiguity of scoring value that can lead to unsolvable debates. For example, take the activity “expedite order” to prevent a late shipment to an important customer. Is this VA or NVA work? A solid argument can support either case. It is better to simply discard the VA versus NVA dichotomy with a different set of words that scale along a continuum and better describe levels of importance (e.g., critical, necessary, regulatory, or postponable.)

Regardless of what type of scale you use to score or grade value, the objective is to determine the relation of work or its output to meeting customer and shareholder requirements. The goal is to optimize those activities that add value and minimize or eliminate those that do not. Following are some tips, but by no means hard rules, for classifying value attributes. High-value-adding activities are those

- Required to meet customer requirements;
- That modify or enhance purchased material of a product;
- That, if more of them are accomplished, the customer might pay more for the product or service;
- That are critical steps that cannot be eliminated in a business process;
- That are performed to resolve or eliminate quality problems;
- That are performed due to a request or expectation of a satisfied customer;
- and
- That, in general, if time permitted, you would do more of.

Low-value-adding activities are those that

- Can be eliminated without affecting the form, fit, or function of the product;
- Begin with the prefix “re” (such as rework or returned goods);
- Result in waste and add no value to the product or service;
- Are performed due to inefficiencies or errors in the process stream;
- Are duplicated in another department or add unnecessary steps to the business process;

- Are performed to monitor quality problems;
- Are performed due to a request of an unhappy or dissatisfied customer;
- Produce an unnecessary or unwanted output; and
- If given the option, you would prefer to do less of.

Another popular attribute scores how well each activity is performed, such as “exceeds customer expectation,” “meets,” or is “below.” This reveals the level of performance. Multiple activities can be simultaneously tagged with these grades from two or more different attributes. As an option, activities can be summarized into the processes the activities belong to. Using two different attributes along the process view, organizations can see, for example, that they are spending a lot of money doing things they are good at but that they have judged to be unimportant. Attributes are very suggestive. In this example it is obvious the organization should scale back and spend less on that kind of work. Figure 2.27 illustrates the four quadrants that result from combining the two attributes for performance (vertical axis) and importance (horizontal axis). The activity costs for such unimportant activities would be in the upper-left quadrant.

Although most attributes are subjectively scored or graded by managers and employees, when the attributes’ targeted activities or cost objects are grouped together, any subjectivity begins to become directionally reliable (assuming there was no bias in the scoring of every single attribute). As a result, the

Scoring and tagging activities can help employees determine what directional actions to take with that work.

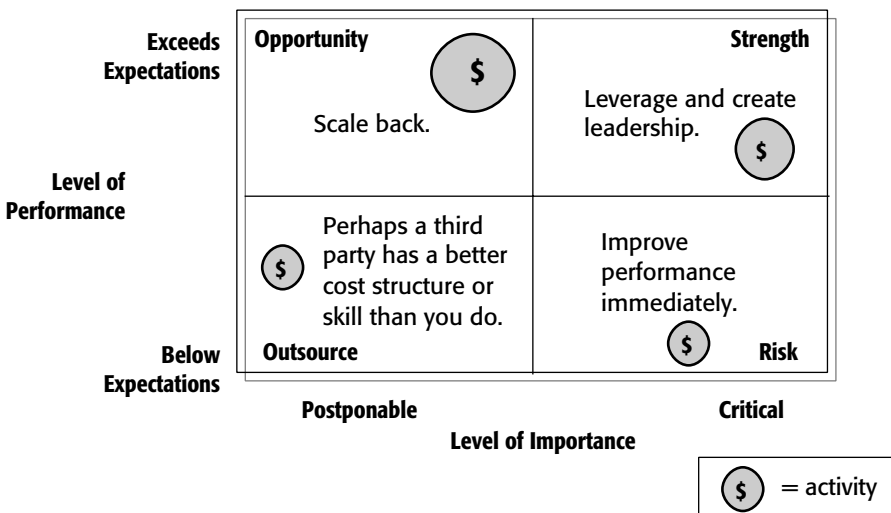


FIGURE 2.27 ABC/M’s Attributes Can Suggest Action

attributed costs introduce emotionally compelling business issues, like the example above.

Following are tips for developing ABC/M attributes:

- Keep the definitions concise.
- Allow employees to develop the classifications, and more important, classify (or distribute) their own activities with the attributes.
- Be clear that attributes are tagged to activities, not to the people who perform the work.
- Constantly ask, “Can the high-value-adding activities be done more quickly or at a lower cost?”
- Determine if low-value-adding activities can be eliminated or at least minimized.

Some analytical people are uncomfortable with any form of subjective grading and prefer rigorous rule-based methods to determine which attribute score is applicable. In this area, they can lighten up and just go with the flow. The scorings may come from some snap judgments of employees and other process participants, but the resulting view of the costs is just a starting point for asking more questions. Don’t make the data collection effort an obstacle.

Because in activity-based costing the activity costs will “pile up” into their final cost objects, and the attribute costs can tag along, one can get another view of attributes now located in the outputs. As low-value-added costs are removed, a trend of relatively lower product or service line costs would reflect the improvements.

Another way of thinking about this is that when attributes are tagged to activities, each cost object will consume multiple grades of a select attribute. As a result, the cost objects will reflect different blends relative to each other. An analogy would be the different gallonage (cost amount) of different colored paint (an attribute’s different score) being poured (activity driver) into an empty paint can (cost object). As each empty can is filled, the color of the paint will be different, even if the cans are filled to comparable levels (same amount of cost).

Attributes can reveal a different mix of value or performance. For example, there can be a major difference between two products with roughly the same unit cost. That is, one color of paint may cost \$50.00 per gallon, with \$15.00 of that total coming from a dozen activities scored as “below expectations” performance. Another color may also cost \$50.00 per gallon, but with only \$5.00 of that total coming from “below expectation” activities. Armed with this information, the product manager of the first color now has a hint that his or her product cost can be lowered. In this way, the attributes are being used as in benchmarking to compare and contrast—and then to focus.

Attributes make ABC/M data come alive to some people. And when the attributed ABC/M data are exported into OLAP software and executive information system (EIS) tools, they can have a very stimulating impact on users.

LOCAL VERSUS ENTERPRISE-WIDE ABC/M

A common misconception is that the scope of an ABC/M system must be enterprise-wide. That is, the expenses included in the system must account for *all* the employees in the organization and 100 percent of a time period's expenditures. (Or alternatively, the expenses must include *all* the people in a substantial portion of the organization, such as a factory or service-delivery arm.) People with this misconception have usually been exposed only to ABC/M models or systems that are used for calculating the total costs of a product or service line used to determine their total profitability.

In practice, the vast majority of ABC/M is applied to subsets of the organization for process improvement rather than revenue enhancement and profit margin increases. An example of a subset is an order-processing center or equipment maintenance function. These ABC/M models and systems are designed to reveal the cost structure to the participants in the main department and related areas. In ABC/M's cost assignment view, the cost structure is seen from the orientation of how the diversity and variation of the function's outputs cause various work to happen, and how much. The costs of the work activities that belong to the processes are also revealed in the ABC/M model as they relate in time and sequence. However, it is ABC/M's powerful revealing of the costs of various types of outputs that serves as a great stimulant to spark discussion and discovery. For example, if an order-processing center learns that the cost per each adjusted order is roughly eight times more costly than for each error-free or adjustment-free entered order, that would get people's attention. This result happens even if the order entry process has been meticulously diagrammed, flowcharted, and documented.

Commercial ABC/M software now enables consolidating some, and usually all, of the local, children ABC/M models into the enterprise-wide, parent ABC/M model. The local ABC/M model data are used for tactical purposes, often to improve productivity. In contrast, the consolidated enterprise-wide ABC/M model is often used for strategic purposes because it helps focus on where to look for problems and opportunities. Also, enterprise-wide models are popular for calculating profit margin data at all levels, including channel-related and customer- and service-recipient-related profit contribution layers.

Example of a "Local" ABC/M Model

Figure 2.28 illustrates a template timesheet input form for a local ABC/M model of a typical purchasing function. In this example, the interest for this portion of the organization is to understand how different types of suppliers create and cause varying levels of costs—both the obvious, such as from the purchasing department, and the "hidden" tangential costs from other departments. For purchasing departments, an increasingly popular exercise is to continuously evaluate and grade their suppliers. This use of a local ABC/M model provides excellent metrics to assist in supplier ratings.

Work Activity Time Sheet		Annual Salary and Benefits Costs =			\$ 50,000
Department	Activity	Number of employees	Percent	TCO \$	other \$
Purchasing		10			
	process blanket purchase orders		10	\$ 50,000	
	process unique purchase orders		30	\$ 150,000	
	negotiate deals		10	\$ 50,000	
	process returns to suppliers		20	\$ 100,000	
	troubleshoot product problems		5	\$ 25,000	
	resolve problems and disputes with suppliers		25	\$ 125,000	
Inspection		10			
	resolve inbound problems		20	\$ 100,000	
	<i>Do other Core work</i>		80		\$ 400,000
Receiving		10			
	process supplier paperwork		20	\$ 100,000	
	<i>Do other Core work</i>		80		\$ 400,000
Production planning	reschedule operations—supplier-caused	5	10	\$ 25,000	
	<i>Do other Core work</i>		90		\$ 225,000
Operations	idle or wasted time—supplier-related	100	5	\$ 250,000	
	<i>Do other Core work</i>		95		\$ 4,750,000
Sales	Explain late shipments—supplier-related	20	5	\$ 50,000	
	<i>Do other Core work</i>		95		\$ 950,000
		155		\$ 1,025,000	\$ 6,725,000
			total =	\$ 1,025,000	
	Note: \$525,000, which is over 100% of the Purchasing Department's expenses, is usually "hidden" supplier-related costs.				

FIGURE 2.28 ABC/M Timesheet for Local ABC/M

Figure 2.28 includes *all* the expenses of any department or group of people that may have any involvement in or be affected by the purchasing process. The magnitude of the cost impact on each department may be large or small. For the departments and functions outside the formal purchasing department, the specific work is described using the “verb-adjective-noun” grammar of ABC/M. All of those employees’ nonpurchasing process-related work, regardless of what they do and why, is simply lumped together as a single activity (e.g., “do all the other work”).

In some cases, the head count of one of these tangential groups of workers may be many orders of magnitude greater than the number of employees in the purchasing department. However, for example, a 5 percent activity cost recorded from several large groups of people can reveal a significant amount of traditionally hidden or usually nonquantified costs relative to just the purchasing department. In Figure 2.28, the full-time equivalent (FTE) head count that is related to the purchasing process is 20.5. This includes all 10 purchasing department employees and portions of the other 100 plus employees that add up to 10.5.

The cost math on the timesheet input form consequently first computes a total cost for all the employees, then carves out only those activity costs that are related to the purchasing process. In the community of professional purchasing managers, this total cost has been referred to as the total cost of ownership

(TCO). The first part is the direct purchase price of the product or service line printed on the supplier’s invoice. This form is like a block of marble for a sculptor. After the non-TCO costs are excluded, like the finished sculpture, the costs that remain are pure TCO.

Revealing the Differences in Costs of Cost Objects (Outputs)

Figure 2.29 illustrates how there is additional impact on learning from the local ABC/M model. Discovery comes from tracing and assigning the activity costs from all the functions to their cost objects. In our case of the purchasing department, the various activities will usually trace activity costs disproportionately into various types of processed purchase orders or directly to different types of suppliers. Note that the different types of suppliers consume different quantities of the different types of purchase orders (using a cost object cost driver), so 100 percent of the TCO costs is ultimately traced to suppliers.

In the figure only two types of purchase orders were segmented, a standing blanket order and a traditional unique purchase order. However, by imagining a dozen or more types of purchase orders, you can get a much better idea of how ABC/M traces and accumulates the costs to various suppliers. Employees are stimulated by the combination of using work activity costs that reflect nonconformance, such as to “process customer returns,” and defining cost objects that intuitively require different amounts of work effort for each.

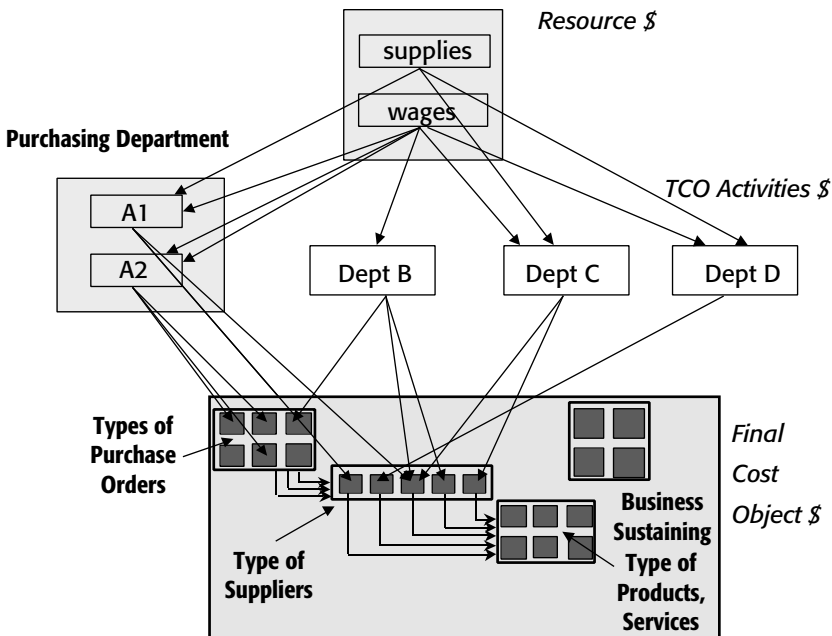


FIGURE 2.29 Tracing Obvious and Hidden Supplier-Related Costs

Also note that a relatively small portion of the purchasing department's activity costs may not be related to the suppliers they interact with, but rather to their products, service lines, or business sustaining costs. These activity costs could therefore be excluded from the TCO costs traced to the suppliers.

Revisit Figure 2.9, the ABC/M Cost Assignment Network. It brings closure to the optional inclusion of the local ABC/M model in the parent consolidated model. The supplier-related costs are reassigned to the specific products and service lines purchased. By folding these costs into the costs of products and service lines, these very same costs then provide for accurate profit margin reporting—for product and service lines and for customers. The customers also consume a unique mix of products and service lines, as demonstrated in this figure.

Just as when tracing product sustaining costs (i.e., non-unit, non-batch-related volume consumption relationships), do not excessively worry about which driver measures to use with which costs to trace an intermediate cost object. Remember that most of the accuracy, from the final cost objects' perspective, was achieved by the segmentation assignment. Therefore, applying an "evenly assigned" or "volume-based" activity driver measure would be acceptable under most conditions and still achieve reasonable accuracy.

In one sense, the impact of capturing the segmented costs this way is as if a specific product normally sourced from multiple suppliers will now have its single product cost uniquely segmented into multiple costs (e.g., as if a vendor-specific suffix number is added to the part number). The idea is to not further complicate the inventory cost accounting system to track these costs (e.g., LIFO, FIFO). However, for industries such as foods and pharmaceuticals, unique traceability of cans, boxes, bottles, and so forth is important for regulatory compliance reasons. Local ABC/M models are somewhat similar, but after each cost is segmented and reassigned, the cost object costs can be combined. Then, these average costs—no longer broad-brushed but useful—can be applied for decision making.

Applications of Local ABC/M

The vast majority of ABC/M data are applied locally. Examples such as that for the purchasing process are limitless. Whenever you have people and equipment doing work where the outputs have diversity, a local ABC/M model can be constructed. The objective of local ABC/M models is not to calculate the profit margins of products, service lines, and customers; it is to compute the diverse costs of outputs to better understand how they create the organization's cost structure.

An interesting application is when a marketing, recruiting, or promotion department has employees who are trying to generate new or continuing inbound orders. They may be trying multiple avenues, such as newspapers, radio, television, trade shows, websites, billboards, and so forth. The costs for advertising placements are different and so might be the results in terms of success (including any additional differences in the type of sale, recruit, or sale). This is an ideal case for

an ABC/M calculation to determine the costs versus benefits of all the channel combinations to rank order which are more or less the best return on spending.

In addition to analyzing the impact of diverse cost objects, there is also the traditional activity analysis and cost driver analysis. Figure 2.30 reveals the link between an activity driver and its work activity. In a simple fashion it describes how each work activity can be judged based on its need by the product or customer, its efficiency, and its value content.

Some managers believe that the only way to truly cut costs is remove the work activity altogether. Their reasoning is that to try to cut back on costs is rarely effective. They believe there is little point in trying to do cheaply what should not be done at all. That is, a job not worth doing is not worth doing well.

Regardless of how one attacks achieving improvements, the main message here is that work is central to ABC/M. What do we do? How much do we do it? Who do we do it for? How important is it? Are we very good at doing it?

Some refer to the application of local models as activity-based management (ABM), an earlier-generation term for ABC/M, because the uses of the ABC/M data are more operational than strategic. I like to view local ABC/M models using an analogy of a musical symphony orchestra conductor in rehearsal first working the violins, then the trumpets, then all the string instruments, then all the brass instruments—and finally the entire orchestra in a live concert. The combined orchestra represents a consolidated parent ABC/M model, with local models rolled up into a parent model, then performing as a repeatable and reliable system.

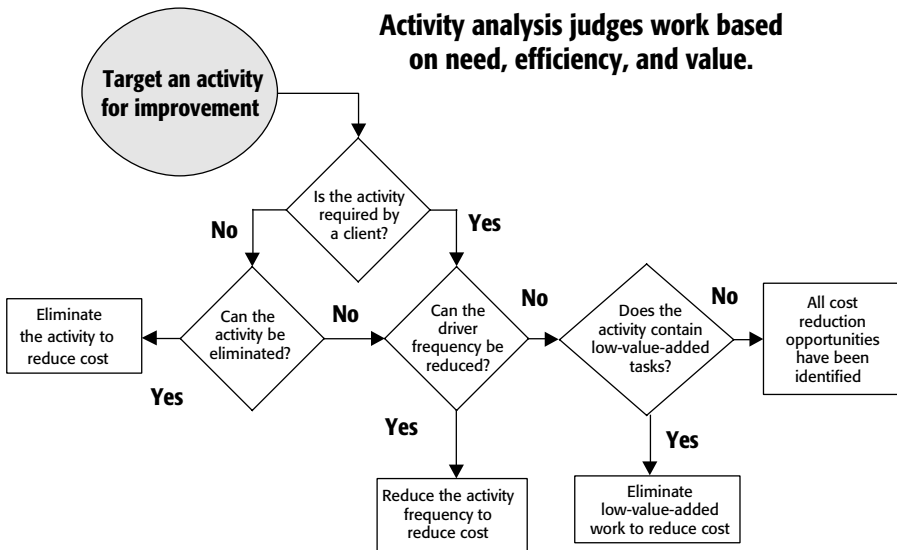


FIGURE 2.30 Activity Analysis

When ABC/M is applied at all organizational levels—local departments, processes, enterprise-wide, or across the supply chain—it provokes intelligent actions and supports better decisions. The rest of this book drills down into the many applications for ABC/M data.

NOTES

1. *Nicomachean Ethics*, Book I, chapter 1.
2. This quote is adapted from a poem by Barry Gater, Barclays Bank, PLC, London.

3

Are All Your Trading Partners “Worth It” to You?

Every scientific truth goes through three states: First, people say it conflicts with the Bible; next they say it has been discovered before; lastly they say they always believed it.

—*Louis Agassiz, Swiss-American naturalist*¹

INTRODUCTION

It is no longer sufficient for an organization to be lean, agile, and efficient. Its entire supply chain must also perform as it does. If some of its trading-partner suppliers and customers are excessively high-maintenance, those suppliers and customers erode profit margins. Who are these troublesome suppliers and customers, and how much do they drag down margins?

Some customers purchase a mix of relatively low-margin products. After adding the “costs-to-serve” for those customers *apart from* the products and service lines they purchase, these customers may be unprofitable to a company and to that company’s supply chain. Other customers who purchase a mix of relatively high-margin products may demand so much in extra services that they also could potentially be unprofitable. How does one properly measure customer and supplier profitability? How does one deselect or “fire” a customer or a supplier? After the less-profitable customers and suppliers are identified, they can be migrated toward higher profits using “margin management” techniques.

ALL CUSTOMERS AND SUPPLIERS ARE NOT CREATED EQUAL

If two customers purchased from your company the exact same mix of products and services at the exact same prices during the exact same time period, would they be equally profitable? Of course not. Some customers behave like saints and others like sinners. Some customers place standard orders with no fuss, whereas others

demand nonstandard everything, such as special delivery requirements. Some customers just buy your 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 and expedite their order, or return or exchange their goods. Some customers require more post-sale services than others do. In some cases, just the geographic territory the customer resides in makes a difference.

Employees often wonder if the bothersome or geographically distant customer is worth the trouble. What they are really asking is: If we added up all the costs of our time, effort, interruptions, and disruptions attributed to those customers, *in addition to* the costs of the products and base service lines that they draw on, would we find that we really made any profit? That is a good question. How do we know? How do we know the level of profitability of any or all of our customers? Most organizations do not. Because organizations are continuously pursuing prospects, they might want to know how profitable they will be relative to each other or to existing customers.

Employees can ask a similar question about the inbound costs from their suppliers. Are some suppliers so much more difficult to work with that the cost ultimately drags down the organization’s profits?

If all these “extra” costs are passed on to customers by ultimately increasing prices to the end-consumer, what is the risk that our entire supply chain will have finally pushed that consumer to switch to a substitute or a competitor’s product or postpone the purchase altogether? That means lost sales to everyone. As mentioned previously, it is no longer sufficient for an organization to be lean, agile, and efficient; its entire supply chain must also perform efficiently.

Pursuit of Truth about Profits

Why would a company want to know the answers to the questions its employees are asking? Possibly to answer more direct questions about its customers and suppliers, such as the following:

- Do we push for volume or for margin with a specific customer?
- Are there ways to improve profitability by altering the way we package, sell, deliver, or generally service a customer?
- Does the customer’s sales volume justify the discounts, rebates, or promotion structure we provide to that customer?
- Can we realize the benefits from our changing strategies by influencing our customers to alter their behavior to buy differently (and more profitably) from us?
- Can we shift work to or from some of our suppliers based on who is more capable or already has a superior cost structure compared to ours?

To be competitive, a company must know its sources of profit and understand its cost structure.

A competitive company must also ultimately translate its strategies into actions. For outright unprofitable customers, a company would want to explore passive options of substantially raising prices or surcharging them for the extra work. It can also be more assertive and terminate the relationship. For profitable customers, a company may want to reduce customer-related causes of extra work for its employees, streamline its delivery process so it costs less to serve customers, or alter the customers' behavior so that those customers place fewer workload demands on the company.

What kinds of customers are loyal and profitable? Which customers are only marginally profitable, or worse yet, losing you money? Activity-based cost management (ABC/M) is the obvious methodology to economically and accurately trace the consumption of an organization's resource costs to those types and kinds of channels and customer segments that place varying demands on the company. Determining the "costs-to-serve" customers is logical with ABC/M. ABC/M also traces the varying consumption levels of a company stemming from supplier behavior; high-maintenance suppliers erode its margins as well.

Look at Figure 2.9 (page 53). It shows the framework for how ABC/M traces, segments, and reassigns costs based on the cause-and-effect demands triggered by customers and their orders. As previously described, ABC/M refers to these triggers as "activity drivers." When the cost of processing a customer's orders is subtracted from the sales for those orders, a company can really know whether it actually made or lost money over time. A company will also know prospectively whether an accepted price quote for a future customer order will be profitable.

Some employees intuitively suspect the truth—that there *are* losers—but these employees will likely assume that their companies would never want to "drop" those customers; besides, they perceive that those customers still provide sales volume that somehow "covers the overhead." But perhaps all the product costs, base service costs, and unrecognized extra costs are not fully recovered by the sales prices! Some employees believe that on average there is very little difference between customers, so they basically view customers as clones. In other situations, some employees are evaluated on commissions that are based on sales volumes, so they don't place much importance on costs and profits.

The issue here is not only determining the profit contribution of customers, including "accurate" costs for the products they buy, but also understanding the elements of customer-specific work that make up the entire costs to serve *each* customer. It is no longer acceptable to *not* have a rational system of assigning so-called nontraceable costs to their sources of origin, whether those sources are suppliers, products, or customers.

Finally, the advanced suppliers for a specific customer may very well be examining that company in the same way. Is that specific customer a high-maintenance customer to them? Might they be considering "firing" that customer because it is not "worth it" to them?

Beneath the Iceberg: Unrealized Profits

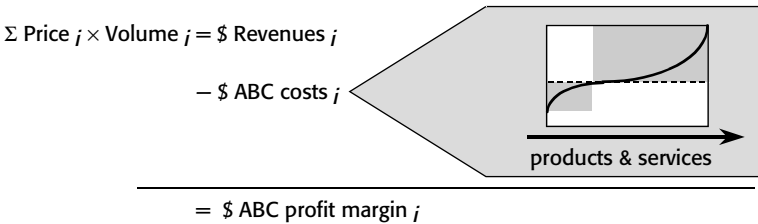
What is the reality of profits and losses? When companies take the time to define and measure their in-house work activities and directly connect them to the bigger and smaller consumers of their work, the obvious occurs. In addition to the products and base services provided to customers, there are users—big, small, and in between—of other portions of a company’s workload. Because pricing is usually determined (and quoted) based on average-based standards, those customer-driven imbalances are rarely reflected in the pricing. High-maintenance and low-maintenance customers are equally priced and reported as equally profitable; this is not reality.

When the inequities are replaced with true consumption measures of the “costs-to-serve” customers, the companies who have performed an ABC/M analysis have realized that they make a lot of profit on the winners but simultaneously give back quite a bit of unrealized profit on the losers. And both the profits and losses are usually large numbers. The company only banks the net difference.

Figure 3.1 illustrates this disturbing outcome. Refer to Figure 1.5 (page 14), which shows the cost-shifting effect of under- and over-costing that results from poor methods of cost allocation. Figure 3.1 has the S-curve embedded in it but also subtracts the true product and service-line costs from the sales and revenues. The profit margin is the derivative. Because the costs shifted but the price and volume did not, the profit margins are different than the organization believes.

Relative to the organization’s belief about what is more or less profitable, the swing is quite dramatic. This is because margins are usually very thin, so even slight changes in costs make a difference. But ABC/M causes large changes, so the new, correct, and true profit margins from ABC/M can produce a substantially different story than what most employees have assumed.

Reassigning costs is a zero-sum game.



But cost-plus pricing using “traditional” costs creates a total net profit condition of big winners and big losers.

FIGURE 3.1 Profit Impact of Misallocated Costs Using Traditional Accounting
Source: Gary Cokins, *Activity-Based Cost Management: Making It Work*, © 1996, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

Figure 3.2 is a graph of how unrealized profits can be hidden due to inadequate costing methods. The accountants are not properly assigning the expenditures based on cause and effect. The graph is of each product's cost, net of sales, to reveal *each* product's and service line's profit. This is the calculated profit margin from Figure 3.1.

The products are rank-sorted left to right from the largest to the smallest profit margin rate. The very last data point equals the firm's total net profit, as reported in its profit and loss (P&L) statement. Statisticians call this the Stobachoff curve. For this organization, total revenues were \$20.0 million with total costs of \$18.2 to net \$1.8 million, but the graph reveals the mix of that \$1.8 million. The last data point "foots-and-ties" as the total reported profit, but gives no visibility to the parts. As a result, the curve looks like a fishing pole catching a fish. Think of the last data point as being on a vertical metal track; it can only slide up or down (where the imaginary fish is on the hook). Looking at the graph this way reveals that products and service lines to the left of the peak, where an item's sales exactly offset its costs, are also fair game for increasing profits. Many people only focus on the losers to the right. (This graph has also been referred to as "profit cliffs" and "humpback whale curves," but a fishing pole analogy adds the concept of spring and motion to lift the end point: raise profits upward.)

A separate "fishing pole" profitability report can also be produced after each customer's purchased mix of products and service lines is *combined* with its unique "costs-to-serve." In the diagram the customers, not the products or service

**Profitability profiles are like electrocardiograms of a company's health.
After sales are attached to the ABC costs, this graph reveals that \$8 million
was made on the most profitable 75 percent of products—
and then \$6 million was conceded back!**

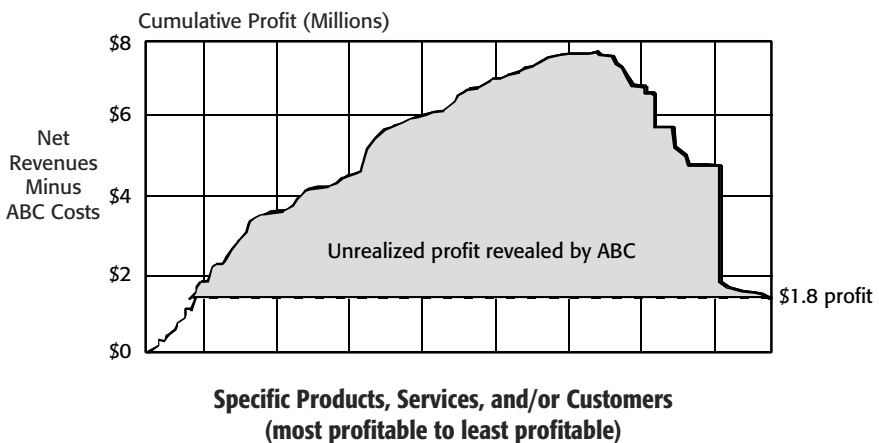


FIGURE 3.2 Profitability Profile Using Activity-Based Costs

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lines, would be sorted from the most to the least profitable. (I describe how each customer can have its own profit and loss report later in this chapter.) These reports together allow for a customer base analysis. Not surprisingly, the shape of the graph for customers often resembles the shape of the graph for products: There are initially winners, then losers detract from the peak *unrealized* profits.

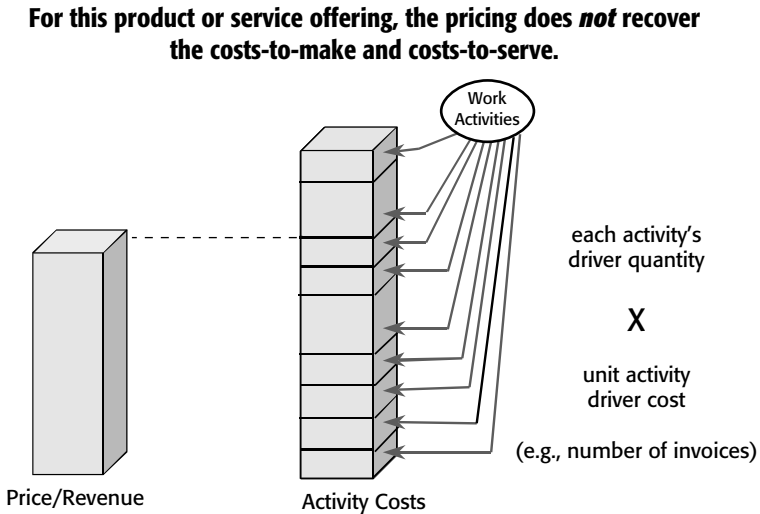
The graph shows both big profits and big losses. Although not empirically tested, experiences with these measures show that the total amount of the profits, excluding any losses, usually exceeds 200 percent of the resulting reported net profit; greater than 10X has even been measured. Management literature periodically cites the Pareto rule, which claims that 20 percent of customers might account for 80 percent of profits. This distribution, however, is misleading. Twenty percent of customers may indeed account for 80 percent of the sales volume, but with regard to profit, the distribution may be very different because earnings for the losing products or customers are negative, which leads to the fishing pole shape. Therefore, for the distribution of profits, not sales volume, the most profitable 30 percent of the products or customers might account for 500 percent of the total profits.

How can this be happening? How can such unrealized profits be so offset by the unprofitable products and customers? The major reason is that no one has ever seen the profit margins displayed in this manner. Some employees have always intuitively thought of this profit portfolio mix as being true, but they could never prove it. With ABC/M they can.

Figure 3.3 clarifies the graph in Figure 3.2. It reveals the information that constitutes a single data point on the right downsloping side of the “fishing pole” graph. The single data point shows the incremental financial loss that is plotted step-by-step in Figure 3.2. Figure 3.3 illustrates that for each product, service line, or customer, its final cost object’s activity costs have piled up in it like sediment on the bottom of a river. The assignment comes from the ABC/M cost assignment network, where each activity driver and rate apportions the proper amount of activity costs consumed.

Traditional financial reporting does not reveal the separate profits and losses of products or customers for two reasons: (1) It examines and reports department-level expenses but not the work-efforts within a department and (2) the nondirect product and non-base-service costs are only allocated to products or base services. These costs are rarely isolated and directly charged to the specific customer segments causing these costs. In financial accounting terms, the costs for selling, advertising, marketing, logistics, warehousing, and distribution are immediately charged to the “time period” in which they occur. Consequently, the accountants are not tasked to trace them to channels or customer segments. Today’s selling, merchandising, and distribution costs are no longer trivial costs—they are sizable. As an example, it now costs General Motors more to sell its trucks and cars than to make them!

As an example, a high-tech semiconductor manufacturer performed ABC/M and discovered it was making roughly 90 percent of its profits from 10 percent of



ABC provides insight not only into the relative magnitude of each activity cost element, useful for comparative purposes, but also into the product's or service's cost drivers and driver quantities.

FIGURE 3.3 Revenue – Bill of Activity Costs = Profit/Loss

its customers. That alone is not unusual, but it was losing money on half of its customers. Upon discovering this, this manufacturer explained to some of its unprofitable customers how those specific customers could alter their own behavior to lessen the workload on the manufacturer so that a fair profit could be attained. The remaining unprofitable customers were “fired,” asked to take their business elsewhere because it was evident there was little hope their sales would cover their costs. This manufacturer’s sales levels then predictably dipped, but profits tripled.

The lesson here is that there is a “quality of profit” associated with sales volume and product mix. There should be a focus on the customer contribution margin devoid of simplistic cost allocations such as the current focus of cost accounting on product profit margins. There is a red-flag warning from this: Two traditionally popular measures—market share and growth—can potentially be dangerous in the new order of competition. This is because organizations now realize that there is a sizable unprofitable segment of products, service lines, and customers in the mix.

Increasing Sales and Decreasing Profits

Some organizations investigate ABC/M because they are experiencing an increasing sales volume but decreasing profit, and the financial controller’s department cannot explain why. How can this strange outcome be explained?

Refer to Figure 3.2, the fishing pole profitability profile. The sales function basically begins each new period with no booked sales. In effect, the sales force is expected to “fill the tank” with new business. Ask yourself: What direction will the last data point go in if during this next period the sales force sells a few more of the unprofitable products and service lines to the right side of the peak, and the left side remains a repeat of the volume and mix in the prior period? Will it move up or down? Of course it will move down. Taking this scenario even farther, what will happen if the sales force sells a few more of the unprofitable items to the right side of the peak, but they *also* sell fewer of the profitable items to the left side of the peak? The last data point drops down even more.

What is happening here is that the *mix* of products and service lines is shifting beneath the feet of the company, but the traditional allocation system is too simplified to detect the diversity and variation of each of the products and service lines. The sales are growing, but the total profits are declining. Each product’s individual profit level remains unchanged. The sales force happens to be selling a less-profitable volume and mix of products or service lines.

This explanation does not mean that the traditional costing system is totally bad. But it is more like a child’s toy telescope: It just does not have the quality of optics to see things well. In contrast, ABC/M is like a much more sophisticated telescope with a much finer lens and granularity to detect the unique variations in how each product, service line, channel, and customer consumes expenses. As the diversity of the products and service lines broadens, and as the company adds more services to sell and support its offerings, in effect the traditional cost allocation has lost its edge. It may have worked adequately in the old days, but now a finer imaging system is needed. The ABC/M Cost Assignment Network is that replacement system. ABC/M is simply a next generation absorption costing system.

How Does Customer Sales Volume Relate to Profits?

Figure 3.4 reveals the typical data points for the intersection of individual customer sales volume and profit that constitute the same data points shown in the fishing pole diagram (Figure 3.2).

On a simple level, because profits grow exponentially with sales volume, the graph supports intuition to a certain extent. But upon closer examination, Figure 3.4 indicates that there are clusters:

- Small-volume customers are, to a high degree, unprofitable. In addition, because a large portion of an enterprise’s customers is usually small-volume ones, most are unprofitable. (Note that this does not automatically suggest abandoning all of them because some may be the seedlings that will grow into forests, becoming the large profitable customers of the future.)
- For many of the larger customers, profits grow exponentially.
- For a sizable group of large customers, however, profits are minimal, or worse yet, nonexistent.

Customers tend to cluster. Medium-volume customers can be much more profitable than large-volume customers!

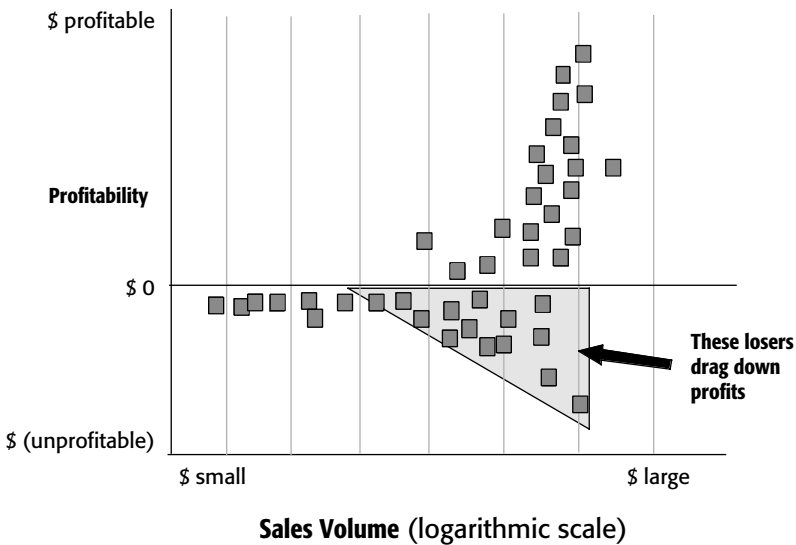


FIGURE 3.4 Customer Sales Volume versus Profits

- There can be medium-sized customers that, as a collective group, bring in a large share of the total profit.

The shape of each supplier's customer base's profitability profile curve will be different. Knowing the types of customers that cluster in the various profit/loss zones of Figure 3.4 can be valuable in determining what actions to take. Advanced ABC/M teams, equipped with customer profitability data, perform multidimensional statistical analysis to determine patterns.

Structural Deficiencies with Traditional Financial Accounting

The unique behavior of customers and suppliers themselves is the source of a much greater amount of work-creation than most people imagine. For wholesalers and distributors, one can argue that customers cause almost *all* the work. Even when that is understood, traditional accounting systems are ill equipped to trace the costs. What is needed is to first accumulate the costs of the various support work activities for the order-fulfillment work, then reassign this order-fulfillment work to the product and customers who cause work to happen in varying amounts, in proportion to their use. As discussed in Chapters 1 and 2, the traditional financial accounting systems are structurally deficient to accomplish this goal. The ledger account balances must initially be translated into activity costs to even begin to trace or assign those costs to processes or products and customers.

In a simple supply chain structure (i.e., suppliers → intermediary → customer), some employees of the intermediary are unclear about how the behavior of one supplier can affect the margins of a particular group of customers. Refer to Figure 2.9 (page 53), the ABC/M Cost Assignment Network. Focus on the bottom module, the Final Cost Objects. Note how various final cost objects consume the other final cost objects. The metaphor for this cost consumption chain is the “predator food chain” of the animal kingdom, in which large mammals eat small mammals and small mammals eat plants. I expand on this notion below.

The unique work activity costs caused by one’s suppliers, such as processing their purchase orders or negotiating deals, are burdened to those products that are purchased. The National Association of Purchasing Management (NAPM) refers to this as the “total cost of ownership (TCO).” This means that the invoice price of the purchase does not reflect the *entire* cost of procuring that product. Just think about the differences between technically sophisticated suppliers who use EDI and bar-coding and archaic suppliers who use error-causing faxes. Which type of supplier causes more of a company’s workload and costs, *apart from* the direct material purchase cost? Suppliers cause their customers different workloads independent of volume.

In summary, calculating costs with ABC/M allows reassembly and assignment-tracing for all the work activity costs to reflect how each customer, channel, and market segment consumes the costs of being served.

ABC/M Contribution Layering

In activity-based costing, the traditional P&L statement changes and becomes more like the layers of an onion skin. Figure 3.5 contrasts the traditional P&L with an ABC/M P&L. It shows a simple report revealing varying margin layers. The left side of the figure shows what most managers see today. Only the products are costed (and the product overhead costs are themselves frequently misallocated to the products).

The right side of Figure 3.4, the ABC/M P&L view, shows that first, exclusively product-related margins can be viewed, and without the misleading distortions from overhead cost misallocations (traditional overhead cost allocations apply volume-based factors without correlation, not *use-based activity drivers* that possess cause-and-effect, if-then relationships). Then, as customers consume (i.e., purchase) their unique quantities of the mix of products and service lines, where some products may be stand-alone profitable and some not at the product level, the “costs-to-serve” customer-related costs are combined to calculate the next profit contribution margin layer.

Examples of customer-specific work activities traditionally hidden in the customer support, marketing, and sales functions, yet uniquely traceable to customers, are the following:

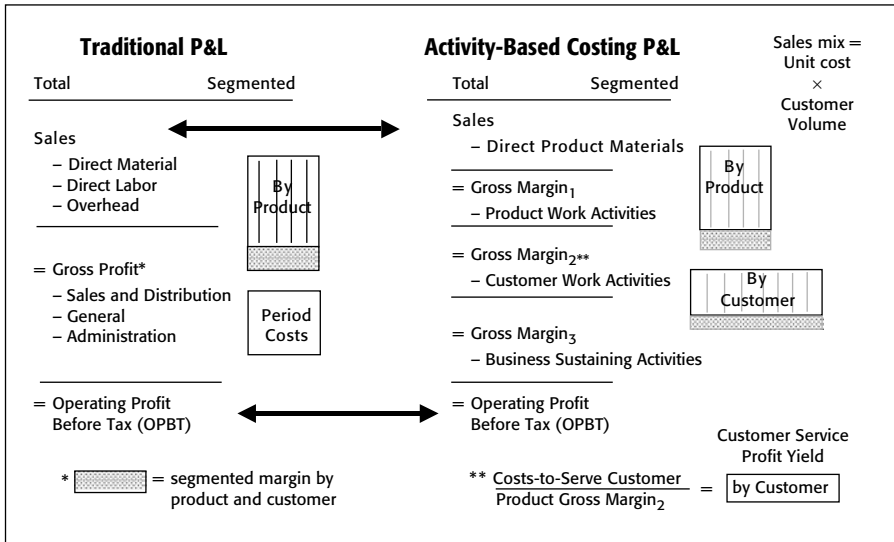


FIGURE 3.5 Traditional P&L Statement versus ABC/M

- Order processing costs
- Billing, collection, payment processing costs
- Accounts receivable and carrying costs
- Customer service costs
- Post-sales costs
- Selling and marketing costs

A true ABC/M system operates as a reassignment system. The following material refers to Figure 2.9, the ABC/M Cost Assignment Network (page 53). This structure is the key to revealing the profit margin layers for each customer and to generating customer-specific P&L statements.

Unit-Level, Batch-Level, and Cost Object Sustaining Costs

One of the insights gained from ABC/M is an understanding of how final cost objects, such as suppliers, products, channels, and customers, vary with the work-related activities that they consume. Some activities, such as opening a new customer’s account or placing a product in a box, vary directly with each specific supplier, customer, or product (i.e., cost object) processed or serviced. These are *unit-level costs*. Workloads vary directly with each activity driver quantity, and they can be recognized as specific to an individual supplier, product, service line, or customer.

There are other work activities, such as changing over machine settings to make different products, for which the time or work-effort varies *independently*

of the batch size (i.e., the quantity of the machine run volume). These kinds of work activities vary directly with each event for which the machine is reset. Another example, customer-related, is where the length of time spent processing a customer invoice is independent of the price of the invoice. These are referred to as *batch-level costs*. The activity drivers for both unit-level and batch-level activities can be quantified by the number of occurrences.

Both unit-level and batch-level costs can be attributed to specific suppliers, products, or customers without debate because the products or customers are the final cost objects causing and consuming the work. There is a third, higher-level activity cost type, *cost object sustaining costs*. Sustaining drivers reflect policy or strategy or response to the importance of the object. The driver measure for people is basically the time spent on each cost object. Infrastructure or business sustaining costs, which are applied to the organization as a whole, are discussed in Chapter 2 as advancement no. 9 in “Ten Advances in ABC/M Model Design and Thinking.” Sustaining costs can also be applied to customers, products, or suppliers.

In short, these activity costs are related to support or overhead work activities, but their existence can be attributed to suppliers, products, service lines, channels, or customers. Each of those final cost object categories will have its own “sustaining” cost object. These are separate sustaining cost objects from the “business sustaining costs” described as advancement no. 9. Business sustaining costs, in contrast, have little to do with making a product or delivering a service to a customer.

Figure 3.6 expands on the ABC/M Cost Assignment Network’s final cost object module in Figure 2.9 (page 53). It displays two layers of a “nested” consumption sequence of costs. The metaphor for this consumption sequence, as previously described, is the predator food chain. The final-final cost object, which in this figure is the customer, ultimately consumes all the other final cost object costs, except for the business sustaining costs.

Within each of the major final cost object categories (e.g., supplier, product/service line, and customer), each has its own “sustaining costs,” which are assignable to its end-product or end-customer. However, when tracing these “sustaining costs,” one cannot apply the measurable product or customer-specific quantity that is applied for the batch-level and unit-level activity costs. For example, a product-branding program from the marketing department may benefit a select group of products, for which those products can be specified, but how much of the branding cost should be charged to each *specific* product within the brand? These “product sustaining costs” can optionally be traced using some “shared” basis, such as sales unit-volume, or be spread evenly, even though there is no cause and effect.

In short, sustaining costs can be assigned to products or to customers using what may appear as the old flaws of cost allocation, the “spreaders.” However, this method of capturing diversity of the mix (in this example, the mix of the products) segments and isolates the sustaining costs to the type of final cost objects that cause the activity costs to occur, usually to a subgroup within that final cost object.

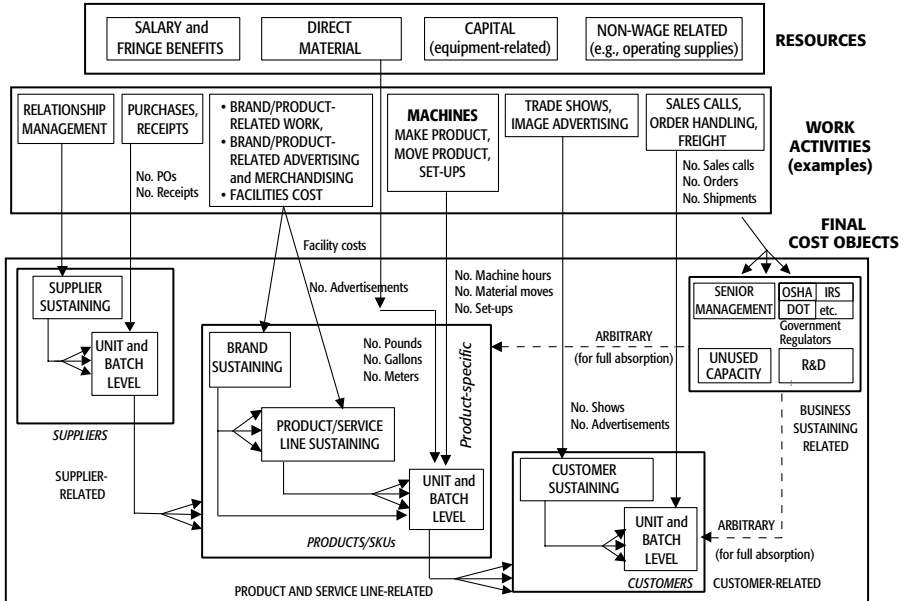


FIGURE 3.6 ABC/M Profit Contribution Margin Layering

Additional Final Cost Object Types

In effect, ABC/M reflects how the variation and diversity of cost objects segment activity costs and resource costs. If there are substantial costs and sufficient diversity in another type of cost object, for example the type of customer order (standard orders, specials, adjusted, international, etc.), the “order type” can qualify as its own separate and visible final cost object. Another example is the type of freight-haul trip, such as truck, marine, or rail or less-than-truckload (LTL) versus full truckload. This type of receiving final cost object would serve as an intermediate repository to capture the diversity of the type of work output. After activity costs are traced to these final cost objects, those costs are further retraced to the customers based on the mix of order types consumed by each customer. Hence, “all customers are not created equal.” ABC/M equitably traces all the costs based on unique usage by its downstream final cost object.

Figure 3.7 displays three potential cost object types that could be isolated and assigned as an intermediate destination for activity cost accumulation prior to being reassigned to customers.

Note that without individual final cost object “types” being isolated, the activity costs that trace into them would have been directly assigned to customers from the same activity costs. The factor or basis (i.e., activity driver) would not likely reflect the activity’s use; in fact, the activity would likely be pooled with other activities and therefore be traced with the activity driver chosen to trace the more prominent activity cost.

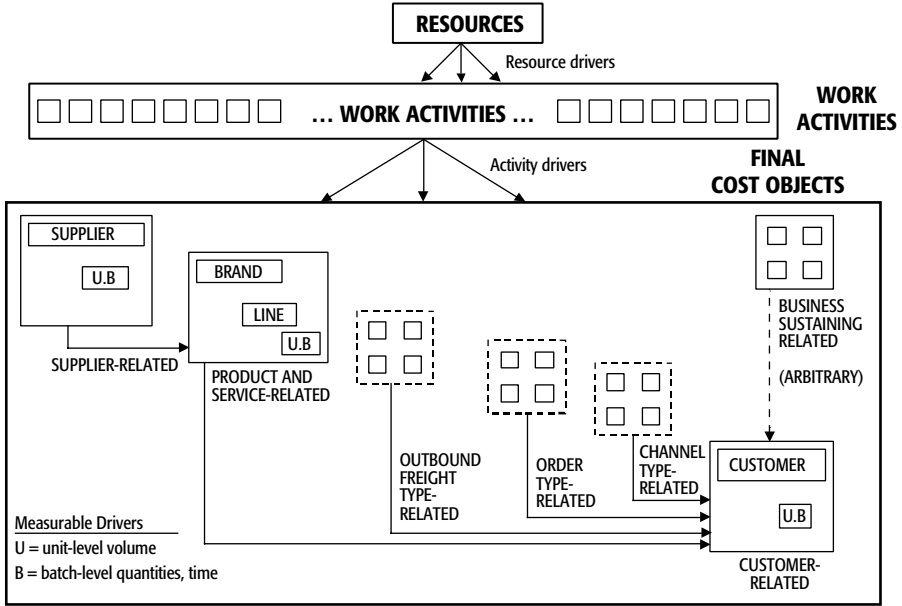


FIGURE 3.7 ABC/M Predator Food Chain

Improved accuracy comes from establishing an individual final cost object and thus isolating each one. Then, using a two-step cost assignment method, the activity costs trace the workload to this type of cost object, and the customer is shown to be “purchasing” and consuming the output. The second of the cost assignments is referred to in ABC/M lingo as a *cost object driver* (the term *activity driver* is no longer applicable because the work activity cost was already accumulated in the final cost object.)

Advanced ABC/M users may wish to view product profitability including customer costs (e.g., to determine and publish prices in a price list catalogs). Today’s advanced ABC/M software allows multidimensional views of various combinations of cost objects. With multidimensionality, a two-way, bidirectional linkage replaces the sequence of the predator food chain. Other dimensions include geographical sales territories, store locations, or specific salespeople. Multidimensionality is made possible by computer technology called online analytical processing (OLAP).

ABC/M Customer Profit and Loss Statement

As costs flow from one final cost object to another final cost object, 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/M Cost Assignment Network, each product previously incurred its own activity costs with a cause-

and-effect relationship, not with an arbitrary indirect cost allocation. This then creates layers of costs.

Figure 3.8 is an example of an individual customer profitability statement. Using ABC/M, there can now be a valid P&L statement for *each* customer as well as logical segments or groupings of customers. A tremendous amount of detail lies below and within each of these reports. For example, the individual products and service lines purchased can be examined in greater detail; they comprise a mix of high and low margins based on their own unit costs and prices. In other words, in a customer-specific P&L summary, the product or service line is reported as a composite average, but details about the mix are viewable. In addition, within each product or service line the user can further drill down to examine the content and cost of the work activities and materials (“the bill of costs”) for each product and service line.

ABC/M users refer to this data mining and navigating as “multidimensional reporting”; and they use the OLAP software tools for viewing the output of the ABC/M calculation engine. This is powerful information. The sum of all the customer P&L statements for this type of report will be the entire business’s enterprise-wide profit (or loss). That is, it can be reconciled with the company’s official books: the bottom line.

CUSTOMER: XYZ CORPORATION (CUSTOMER #1270)			
Sales	\$\$\$	Margin \$ (Sales – Σ Costs)	Margin Percent of Sales
Product-Related			
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 %
Distribution-Related			
Outbound Freight Type*	xxx	xxx	28 %
Order Type*	xxx	xxx	26 %
Channel Type*	xxx	xxx	24 %
Customer-Related			
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 measureable quantity volume of activity output (Other activity/assignments traced based on informal (subjective) percentages)

**Capital charges can also be directly charged as imputed interest to products and customers

FIGURE 3.8 ABC/M Customer P&L Statement

In short, customer profitability analysis recognizes that each customer is different and that each currency unit (e.g., a U.S. dollar) does not equally contribute to the customer’s profitability. Customers use a supplier’s resources differently; thus, customer costs vary among customers. ABC/M detects the variations; traditional cost allocations do not.

Some companies that have applied ABC/M to get this far and compute these data face a critical test. The crucial thing is not just to calculate customer profitability data but to *use* the data, and wisely. The benefit comes from identifying the profit potential and then realizing it and fulfilling it with smart actions.

Revelations from the New Cost Data

Note that in Figure 3.5 the three margin levels do not include any “business sustaining expenses,” the company internal tax. Again, what distinguishes business sustaining costs is that although they are not directly caused by suppliers, products, base services, channels, or customers, they are a cost of doing business. These expenses must somehow eventually be recovered in total via pricing for the company to be profitable overall. The ABC/M P&L statement reveals that they do not necessarily have to be recovered by all products and by all customers.

This revelation can give progressive and innovative companies tremendous flexibility to price low for emerging products and for targeted new customer prospects and price higher with more loyal and secure customers less likely to switch to competitors. However, too many prices are set slightly above the “marginal costs,” as time passes and products are phased-out and customers depart, the profit structure risks being slowly and gradually replaced without enough sales volume to recover the business sustaining costs. Therefore, any practice of setting prices to only recover “variable” costs must be carefully managed. For example, low prices offered to capture new customers should be gradually increased over time.

The ratios of the “costs-to-serve” customers to the product mix margin are revealing when compared on a customer-by-customer basis (or by segment or channel). A traditional belief that large-volume customers produce proportionately large profits may be dispelled. Companies using ABC/M often discover that if given an extra hundred dollars to “serve” a customer, the money returns a relatively higher profit contribution from mid-sized or smaller customers than from large-volume customers.

Migrating Customers to Higher Profitability

What does all this information reveal? First, it quantifies what everyone already 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 cus-

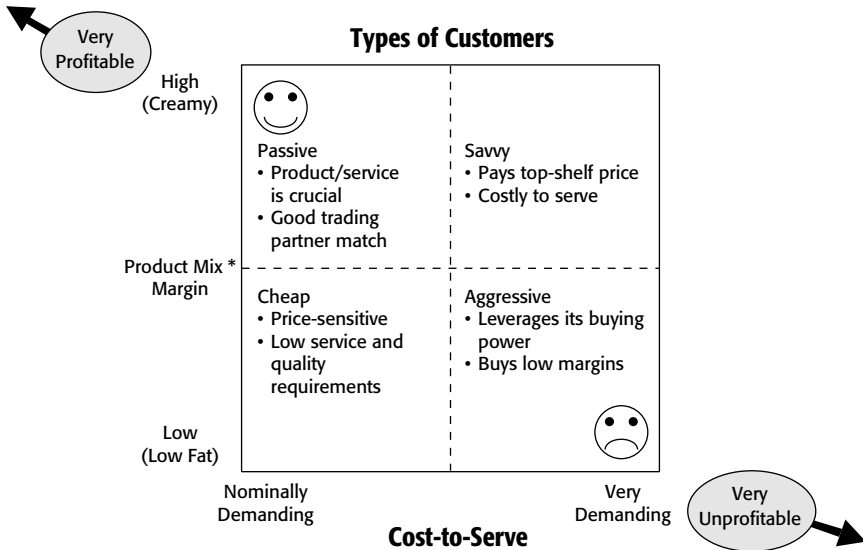
tomter service to earn customer satisfaction and the impact of doing that will have on shareholder wealth. The best solution is to increase customer satisfaction profitably. Because increasingly more customers will expect and demand customization rather than standard products, services, and orders, understanding this balance will be important. ABC/M data facilitate discussions about arriving at that balance. Many managers are unwilling to take any actions until presented with the facts.

In the company P&L in Figure 3.5 there are two major “layers” of contribution margin:

1. By mix of products and service lines purchased.
2. By “costs-to-serve” apart from the unique mix of products and service lines.

Figure 3.9 combines these two layers. Any single customer (or cluster) can be located at an intersection. Figure 3.9 provides a two-axis view of customers with regard to the two layers just described, the “composite margin” of what each purchases (reflecting net prices to the customer) and its “costs-to-serve.” Each quadrant of the matrix represents a zone in which four different types of customers can exist. Figure 3.9 debunks the myth that companies with the highest sales must also generate the highest profits.

**Customers with high sales volume are not necessarily highly profitable.
Customer profitability levels depend on whether the net revenues recover the customer-specific costs-to-serve.**



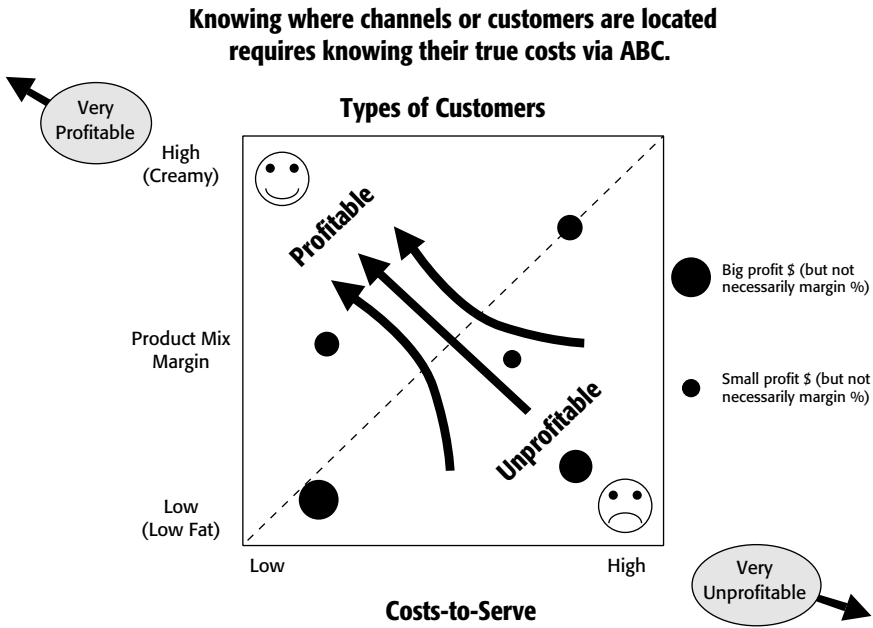
* Unique to each customer (their basket of purchases)

FIGURE 3.9 ABC/M Customer Profitability Matrix

Figure 3.10 shows various customers as points of an intersection on the matrix in Figure 3.9. The objective is to make all customers more profitable, 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 repricing 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.

Note that migrating customers to the upper-left corner is equivalent to moving individual data points in the profit profile in Figure 3.2 from right to left and



**With the facts, customers can be migrated toward higher profitability by
(1) managing the service costs, (2) reducing their services,
(3) renegotiating prices and/or shifting their purchase mix to richer products.**

FIGURE 3.10 Migrating Customers to Higher Profitability

bottom to top. (The following section further explores these types of actions.) Knowing where customers are located on the matrix requires ABC/M data.

Another critical reason for knowing where each of your customers is located on the profit graph is to protect the most profitable customers from competitors. Because so few customers account for a significant portion of the profits, the risk exposure is enormous. The farther to the left side of the profitability profile distribution curve the peak is located, the more sensitive the bottom line is to competitor attacks on key customers or product lines.

A common misunderstanding about ABC/M is that it does not capture life cycle costing. A calculation of ABC/M usually is for a time period such as a month. (This is discussed further in “Seven Options to Raise the Profit Cliff Curve” later in this chapter.) Individual customers have the potential to produce even greater profits in the future beyond simply additional profits from incrementally higher revenues from additional purchases. Other tangential profits come from the following:

- Reduced operating costs from economies of scale,
- Word-of-mouth referrals by the customer to others who become new customers, and
- Premium pricing that can be achieved with loyal customers.

The combined effect of these sources of profit generated from a single customer highlight the importance of high customer retention rates, the value derived from customer loyalty, and the opportunity cost of losing profitable customers.

Some customers may be located so deep in the lower-right corner of the customer profitability matrix that the company will conclude that it is impractical to achieve profitability with them and they should be terminated. After all, the goal of a business is not to improve customer satisfaction at any cost but rather to attempt to manage customer relationships to improve long-term corporate profitability. “Seven Options to Raise the Profit Cliff Curve” in this chapter discusses issues related to unprofitable customers. “Who Benefits from Increased Value, Customers or Shareholders?” in Chapter 5 discusses issues related to trading off customer service levels with changes in shareholder wealth.

Beware the Learning Organization: Competitors

As progressive organizations gain proficiency and mastery with the business intelligence provided by ABC/M, they can be formidable. What those companies are recognizing is that each individual customer affects the profitability of their brand products, base services, and market segments. The effect is due to the customer’s purchasing habits, delivery location, discount/rebate structures, or other diverse ways in which it places demands on its suppliers. When equipped with ABC/M’s superior data, competitors can cherry-pick the premium-profit customers of their competitors. They can also strategically price for new product entry.

Future competitive differentiation will be based on the rate of speed at which organizations learn, not just the amount they learn. An organization should not be too late in understanding and mastering ABC/M as the route to understanding customer profitability. It should also not want its trading partners to be blind to where they make or lose money.

Having all these cost and margin data is only a beginning. People have to act on and make decisions with the data. But in the land of the blind, the one-eyed man is king.

SEVEN OPTIONS TO RAISE THE PROFIT CLIFF CURVE

What does a commercial organization do with the information that results from the profit cliff (i.e., fishing pole) diagram in Figure 3.2? In other words, what actions can an organization take to raise the last data point vertically up the “profit track?” This is all about the “M” in ABC/M, the managing of costs and profits. Before doing anything and acting hastily, it is important for anyone interpreting the profit distribution diagram to understand the following key issues about the diagram:

- This snapshot view of a time period’s cost does not reflect the life cycle costs of the products, service lines, or customers that have consumed the resource and activity costs for that particular time span.
- The information represented in the graph should not be prematurely or spontaneously acted upon until analysts appreciate the large difference between what information is and what making an actionable decision is. They are not the same.

These two issues are briefly discussed below, followed by a description of each of the seven options an organization can choose to improve profitability:

1. Introduce new products and service lines.
2. Raise prices.
3. Manage the customer’s demands.
4. Abandon products, services, or customers.
5. Fix the process.
6. Focus the process.
7. Offer the customer profit-positive service level options.

ABC/M’s Blind Spot: Life Cycle Costing

It is important not to misinterpret the cumulative profit cliff (fishing pole) diagram. The weak spot of traditional costing has always been tracking the life cycle of costs and revenues of products, service lines, and customers. ABC/M measures the consumption of expenses for only one time period (e.g., month, quarter, year). Traditional absorption costing has historically not been applied to track costs and profits across multiple periods.

Some industries in which products have very short life cycles, such as semiconductor manufacturers, have developed competency in this area. But these industries have been the exceptions. Just because a product or customer may be located at the far-right of the profit distribution graph, meaning the costs exceeded the sales for that period, does not automatically mean this is a bad thing. The time value of the product or customer must be considered. All new products and new customers require one-time and nonrecurring up-front spending. New products require product and development costs. New customers require acquisition costs to persuade them to purchase. Unless an organization is specifically tagging and tracking these nonrecurring costs, their visibility will be lost when they are combined with all the other recurring costs that are being incurred during the growth and maturity phase of the product’s or customer’s life cycle.

Even if the nonrecurring expenses are isolated and excluded from the assigned product or customer costs, there can still be misinterpretation. During the growth phase, the volume of sales will not be recovering all the non-unit variable costs. Eventually during the mature stage of the life cycle, the planned sales volume is expected to recover the non-unit variable costs.

Figure 3.11 is a time value curve, with the nonrecurring costs located at the beginning of the curve. As time passes, if there are sufficiently high price levels, the cumulative buildup of sales less the cumulative nonrecurring and recurring costs will pass the break-even point. An acceleration of the break-even point will result from increased purchase volume and reduced “costs-to-serve.”

The cumulative buildup in sales hopefully will eventually exceed the cumulative nonrecurring and recurring costs.

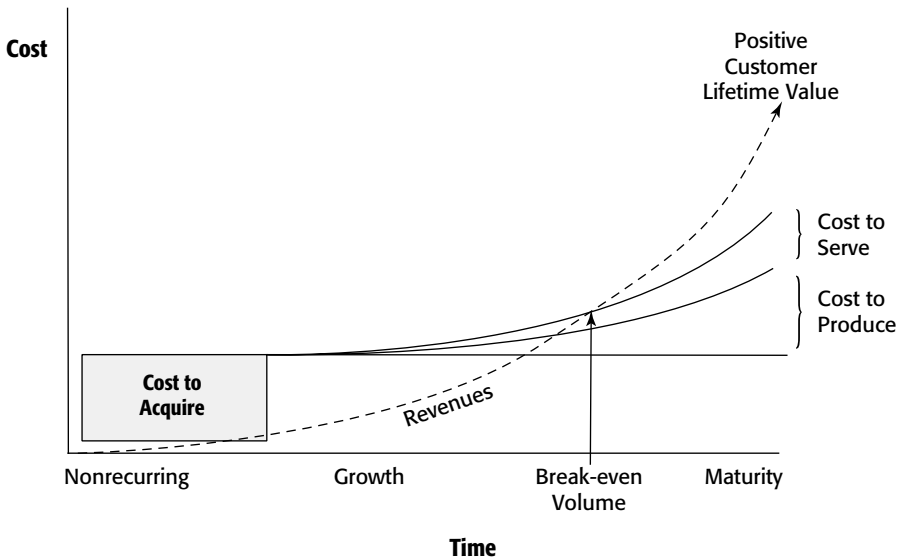


FIGURE 3.11 Time Value of Products and Customers

For each slice of time that ABC/M computes and traces, all the expenses and the profits generated from products and customers can obviously be tracked; that is what ABC/M does so well. By additionally and separately tracking each individual product or customer, as one would track the investment return of an individual stock in a portfolio, one can measure the *lifetime* profit or loss.

If a product or customer is located at the right-hand side of the profit cliff in one period, in successive periods it may migrate quickly to the left and become a shining star. But if it repeatedly remains unmoving as a profit loser year after year, one must eventually ask: How long should we tolerate that product, service line, or customer continuing to take away profits from our shareholders and us?

Information and Actions Are Not Synonymous

Imagine that your organization has created a robust and accurate ABC/M system and that it produced a profitability curve profile very similar to the shape in Figure 3.2. Now imagine that you are given only 30 seconds to summarize and distill the chart in front of senior management. What would you say?

Many analysts are tempted to summarize the graph with a knee-jerk reply such as, “This is a picture of our profitable and unprofitable products and service lines. If we drop the items descending down the right side of the peak, we will be much more profitable.”

This would be a wrong answer. In the first place, as just discussed, an ABC/M snapshot of a slice of time does not recognize product life cycles. There are other reasons as well. In some cases, the marketing and sales functions may have determined that if they sold a few items at low profit or unprofitable levels, there are customers who will purchase those but also several of the profitable items. Their argument is that they must offer a full line of products. ABC/M does not determine whether that is a successful strategy, but it does provide some of the facts to verify how well that scheme is working.

A similar example is a department store that opens up a food court for many vendors. It is possible that after a while the store, using ABC/M data, will conclude that the food court is not sufficiently profitable. It could drop the service. But what if, as a result of this action, there is a reduction in shopping traffic that adversely reduces the sales volume of the other departments in the store?

The lesson here is that a business must consider many other factors in addition to profits as it assesses better ways to make money. Figure 3.12 is a “staircase” showing how raw data are converted into managerial information and used for decision making and taking actions. A good question is, where is the epicenter and most central location of the ABC/M data on that staircase?

Figure 3.12 shows a reasonable answer. The ABC/M data only provide findings and observations. From these, the organization can discover more things that it never knew, ask more questions, and test hypotheses. Perhaps it may need to collect additional or more granular ABC/M data to answer those questions, but

Note where ABC/M data are located along the steps for how data turn into a decision. ABC/M is not the “silver bullet” solution or a provider of “no-thinking required” answers

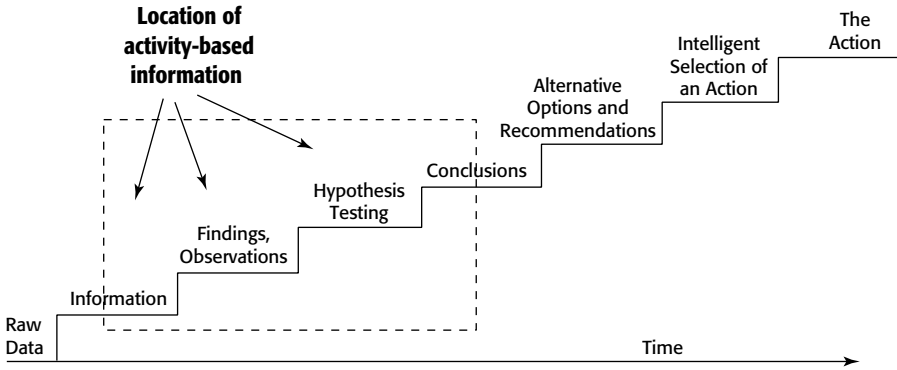


FIGURE 3.12 Epicenter of ABC/M Data in Decision Making

the key point is that the ABC/M data are serving as a stimulant to get people thinking about what options the organization might have. (Later on and farther up the staircase, ABC/M data can also be used to test or compare the outcomes of the alternative actions, but ABC/M data are initially used to aid in learning.)

In Figure 3.12, the person who would have told the senior executives to “drop the products to the right of the peak on the profitability profile” would have been at the top of the staircase. The message here is that although making good decisions is an ultimate goal, the ABC/M data are strictly an enabler to be combined with other factors to attain that goal.

Seven Actions to Increase Profits

The intent of measuring profit margins is to improve them. In Figure 3.9 the matrix of the product mixes margin versus the “costs-to-serve” customers showed migration paths of the intersecting points: the customer profit positions. What actions can be taken to migrate these data points toward higher profitability?

- 1. Introduce new products and service lines:** The entire subject of new product development is much better explained by “target costing.” ABC/M’s strength has been its focus on recurring costs. There has been rich research in target costing, which involves innovation.² Those who have researched the methods of target costing have explained that the ABC/M data have been a valuable provider of cost rate and other planning parameters used to determine target costs. I briefly discuss target costing in “Target Costing versus Assignment Costing,” later in this chapter.

- 2. Raise prices:** An obvious action that can raise the entire profit cliff, at all points from end to end, is to raise prices. The problem with this solution is price elasticity. Any time one raises prices there is a risk that the buyer will switch to a competitor, substitute an alternative product or service line (possibly from a competitor), or simply stop purchasing and do without. All these risks lead to lower profits (unless the product, service line, or customer is already unprofitable and the freed-up idle capacity from the lost volume is not re-deployed or removed). For high "costs-to-serve" customers, costly services can be priced as an added surcharge. Similarly, menu-based pricing can be established for services desired by some but not all customers.
- 3. Manage the customer's demands:** Abandoning a customer, which is part of item no. 4, is a last resort. Once the facts are known about where a customer's level of profit is—and with visibility of margins from its products, services, and its "costs-to-serve"—that customer can be migrated toward higher margins. This can be done through either increased revenues or reduced costs while minimizing customer defections to competitors.
- **Revenues:** One tactic is to influence the customer to purchase a relatively higher margin mix of products. This can be done through promotions or persuasion. Increasing sales volume is the other, more obvious tactic. Pampering preferred customers may be worthwhile and may be key to retaining the customer.
 - **Costs:** If the customer is too demanding (e.g., ordering too frequently), collaborate with that customer to determine how to reduce its service level. If appropriate, as just mentioned, services can be unbundled and charged as fee-based. If the supplier's "costs-to-serve" processes are inefficient, improve them (see item no. 5).

ABC/M data make these tactics more viable because the facts are known.

- 4. Abandon products, services, or customers:** When products, service lines, or customers are in the mature stage of their life cycle and either their costs exceed profits or they are marginally profitable, they are targets for investigation. Should one stop making, delivering, or selling these targets? In the field of strategic planning this analysis is referred to as *rationalizing*. As stated previously, ABC/M does not make decisions; it focuses on where there may be opportunities.

There may be acceptable reasons to continue to incur losses. To some executives, dropping product lines and services or "firing" a customer is usually a last resort for improving profits. One popular reason to continue to lose profits on specific products, service lines, or customers that is offered and argued by the marketing and sales functions is that "we need to sell the losers in order to sell a whole lot more of the winners." This may be the case, but equipped with the ABC/M data one can now test and prove this claim because all the data exist to combine the winners and losers to see if the net effect is profitable.

Another reason may be that carrying a highly visible and referable customer at a loss attracts new customers to offset the loss. This is in effect an

investment decision. Equipped with the ABC/M data, one can apply investment justification methods because the cost information is now calculated and available from ABC/M.

Before permitting an unprofitable customer to be terminated, all avenues should be explored to convert it to being profitable. Good judgment and other subjective, qualitative information should be considered. Also, it must be recognized that after firing an unprofitable customer (or dropping a product or service line) the fixed spending expenses that are not directly variable will still remain in the cost structure. There will be an increase in idle and unused capacity of some of the time of those employees who were making

Deselecting Customers

Before deselecting (i.e., abandoning) a customer, make an extensive analysis. A good understanding of customer life cycles is essential. Many believe that high customer profitability is linked to customer retention and loyalty. This means that an individual customer's profitability is likely to grow over time. For example, as customers get to know and work with a supplier, they tend to interact more efficiently with it, resulting in reduced "costs-to-serve." Customers who are repeat buyers may be more likely to buy at premium prices. Satisfied customers can generate referral business.

Nevertheless, how much loss can you invest in an unprofitable customer that is eroding your profits? How generous can you be? Should this spending be categorized as a donation, as are other goodwill contributions? What decision would a shareholder make about retaining this customer?

The two financial issues related to unprofitable customers are the continued spending of valuable and resource-limited sales and marketing time and money that is not serving prospects and profitable customers and the realizable financial loss avoidance from dropping the customer.

- Not all suppliers are free to abandon customers. Examples include regulated environments such as utilities or healthcare facilities. Long-term contracts may also legally prevent disengagement.
 - Four barriers inhibit suppliers from dropping customers:
 1. They do not have an ABC/M segmentation system that credibly calculates margins to customers.
 2. The sales force incentive (e.g., commission) compensation program is based on sales and revenue volume, not profits.
 3. There are unknowns regarding unprofitable customers who may be purchasing some products or service lines that are high margin on their own.
 4. Unwanted negative publicity may result.
- ABC/M does not automatically solve all these issues, but it provides a foundation for asking good questions and determining solutions.

those products or delivering those services. To realize real expense savings, management must either redeploy that unused capacity to other revenue-generating activities (amounting to a future cost avoidance) or remove the capacity by terminating the affected employees.

If the decision to terminate a customer is made, methods to effect that outcome include a combination of raising prices, adding surcharges, and reducing service levels. These tactics to discourage a customer from continuing the relationship are obviously intended to influence the customer to voluntarily remove itself rather than having to formally terminate it or deny it business.

5. **Fix the process:** This is often the solution organizations realize may be the most expedient and practical to improve profits. Take waste, inefficiencies, and unneeded, unused capacity out of the system. Remove redundancies. Manage the cost of quality by reducing the costs of nonconformance and even reducing the costs of conformance directionally toward the ideal state, in which all activity costs can be classified as error-free. Moving from ABC into ABM is addressed in Chapter 9 in “Using Activity-Based Costing to Become Activity-Based Management.”
6. **Focus the process:** In many cases a supplier’s customer segment automatically receives product features and functions or services that it really does not care about. Other segments may, but this one does not. The supplier can investigate how to scale back on those wasted costs. Suppliers may be under-spending on activities that lead to preferences that certain customer segments highly appreciate. If those customers are reasonably satisfied, adding more effort can increase both the overall market and the supplier’s market share of it. If those customers are not happy, they may shift to competitors. In either case, increased spending for only those costs makes sense. In Chapter 2, in “Using the Attributes of Activity-Based Costing,” an innovative approach is described that leverages ABC/M’s powerful attributes by matching them to the vital few customer preference traits of the supplier’s products and services.
7. **Offer the customer profit-positive service level options:** This last option is usually pursued by organizations that have aggressively pursued process reengineering and continuous improvement programs. So much good work is already behind these types of organizations that they are lean and agile, with minimal unused capacity. For them to further improve profits there are no remaining places to go to remove costs from their cost structures. But they are savvy enough to understand that if they can motivate their trading partners (i.e., suppliers and customers) to shift to alternative service-level options, they may come out net-profit-positive following the switch. This topic is addressed in Chapter 4 in “Measuring Supply Chain Profits and Costs: ABC/M to the Rescue.”

Fishing Pole Profitability Profile Diagrams

As you can imagine, there can be many different shapes of the cumulative profitability diagram. For example, some immediately peak and then are relatively flat

for the rest of the diagram. This means that the organization makes the bulk of its profits on only a few products (or customers), and the remainder are virtually at break-even: The pricing exactly recovers the cost with no profit.

Many other shapes exist. Someday all these shapes of profit distribution curves will be cataloged as astronomers have classified galaxies of stars (e.g., spiral galaxies, elliptical galaxies). By leveraging these shapes, astronomers can infer behavior about gravity and the evolution of space. I predict that as the ABC/M community moves into Stage 5 cost management systems, it will be categorize the shapes of profit cliffs, with accompanying interpretations.

What Is Needed Is a CPO

Commercial organizations have always had the job position chief executive officer (CEO), and many have a chief operating officer (COO) as well. They have a chief financial officer (CFO) and a chief information officer (CIO). More recently we have seen the roles chief technology officer (CTO) and chief knowledge officer (CKO) or chief learning officer (CLO).

But no one has a Chief Profit Officer (CPO). One could argue that the COO is responsible for profits, but that person's daily job involves so many other burning platform issues that he or she really does not have the time to examine all the various angles where margins are squeezed, work efficiencies might bear substantial extra returns, certain customers or channels are big problems or opportunities, or there is substantial misalignment between work executed and the strategy. If a CPO was held responsible for continuously raising those margins by communicating and coordinating with all the participants of value creation—including suppliers and customers—profits would increase in a more organized manner.

TARGET COSTING VERSUS ASSIGNMENT COSTING

Ideally, prices should be linked to sensitivities of customers and the market. Too often, marked-up costs are computed to ensure an adequate profit margin. Target costing, which is price-based, offers an improvement over cost-based pricing.

In Japan, cost management is the responsibility of engineers, not accountants (which ironically is where the responsibility was located in the United States in the 1920s when Frederick Taylor's scientific approach to management was popular). The Japanese treat costs as a symptom, not a cause or a solution. They embrace costs as important clues for tackling problems or seeking opportunities.

Target costing begins with the assumption of the customer's ability to pay. It works backward from the customer's preferences. That is, target costing begins with market-based pricing, independent of cost, for desirable product features, functions, and quality. Because earning a profit is a given, a planned-for target cost becomes a calculated number for which the operating costs cannot be exceeded following the product design:

$$\text{Target cost} = \text{Market-priced selling price} - \text{Target profit margin}$$

Manufacturers in most countries outside Japan first design and produce their products; they then calculate a cost-plus markup to determine a selling price that assures a profit. Salespeople then hope there is still a sufficient market for the product or service at that determined and potentially high price:

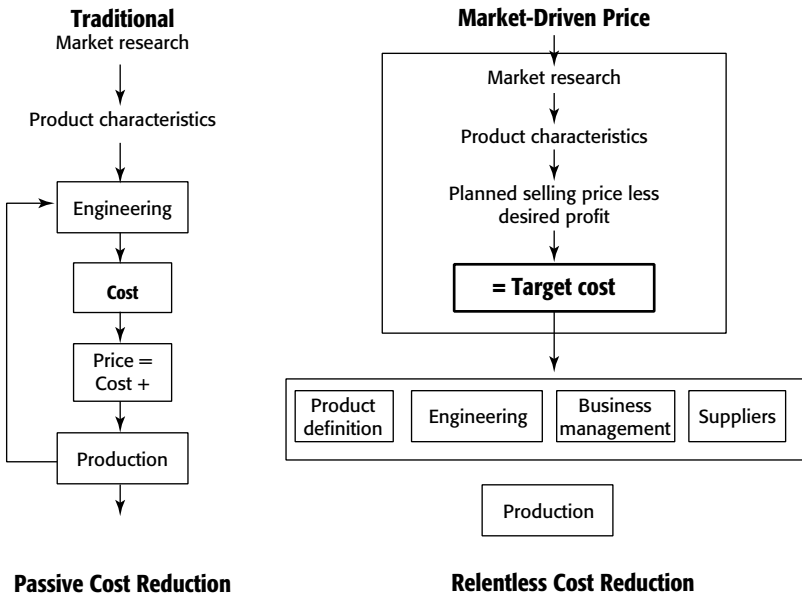
$$\text{Actual cost} + \text{Planned profit} = \text{Price}$$

Figure 3.13 illustrates these equations. Note that the predetermined cost drives the target cost approach.

Figure 3.14 reveals the intrinsic benefits of the target costing approach. Costs are best managed during the concept and design phase when the design engineers can be restricted to "live within the company's means" to develop a marketable product. By excelling in strong and stable designs, the engineers are effectively committing the costs up front in the product's life cycle. Costs are intrinsically created during the new product or service development phase. That is, target costing makes costs an input to the design process, not an outcome of it.

In effect, the majority of a product's recurring production costs are designed prior to production. Experience has shown that it's easier to design costs out of products than to find ways to eliminate costs after the products enter production. The power of target costing is its ability to act in a feed-forward mode in the design phase, as opposed to a feedback mode in the production stage.

There is a time lag between product design decisions and their eventual impact on the recurring operating costs. Cost causes and cost occurrences are sepa-



Passive Cost Reduction

Relentless Cost Reduction

FIGURE 3.13 Market Target Costing

Costs are intrinsically created early during the new product or service development phase. Afterward, cost management is limited to only controllable costs.

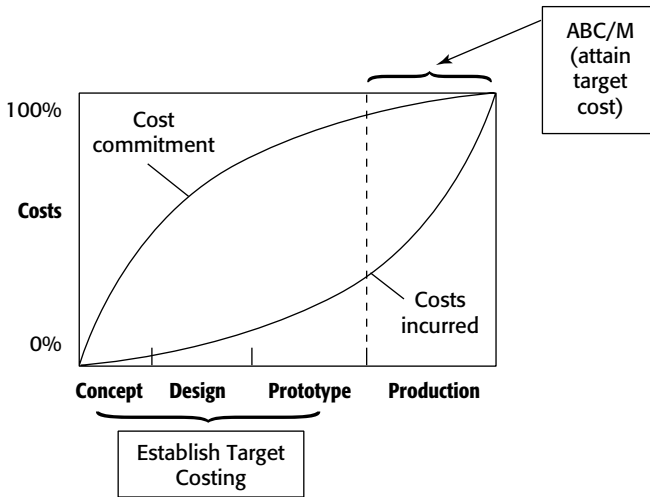


FIGURE 3.14 Costs Committed in the Concept and Design Stages

Source: Gary Cokins, *Activity-Based Cost Management: Making It Work*, © 1996, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

rated by time. The operations people are basically dealt their cards and then must make the best of what may be a lousy situation. Sometimes the production people can only try to minimize the unfavorable variances that result from high product-design costs that were already baked into the product.

Additional unplanned costs are usually introduced prior to production. Without stable designs, the frequency and intensity of engineering design changes that can follow will generate excessive costs later in the product’s life cycle. In Japan, cost management begins with target costing. Each supplier for components is also informed of the product’s specifications and the price it can charge. The supplier must creatively design its component in an economical way that meets the product specification but also provides some profit. After the product is in production, the Japanese rely on *kaizen* methods as their form of continuous improvement to further drive costs down.

In contrast, other countries focus on managing (i.e., beating up) the production personnel to get costs in line. Generally, production and operations face a predicament: They can only slightly decrease costs, by introducing some level of efficiency, but they cannot substantially reduce costs outside the constraints of the predetermined product (and associated process) designs.

In Figure 3.14, the ABC/M data are applicable without question during the mature stage of the product’s life cycle where the work is recurring. However, portions of ABC/M data are also useful for the design and development phase:

- Cost rates that are effectively calibrated in the historical ABC/M reporting can be used to extrapolate costs in the design of new products.
- In some circles, applying ABC/M for product costing has been called *feature-based costing*. The product’s design features govern the amount of cost usage. For example, the future unit cost of a new printed circuit board might be estimated based on the holes punched, number of board levels, and so forth. The unit cost for each hole punched and board placements will likely have been derived in the historical ABC/M system. In effect, the time dimension activity driver has been converted into an equivalent related to the product.

In these ways, the ABC/M data, which are so powerful in the recurring phase of a product’s life cycle, can also be leveraged in the up-front product design phase.

In short, target costing is a technique to manage the future profits of a company. It achieves this by applying discipline in the product development phase of a product’s life cycle. The product’s cost must satisfy a target price and target profit margin. After a target cost is derived, improvement methods, such as value engineering for products and business process reengineering, are applied.

ABC/M systems are a result of the competitive business need for much sharper pencils than have ever been needed before. ABC/M data bring cost visibility of the processes and more accurate product and service costs.

DECLINE OF STANDARD COST ACCOUNTING SYSTEMS?

ABC/M is basically a refined version of a standard cost accounting system. Professor Robert S. Kaplan of the Harvard Business School, credited with being one of the earliest advocates of ABC/M, did not invent ABC/M, he just began to apply it. Standard costing is a method of absorption accounting in which the resource expenditures are restated as outputs, such as products. The key is to understand all the assumptions.

From Engineers to Accountants

Standard cost accounting’s origins date back to the late 1880s. Standard costing evolved when accountants began to mirror a key principle of Frederick Taylor’s scientific management revolution. Scientific management evolved as industry progressed from handcrafted job shops to repetitive manufacturing and assembly processes for standard products. A key to scientific management was analysis to determine the ideal method to perform a workstep and a predictable standard time for each step.

To support scientific management, standard cost accounting was mapped to the concept of well-designed processes with predictable rates of work output. The costs of each workstep were time-based and were used to calculate the costs of different products that in turn were combined with sales and pricing data to provide profit reporting by individual standard product.

In addition, the same standard costs could be used to compute favorable and unfavorable cost variances of actual expenses that deviated from the standards. The magnitude of the variance would suggest the severity of the reaction. In short, a method of control could be introduced with feedback of actual to expected cost results. The accountants' "cost variances" equated a financial measure with time, weight, and volume measures. The operations managers used these cost variances as their gauges for control. Eventually the emphasis of managerial accounting shifted from only calculating product costs to managing efficiency and utilization of people, machines, and space.

We now understand that measuring cost variances can inadvertently maximize "local" production but not optimize enterprise-wide production. ("Local" versus "enterprise-wide process" accounting is discussed in Chapter 8.) In short, after the Industrial Revolution the responsibility for measuring costs shifted from the mechanical engineers to the accountants. With this shift, the emphasis of accounting fell on cost reporting rather than cost finding. Fortunately, we are now experiencing a reverse shift of the responsibility for cost accounting back to the engineers and operations managers. ABC/M is part of that shift.

ABC/M versus Standard Costing

A primary difference between traditional standard costing and ABC/M is that ABC/M more logically segregates and restricts cost center spending pools into work activities rather than departments. ABC/M then matches each spending pool to an activity driver that truly mirrors the consumption rate of that spending pool. Each driver rate can be considered as a standard cost. The consumption rate can be thought of as representing a linearly variable relationship between the quantity of the driver and the workload.

Another difference between traditional standard costing and ABC/M is the frequency of updating and refreshing of the ABC/M system. ABC/M is often updated monthly or quarterly, whereas the standards for traditional standard costing are usually reset annually. If we extend our thinking to refreshing the ABC/M model even more frequently—such as weekly or daily—ABC/M approaches a truly actual cost accounting system. However, do not assume that daily ABC/M reporting would be good for making better decisions. For some decisions, frequently computed ABC/M could result in *worse* decisions. This section explains why.

There are several choices for defining a standard cost:

- Use *ideal* costs. Ideal costs are perfection-based, error-free costs that presume, as examples, no waste, no inefficiency, and no time delays. The shortcoming of this type of standard is that virtually all the cost variances are reported as unfavorable variances. The intent of this type of standard is to place perfection as a target and presume that the workers will try their hardest to close the gap. Some organizations, however, believe that this method is demotivating. The following equation illustrates these costs:

Ideal cost = Standard cost + Allowable waste

- Use *standard* costs. These costs are intended to be realistic yet still reflect reasonable performance under normal operating conditions. The following equation illustrates these costs:

$$\text{Standard cost} = \text{Actual cost} \pm \text{Variances}$$

(assuming maximum practical capacity)

- Use *actual* costs. This approach basically discards any pre-established targets and computes costs based on known and reported results. A so-called actual cost in reality will always be an “average” cost of each output for the total time period for which expenses were measured.

Some people believe that there are additional choices for defining standard costs. These choices would depend on including or excluding the idle and unused capacity that normally exists in operating systems. I address these issues later in this chapter.

There is increasing pressure to move away from standard costing toward actual costing: no more variance to planned standard reporting. Imagine that you have infinite computing power and an effortless way to collect and report agreed-upon, relevant data. Under these conditions, don't standard cost accounting practices go away? Assuming our hypothetical computing and reporting scenario, frequently reported actual data would encourage trend reporting and monitoring of only the actual costs. This means that results would be measured and explained based on comparisons of history as opposed to red-flag alerts to exceptions from standards that are often based on stale and often flawed averages or estimates.

Figure 3.15 reveals that as a company incurs constant changes from its mix of customer orders and improvements to its processes, the magnitude of each activity cost fluctuates.

The standard cost establishes a “cross-hair telescope” baseline using history or an engineered estimate or measure as the standard. Actual expense data are then compared to the standard to assess the deviation from the standard cost. Often the selected baseline measure is flawed, not the actual results. As more rapid, frequent collection of actual data occurs (which is like going from freeze-frame snapshots to rolling film), users may better remember and compare their performance to their prior results rather than to standards. With actual cost reporting, users can adopt trend-line analysis based on frequently reported absolute measures rather than deviations from preset standards. But would this be a cost accounting utopia or introduce unexpected hazards?

There will be continuing debate on the topic of applying ABC/M data for historical variance analysis. My opinion is that it may not be worth the effort to report elaborate cost variance data with the intent to react to differences. However, Dr. Robin Cooper, one of the early advocates and authors of ABC/M in the 1980s, has proposed that there be greater application of ABC/M for operational control.

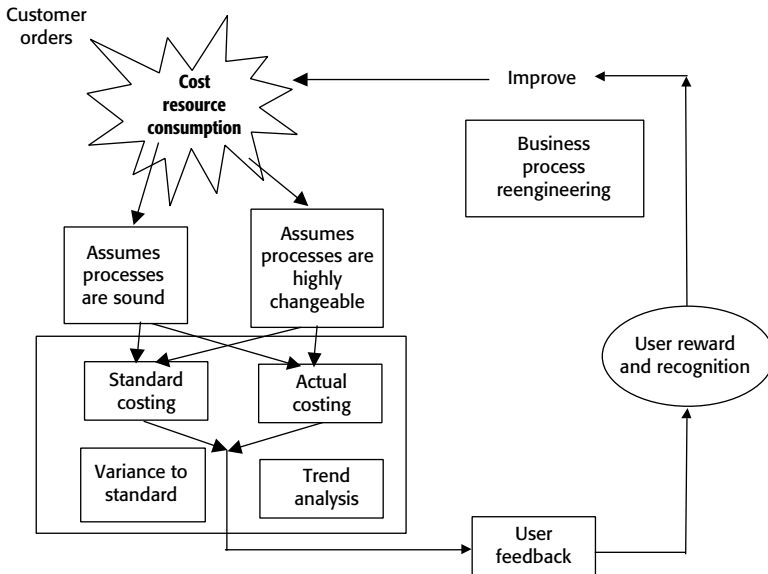


FIGURE 3.15 Decline of Standard Costing. Which Path?

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Dr. Cooper has described his surprise that ABC/M has not extended standard cost accounting in two areas:

- **Weak data collection:** ABC/M systems can lend themselves to “time and motion” studies or comparable empirical measures rather than the usual interviewing and estimating techniques. With more measured costs, there is more opportunity to move beyond current performance levels toward optimal practices.
- **Lack of variance analysis:** Rather than computing the ABC/M driver rates and output costs, it is possible to check actual expenses results against pre-determined standards. Variance analysis was once considered a leading-edge practice for direct costs. It appears to be a step backward to not continue to compute ABC/M variances for indirect costs.³

Advocates of cost accounting practices performed by some companies in Germany also support the use of detailed variance analysis for operational users.

ABC/M Data versus Operational Control

The debate about applying ABC/M data to historical variance analysis can be resolved by considering arguments about the degree to which ABC/M should be used for operational control and learning rather than strictly for strategic decisions. Professors Kaplan and Cooper have addressed this topic by distinguishing

ABC/M from operational learning and control cost systems.⁴ They view them as separate information systems, serving different purposes, yet still useful to each other.

- **Operational learning and control:** This information, which includes non-financial data, provides managers with feedback about process efficiencies and “local” performance. Because the focus is on improving performance, this financial information requires more accuracy and more frequent reporting. Longer-term committed costs may be excluded from analysis. Actual expenses incurred are input because these are the costs that employees can influence and control.
- **Strategic activity-based cost management (ABC/M):** This information allows managers to strategically evaluate products, service lines, channels, and customers with a primary interest in understanding enterprise-wide profit. It helps managers understand the underlying economics of their organization. In addition to the obvious inferences from what is revealed by historical costs, the ABC/M data are prospectively applied to understand activity costs with respect to future capacity. Analysis with these data assists managers in adjusting existing resource levels to match forecast demand.

Kaplan and Cooper feel strongly that these two managerial cost systems are so different—in their requirements for accuracy, timeliness, and aggregation—that no single approach can be adequate for both purposes. They believe, as I do, that the two systems can be partially integrated, but that the integration must be carefully designed. In fact, without careful customization, executives and managers could wind up with a single system that does not adequately perform either purpose described above.

Attacking this topic reminds me of the challenges and debates that physicists encountered as they began to reconcile the huge gap between Einstein’s theory of general relativity and the new discovery of quantum mechanics. Einstein was working at the macro level involving the force of gravity and distances spanning the universe, whereas physicists like Neils Bohr were explaining natural forces at the subatomic micro level. Physicists struggle at the boundary—are the macro and micro laws of physics on a continuum, or is there a sharp punctuated edge between them? The analogy for cost accounting is the divide between operational control (micro) and strategic (macro) cost systems: Is the divide a continuum or a disconnected step?

Real-Time Cost Data: Magic Pill or Poison?

Managers find the idea of instant and real-time financial data very appealing. However, it is important to determine what type of real-time data should be of interest: financial closing reporting data or product costs data? There are significant differences. The news media have broadcast information about how leading-edge

companies can close their books in a day, any day, with hard numbers, no estimates. The challenge is to understand the *assumptions* used for the cost data. You don't want to day-trade the company. If the assumptions about costs are flawed, the profit margins are flawed also. You send wrong signals to the internal users.

There is an old maxim, "Be careful what you wish for or you might get it." As the frequency of refreshing and updating costs increases, the actual use of the labor and equipment time to perform tasks is reflected in the cost. This can be useful to monitor resource utilization performance, but because all the expenses are often assumed to be fully absorbed into the product or service line costs, including the costs of unplanned unused and idle capacity, product costs are overstated relative to their own true consumption. Therefore, any resource budgets or plans based on this type of unit costs could arguably also be overstated. In short, when actual expenses are translated into cost objects, both planned and unplanned nonproductive and idle capacity will get baked into the unit costs.

When idle capacity costs are inadvertently hidden this way, managers can receive misleading information. To resolve this dilemma, Kaplan and Cooper advocate refreshing strategic ABC/M only periodically and with the calculated activity costs and cost objects, excluding any variances that may have been experienced.⁵ That is, the standard rates for ABC/M should not be established using the actual expenses and expected annual volumes, but rather should be based on the maximum practical capacity of the resources.

Practical capacity is defined as total capacity less planned idle and excess capacity for protective purposes (e.g., demand surges). All other idle capacity is included, but as if it is minimal. An advantage of using practical capacity is that the product cost will appear more stable. That is, the product costs are unaffected by fluctuations in year-to-year volumes and activity levels. Without this stability, users would have difficulty judging the impact of changes intended to improve the process and product. The practical capacity assumption computes the minimum costs at which products could be made with existing equipment when the current planned idle capacity is fully used. The disadvantage is that products will usually be under-costed, and the under-costing worsens as idle capacity increases.

Longer time periods between updates also allow outliers and statistical fluctuations in work to offset around an average, meaning that the driver rates from ABC/M will likely be representative of *normal operating conditions*.

Infrequent calculations also partly explain why estimates, rather than precise (and costly to gather) input data, can be tolerated by ABC/M. Decisions made with ABC/M are intended, per Kaplan and Cooper's framework, to be more strategic than operational. (The ABC/M cost assignment structure in Figure 2.9 (page 53) accommodates this solution by allowing the tracing of any or all nonproductive and idle capacity costs to the business sustaining cost object. This is discussed further in Chapter 6 in "Linkage of Activity-Based Costing to Unused Capacity Management.")

In contrast, if strategic ABC/M costs are calculated frequently with real-time and reliable data, the unit (and activity driver rate) costs will fluctuate. Unfortunately, the causes of the fluctuations may be entirely unrelated to the underlying economics and productivity of the work activities and processes. Natural fluctuations always occur in timing of spending (i.e., use versus bookkeeping’s recognition), volume, productivity, and yield. Processes always have some level of variation.

For example, if the oven in a bakery breaks down for a while, should the resulting higher cost of each loaf of bread then be used for every decision? The bread did not cause the oven to break down. The unfavorable cost variance from the oven breakdown should serve as feedback to operations in the operating cost system, but variances should be excluded from ABC/M product standard costs for longer-term strategic decisions such as pricing. The lesson is, do not pass inefficiencies and waste on to your customers.

Introducing such short-term fluctuations will misstate the expected product and customer costs, as well as obscuring improvement opportunities. For example, an organization should not confuse the impact of a decline in customer volume and the resulting escalating actual driver rates as a sign of a decline in productivity. The problem is not efficiency but the need for more customer orders to continuously fill the capacity that was planned for. As another example, when business volume is temporarily high, an organization could be misled by what may appear to be increases in product profits, when in fact reported profits are higher due to the increase in activity quantities (with the same resources).

So, whereas ABC/M proved to be a remedy in the 1980s to remove the product cost distortions caused by poor overhead allocations, this discussion provides a twenty-first century message: If strategic ABC/M is applied (i.e., calculated) too frequently and uses actual costs and actual rates, the consequences can be bad. Instead of getting wrong data every quarter from the old traditional cost system, some managers and teams could receive misleading cost data every day from their new ABC/M system. So-called real-time management accounting can be dangerous to a company’s health.

Linking ABC/M to Operational Control

It appears from the description and purpose of the two types of cost management systems that they must be distinct and apart from each other. This is true, but proper links between them can provide benefits greater than the individual systems could provide if maintained independently. Figure 3.16 illustrates how each type of cost system can boost the other by exchanging vital information. The pyramid shape reveals that strategic ABC/M located on top requires less detail.

Figure 3.16 depicts both cost management systems, with the primary purpose of each noted inside its part of the pyramid. ABC/M is strategic: “doing the right things.” Operational control is tactical: “doing things right.” Note that the infor-

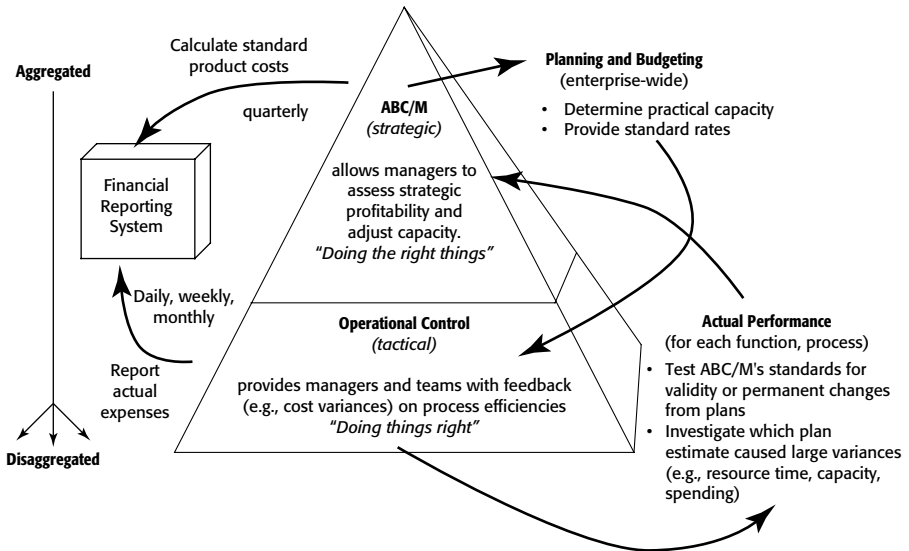


FIGURE 3.16 Differences between Strategic ABC/M and Operational Control Cost Systems

mation that exits ABC/M and feeds the operational control system is planning and budget data of the quantity and expense of committed resources: the practical capacity. The operational control system can then monitor the budgeted resource expenses against actual spending. It can also monitor the budgeted activity cost rates against the actual rates. By isolating the volume, time, and spending variances, the ABC/M standards can be tested against actual practice captured by the operational control system data collection.

Activity-based budgeting and planning (ABB/P) is discussed in Chapter 8. Simply put, ABB/P can be thought of as calculating ABC/M backward. Once ABC/M has calibrated the organization's "standard" driver rates, the driver quantities expected in the future can be extrapolated against the standard rates to solve for the level of resources required to meet the forecast. Equipped with these prospective data, managers can convert their so-called fixed expenses into variable ones by adjusting the capacity supplied by resources to balance the work demands needed to make and deliver the forecast outputs.

In Figure 3.16, going in the reverse direction, note that some information exits the operational control costing system and feeds the strategic ABC/M cost system. On their own, these cost data are actual, more detailed, more accurate, calculated frequently, and specific to the team involved in the function or process. As discussed in Chapter 2 in "Local Versus Enterprise-Wide ABC/M," operational control cost systems are micro-ABC/M subsystems designed at a

more granular level of disaggregation relative to a strategic ABC/M system. Although the operational control data should not be *directly* input into the ABC/M system, which relies on standards, unusually large variances can serve as a signal suggesting that the standard rate in the ABC/M system needs to be adjusted. Any temporary variances should be analyzed for process improvements. Changes to ABC/M standard rates should only be made if they are sustainable with ongoing performance.

The operational control system can also audit if the actual capacity significantly differs from the estimated capacity that was assumed in the ABC/M system. For example, if the quantity of activity driver demands exceeds the estimated capacity assumed in ABC/M, but without resulting delays or erosion in customer service levels, managers may realize that actual capacity exceeds their estimate. The ABC/M system data can then be revised.

ABC/M is primarily used for insights and inferences (see Chapter 8 for further discussion). Changes are made to obvious problems. However, all changes are decisions that affect the future, and for more complex situations, predictive costing is used in the analysis. ABC/M information, in the form of ABB/P, enables managers during the budgeting process (or for planning) to determine the spending increases and reductions they believe will be required in upcoming periods. They are adjusting the organization’s capacity, thus affecting resource expenses. In short, ABC/M and ABB/P are used for strategic planning decisions. Operational control cost systems are to be used to improve local efficiencies.

Transfer Pricing: A Profit Mirage?

Some organizations move product or deliver services among multiple internal divisions and departments. This is internal commerce. Chargeback fees and shared services are addressed in Chapter 6, but I want to briefly comment on the so-called internal selling price, commonly referred to as a “transfer price.” This is the monetary amount that reflects the exchange between the division that ships a product (or delivers the service) and the receiving division.

A true price is only established for a good or service when the external market establishes a market price. It is not until independent third parties repeatedly exchange their money for something that one can assess its going market value. Whenever internal divisions within a larger organizational structure “sell” their product or service to another division, there are three risks:

- A cost-plus markup to add an internal profit is a mirage. The only situation in which an item’s proper price—not its cost—can be gauged is if an identical item is also being sold in the marketplace. For example, in petroleum processing or agricultural products, some intermediate grades or products are also sold as commodities. In those cases, prices are established that are independent of cost, as they should be. But when a manufacturing division transfers a component for assembly or finishing elsewhere, there is no mar-

ket or market price. It should be transferred at the true cost so that the accumulated cost buildup in the final division's cost appears as if it came from one business. In other words, contribution profit margins should only be measured when an exchange is made with an external party.

- Full cost-based transfer prices provide little incentive to the selling division to improve if all cost overruns can be passed on to the buying division.
- Regardless of whether the transfer is calculated as cost only or at cost-plus, if the allocated portion of the cost is flawed, as commonly occurs, misleading information is distributed to the other divisions.

ABC/M provides the basis for a reliable transfer cost system. Some people advocate using a marginal cost-based (not full) transfer price, but they observe that marginal cost is difficult to measure, and you still run into problems when the selling division operates below capacity: Who then pays for the unused capacity? Fortunately, ABC/M resolves these difficulties with a computing platform.

The ABC/M principles described here for internal purposes are also proposed in Chapter 4, which discusses supply chain management. The application will be for measuring interorganizational profit and cost measurement across multiple trading partners in the extended value chain.

Coexistence of Two Cost Systems

Admittedly, what you have just read is complex and can be overwhelming. Some accountants may find unacceptable the idea that how we think about and measure the cost of a resource, a laborer, or a piece of equipment is not absolute: The cost will be represented by a different number in the ABC/M system than in the operational control system. But, costing is modeling. Ultimately, the assumptions one makes about classifying and including resource expenditures and capacity are “decision-dependent.”

The introduction of enterprise resource planning (ERP) system computing platforms involves new opportunities and risks. The risks come from the illusion that online, real-time information is somehow superior to month-old accounting cycle data. Companies will be tempted to integrate their cost data quickly without understanding the assumptions about how their underlying economics relate to their individual decisions and actions, tactical or strategic.

Are all the issues about making decision-dependent assumptions solved? No. For example, ABC/M should apply a standard cost rate based on the maximum practical capacity. However, when it comes to doing the math, how much of the nonproductive and idle capacity should be segregated as product-related versus business sustaining related? Another example is that there should always be a modest amount of unused protective capacity to guard against service-level erosions from surges and spikes in demand. What assumptions does the organization make for these?

Given that cost can and will be represented by a different number in the two cost systems, which number should be used for external financial reporting? Because the actual expenses from the general ledger are captured and reflected in the operational control cost system, these will be reported in the financial statements. The standard product costs from the ABC/M system should be used for cost of goods sold and inventory valuation; however, even here managers will want some flexibility. They will want to assume cost assignment relationships that differ from the compulsory rules dictated by a nation's generally accepted accounting principles (GAAP). Therefore, a primary ABC/M database should be dedicated to GAAP reporting, and revisions or other versions of the ABC/M data should be used for decision making, evaluating performance, and reward and compensation systems.

From Accounting to Economics

Figure 3.17 shows that many different types of assumptions can be used based on the type of decision being made.

In the figure, the cost object cost located above "period n" represents, for example, an accounting product cost. The direct labor and material are easiest to understand because they vary directly with volume (especially material). But there

A cost object can have several *different* costs. The assumptions about *which expenses* to include or exclude, to recognize in future periods, as well as to adjust, depends on the specific decision and its time horizon.

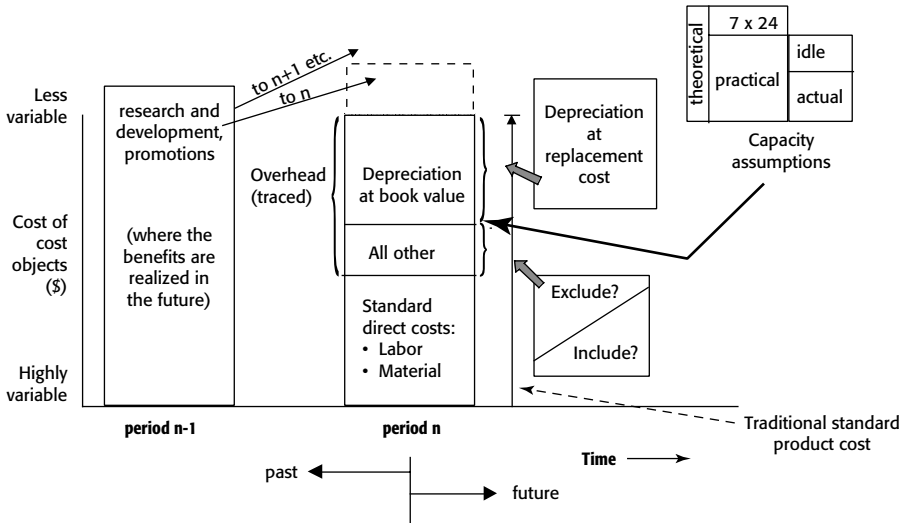


FIGURE 3.17 Cost Accounting versus Managerial Economics

are other considerations about how to treat other expenses that do not vary with product volume:

- **Research and development expenses:** These may be incurred and expensed in a prior time period, but their benefit is experienced subsequently.
- **Equipment depreciation:** Assuming the book value (i.e., the original purchase price) and optional depreciation methods (e.g., straight-line) can produce misleading information. For example, old equipment may be totally written off, thus having no depreciation expense. Applying the replacement cost of the equipment will provide a more reasonable estimate of the product's economic consumption of resources.
- **Scope and planning horizon:** For minor decisions, some expenses may be irrelevant and excluded from the decision analysis because the expenses would not change regardless of the decision. However, for a long-term pricing decision, for example, expenses that may be ignored for a minor decision should be included.
- **Standard versus actual:** Which cost system's numbers should one select from for analyzing a decision, the strategic ABC/M or the operational control and learning?

Making assumptions concurrent with a decision's analysis is admittedly complex, but teams and managers are making these kinds of decisions every day. Small missteps may be harmless, but major ones may result in unrecoverable losses. As time passes, the superior organizations will be interested in better understanding how they make decisions. In Chapter 4, in the discussion of Internet and dynamic auction and bidding systems, I discuss the emergence of rule-based cost analysis. Those rules will require knowing which assumptions about expenses to apply to which decisions.

In Chapter 1 I referred to a *fifth stage* of evolution of cost management systems, in which managerial accounting will evolve into managerial economics. Look how far we have come. In traditional environments, managers had to make do with the financial accounting reports that the accountants published. The accountants took the position that "it is all there—or in my details." But now both ABC/M and operational control cost systems can guide managers and teams in making strategic decisions and promoting process efficiencies. The accountants can periodically draw on data from these sources and reconcile them for external reporting purposes.

There has been a shift to an emphasis on making decisions, not just reporting and unreliable analysis. Stage 5 cost management systems require an internal understanding of the organization's underlying economics apart from that provided for compulsory financial reporting. Information technologies have made the collection and calculation of managerial accounting data easier. However, there are illusions that real-time and dynamic cost information can be a universal source for all decisions. It shouldn't be. We are only at the beginning stage of designing integrated cost management systems that maintain and link ABC/M and operational control cost systems. Different users will draw on different data—

based on predetermined assumptions—to improve their organization’s strategic and operational performance.

We wonder how an age-old profession and practice such as accounting can have such an opportunity to revise its body of knowledge. In the knowledge economy we are entering, brains—not muscle, equipment, or technology—are becoming the differentiators of performance. But the best brains using misleading information may not overcome their disadvantage relative to a smart organization equipped with the appropriate data and methods.

LEAN ACCOUNTING VERSUS LEANER ACCOUNTING

Just as the just-in-time (JIT) production management and demand-pull approaches have captured the interests of operations managers, so has a cost measurement approach that some call *lean accounting*, although to a lesser degree. It is designed to support lean thinking. One of the attractions of JIT material flow systems, such as the kanban foundation for the Toyota production system, is that they require much less paperwork and fewer transactions. In effect, demand-pull and synchronous production systems have begun to displace the traditional batch-and-queue production approach.

Some of the advocates of JIT have extended their thinking beyond the material flow management space and into the cost accounting area. They are proposing that the effort to collect and manage all the cost accounting records and transactions exceeds the benefits. They strongly suggest that, as was necessary for accepting JIT techniques, radical rethinking and changes are needed for cost accounting and performance measurement methods. By removing unnecessary work, the accountants can achieve leaner accounting.

Know the Difference Between Spending and Investing

There is little doubt that performance measures require a shift in emphasis away from local efficiency and utilization measures. (This topic is discussed further in Chapter 8 in “Throughput Accounting versus Activity-Based Planning.”) However, there is less solid footing for proposed changes based on lean thinking that are related to absorption costing and ABC/M. If reforms to managerial accounting that are based on lean thinking are too radical, organizations may find themselves reducing some expenses as if they are non-value-added spending rather than an investment with a healthy return.

Today’s manufacturer resembles a service company—obviously with inventory—but it attempts to differentiate itself from competition by adding services to its products. This implies that on the short-term planning horizon, increasingly more of a company’s expenses are period related than are related to the production curve: variable costs. We need to understand the consequences of proposed changes to managerial accounting before we adopt them. Remember that as cycle

times are shortened to accommodate JIT, the value of information rises. We need to have the right kind of information.

The benefits of lean accounting will apply to nonmanufacturing environments also, so this topic deserves attention from service organizations as well.

Much has been written about the inadequacies of traditional management accounting methods. That is why this book has been written. However, there is a new risk if the proposed solutions overshoot their target. The cure should not be worse than the disease. First I discuss *leaner accounting*: applying lean operational principles to routine accounting transactions. I then discuss *lean accounting* and the problems it addresses in supporting lean operations. I conclude by discussing the risk of taking lean accounting to an extreme that introduces new problems. Finding a balance is the key to lean accounting.

Leaner Accounting

The lean production community would prefer to see the accountants serve much more as change agents than as accounting police. The lean production community believes there is excess waste, complexity, and bureaucracy in traditional standard cost accounting. They see the accountants trapped in a role as bookkeepers with minimal time left over from the non-value-added drudgery of detailed data collection and reporting to assist in analyzing for improvements and innovation. Operations people would like to see their accountants apply lean thinking to themselves.

Following are some of the actions and changes that the lean production community would like to see from accountants:

- Eliminate variance reporting.
- Reduce the number of cost centers.
- Eliminate detailed labor reporting.
- Reduce the number of transactions for payables and receivables (by e-commerce with trading partners).
- Cross-train within the accounting department.

Some obvious obstacles prevent accountants from eliminating and simplifying some of the tasks they perform. One is simply that their cost accounting system attempts to maintain compliance with regulatory and statutory rules, some stipulated by governments. Another obstacle is that general ledger data collection emphasizes spending control. As a result, the general ledger is organized by using many cost centers, and it relies on a huge number of issue and receipt transactions. The cost centers tend to reflect a hierarchical organization view for summary control reporting, but less reflection of a process view. On top of these hurdles, traditional cost accounting thinking is deeply entrenched in the mindset and psyche of accountants.

In some instances, traditional costing can be counterproductive to lean thinking, which requires much more of a total systems mindset. As repeatedly

described, traditional accounting can lead people to make decisions that are contrary to lean thinking. For example:

- An emphasis on maximizing local efficiency at a work center can introduce unneeded in-process inventory while using critical available capacity that could have been much better used to process components needed sooner downstream to satisfy final assembly shipping due dates. This behavior is caused by managers attempting to absorb greater costs to avoid unfavorable cost variances.
- Suboptimizing can result from departments working against each other rather than for each other.
- On a strategic level for evaluating new products, assumptions that only direct costs matter and that overhead is basically a fixed cost have made product proliferation respectable without a complete analysis.
- Resources come in discontinuous amounts. You cannot hire one-third of an employee. As a result, any improvement in efficiencies serves to free up unused and idle capacity. Unless management takes action to remove the idle capacity (and there are good reasons not to remove any, such as to retain operational flexibility for surges in demand), then there will be no realized savings from improving efficiency. Ignoring this step-fixed cost function can lead to improper prioritization of cost-saving projects.

Traditional costing is not innocent in our story. Reforms are welcome.

Lean Thinking Reduces the Need for Accounting Control

The lean accounting community believes that cost accounting and measurement systems are much too complicated. This complexity can cause waste and create confusion. The origin of the complexity traces back in history to requirements to track, check, and validate operations. It also stems from a sincere desire to be cost conscious by tracking and monitoring all aspects of the business. This “accounting police mentality” assumes that the system is usually out of control and that suppliers and employees are not trustworthy.

JIT turns a batch-and-queue production operation into a process flow environment. The emphasis shifts toward flow management of the value stream. Control is easier. Actual customer demand, not just an error-prone forecast, triggers factory-floor activities. JIT prides itself on eliminating complicated reporting and scheduling methods and replacing them with simple, often visual signage systems. The lean community envisions a cost accounting system with much less detailed reporting and transaction data collection. They would prefer measurement of only the vital few events that matter. Transactions are to lean accounting what inventory is to lean production. Transactions are viewed as waste and should be systematically eliminated.

A process and value stream view is fundamental to lean thinking. The initial changes often experienced in factories that begin their journey into lean man-

agement are to physically relocate processing equipment into circular-shaped cells. Many refer to this as *cellular manufacturing*. By broadening the skill capability of the laborers, as in-process product inventory might build up, workers are able to shift themselves downstream to relieve the load and accelerate throughput. Also, the closer proximity of the equipment all but eliminates the need for material handlers to move skids of products from place to place. One of JIT's goals is to configure the people, products, and equipment in a way that reduces variability in the flow. Lean thinking strives for stability, with time buffers replacing stock inventory as the insurance against uncertainty and fluctuations.

Accounting Reforms to Support Lean Operations

Simplification is a cornerstone to lean production and lean thinking practices. With regard to the accounting department, because the measurement systems and workers will be aligned with the processes rather than with the functional departments, lean thinking would prefer that some of the financial analysis also be aligned by the process. (Remember that work activities *belong* to processes in the ABC/M process cost view.)

With regard to accounting information, the lean thinking advocates allow for some relaxation in accuracy and control:

- **Control:** Some of the lean thinking community believe that “backflushing” is a much simpler approach to recording material issue and receipts. This technique relies on a standard recipe for each end-product (e.g., the bill-of-material or BOM). As each single end-product is completed, all the BOM's components are reported as issued in exact quantities as stated on the BOM.

In short, lean systems focus more on outputs of processes and less on inputs. Backflushing of a product's materials and direct labor reporting occurs when a product is at a completed stage rather than recording the multitude of transactions for the release issue of materials to a production order, for each job step, and for the labor used on a job. In a sense, backflushing deduces the inputs based on the outputs. One reason that ABC/M aligns well with lean systems is that ABC/M also does not rely on input transaction data.

This assumes no waste or extra parts used. If extra parts were used and not reported, those parts' physical inventory balance would be overstated. The trade-off for modest problems caused from backflushing is much less transaction reporting.

- **Accuracy:** The lean accounting community will accept some level of inaccuracy in the allocation of indirect and overhead expenses to product costs. Some feel that current cost allocation methods are already so bad that a big fix in accuracy may not gain them that much.

A major conflict occurs as the operations people adopt lean thinking methods, such as backflushing, while their accounting systems continue to require event-tracking of financial information through production orders and labor reports.

One of the more radical proposals from the lean production community is to eliminate labor data collection and reporting systems altogether. A variation on this theme is not to bother to allocate any of the indirect and overhead expenses into product costs. In other words, leave those types of expenses unassigned. This latter method is referred to as “materials only costing” because it only recognizes the direct material costs as being unique to the product costs. All the rest are considered as costs of the operations that are not distinguishable by any product. That is, all nondirect material expenses are presumed to be a cost of doing business, not a product cost.

Some operations people are wary of adopting “materials only costing” because it removes visibility of the components of direct labor costs. The reasoning is that there is a benefit to being able to differentiate the product-related value-adding work (e.g., place, secure, and modify parts) from work that is not (e.g., walking to get parts). There can be even more severe consequences from reporting product costs without reflecting the conversion costs of labor and overhead.

Demand Flow Thinking to the Extreme

Whether or not you think that “materials only costing” makes sense, the source of the conflict is that the lean production people expect the accounting system to reflect the simplification and waste reduction efforts required in a lean environment. However, we need to distinguish between leaner accounting (e.g., fewer transactions, soft month-end financial closings) and managerial accounting to support lean thinking. They are separate topics, each with its own benefits.

One of the leading JIT consulting vendors promotes what initially appears to be a radical approach to product costing: “With flexible processes and production employees, direct labor need no longer be tracked.”⁶ This vendor advocates that product costs include the “planned material consumption from the flat bill of material at the final backflush point only . . . with any extra usage or scrap transactions recorded as exceptions.”⁷

This consultant introduces the term “flow-based overheads” to describe allocating costs to products. The vendor believes that indirect, direct, and overhead expenses should be allocated to product costs from a single “homogeneous” expense pool using a cost rate based on total product cycle time, that is, an enormous factory-wide overhead rate, also including the direct labor payroll, based on each product’s entire duration transit time from plant entry to exit. In effect, this is the product’s rent time in the manufacturing cells of the factory. The logic for this costing approach makes sense for a process flow factory with few products. There is so little diversity and variation, how wrong could the answer be? In addition, any acquisition costs by the purchasing functions, referred to as “material overhead,” would be applied as a percentage of raw material and purchased component costs.

This popular consultant also describes a few exceptions: “Other variable overhead can be charged per . . . product-specific resource requirements. . . .

Also, variable overhead cost may be driven by the use of special machines or resources. These extraordinary overhead expenses would be absorbed by only the products that require the use of these costly resources.”⁸

Perhaps unbeknown to the lean production community, these exceptions are exactly what make their proposed radical lean accounting conform so closely to the rules of absorption costing. In other words, what may have begun as a perceived radical departure from cost accounting winds up following the same underlying absorption costing principles as ABC/M. Figure 3.18 displays the

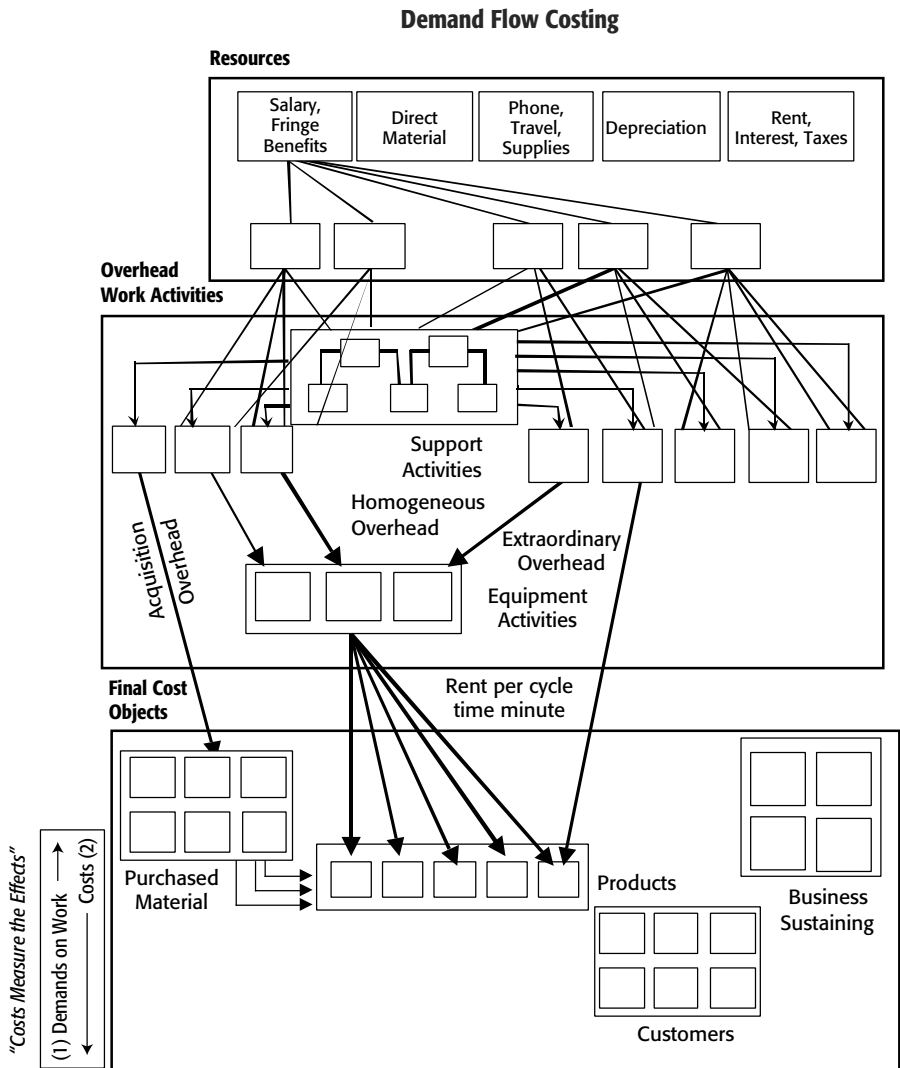


FIGURE 3.18 Resource Cost Assignment Network

resource cost assignment network for a lean production environment using cellular manufacturing. The key is managing the level of disaggregation of the equipment centers. JIT certainly reduces the number of cost centers (i.e., fewer more aggregated cost pools), but it does not remove the necessity to have more cost pools when there is diversity.

Compare Figure 3.18 to Figure 2.9 (page 53), which shows the ABC/M cost assignment network. The similarities are large and the differences are subtle. What Figure 3.18 mainly reveals is that the equipment activities should remain few in number, meaning highly aggregated cost centers. The activity driver remains as the number of minutes each product uses and consumes (i.e., rents) the equipment center.

However, support activities may be uniquely traced to the equipment centers based on each center’s unique use of those activities. To the degree the costing system ignores diversity and variation and simply burdens the cost using a volume or time driver, some error from over- and under-costing will be created. But for high-flow JIT environments with few products, the error may not be substantial.

In short, ABC/M supports lean thinking by allowing flexibility to adjust the measurement system to the lean operations environment.

Impact of Leaner Accounting on the Accountant’s Role

Lean thinking can and should be applied to support processes as well, including the finance and accounting processes. The quality management community refers to this as being “transactional lean,” and leaner accounting is welcomed. Instead of accountants spending time recording and tracking data usually to update upper levels of management, much of the accountants’ time can be spent on supporting process-based and continuous improvement teams. Ideally the accountants would no longer reside under the finance function but would move into the high-performance teams.

With regard to accounting transactions:

- On the procurement and payments side of the supply chain, financial transactions are reduced. Lean manufacturing advocates the use of single-sourced suppliers and blanket purchase orders. The accounts payable system is automated using backflushing to determine vendor quantities used and by using electronic Internet payments.
- On the customer sales and accounts receivable side of the supply chain, the majority of customers are preapproved, and blanket sales orders are used. Payments are electronic using a pay-on-receipt or pay-on-usage method. Cash collection efforts are minimized because the customer, not the supplier, triggers the event.

In short, close partnerships with suppliers, customers, and other third parties, in addition to computer automation, enables an organization to remove much of the traditional administrative waste.

With regard to the budget process (described further in Chapter 8), the emphasis shifts away from managing spending against budgeted targets toward “sense-and-respond” use of resources. Budgets will long be with us, but with fewer cost centers and a better understanding of the cause-and-effect cost driver relationships, the budgeting process will be easier. Ideally, better control results less from monitoring spending variances and more from accountants devoting their freed-up time to continuous improvement teams and from attacking problems at the source.

Risks of Going Overboard with Radical Accounting Reforms

A major tenet of lean thinking is that as the processes and value streams become more simplified, there is less need for financial accounting, control, and measurement systems. But if this notion is construed too narrowly, it can be misinterpreted to mean there is less need for applying financial analysis in teams for decision making. In fact, the reverse is true. The margin for error is getting slimmer, and teams need greater not less proficiency in using financial data.

The lean community detests a fragmented and departmentalized organization. By applying demand-pull scheduling logic, the lean folks have accomplished smooth material flow control of products or documents across the work centers. It appears that some of the lean thinkers want to apply similar thinking to their cost accounting to reduce the amount of data collection. However, if taken to the extreme of “materials only costing” and a single factory-wide direct and overhead expense rate, any heterogeneity in equipment or in products is likely to result in over- or under-costed product costs relative to the product’s true consumption of resource expenses.

What may be an even worse unintended consequence of oversimplifying the lean costing system is the loss of ability to view hidden waste. Today’s traditional costing systems already hide waste by not identifying low-value-added activity costs that are baked into the standard costs. In short, all support costs are lumped into overhead. ABC/M resolves this by making support activity costs visible.

Ultimately we fall back on the “Is the climb worth the view?” test. The cost assignment model’s network design and architecture needs to be leveled up to a point where the diminishing returns of extra accuracy for extra level of effort just are not worth the benefit.

In conclusion, lean accounting to support lean thinking is simply absorption costing, using the same principles as ABC/M. *Lean accounting* applies some common sense by understanding that costing is modeling, and all cost models are stylized based on the decision they are intended to support. *Leaner accounting* involves removing some of the unnecessary work that generates little utility for the organization. The two should not be confused.

NOTES

1. Speech made at Penikese, 1870.
2. See, for example, Society of Management Accountants, *Implementing Target Costing*, Management Accounting Guidelines No. 28, April 1994; www.cma-canada.org.
3. Robin Cooper, “Cost Management: From Frederick Taylor to the Present,” *Journal of Cost Management* 14, no. 5 (September/October 2000): 7–9.
4. Robin Cooper and Robert S. Kaplan; “The Promise—and Peril—of Integrated Cost Systems,” *Harvard Business Review* (July-August, 1998): 109–119.
5. Ibid.
6. John Costanza, *The Quantum Leap in Speed to Market* (Denver: John Costanza Institute of Technology, Inc., 1996), pp. 265, 267, 271.
7. Ibid.
8. Ibid.

4

The Internet, E-Commerce, Supply Chain Management, and Digital Economies: Where Does ABC/M Fit In?

“Nothing else in the world . . . not all the armies . . . is so powerful as an idea whose time has come.”

—Victor Hugo, French novelist¹

INTRODUCTION

Internet Is Changing Everything

The Internet is clearly the revolution of the twenty-first century. Many consider its potential impact on society to be greater than the changes that came from the telephone, highway systems, and even electricity. We are all becoming digital citizens as part of a global networked society.

Some e-commerce experts attempt to profoundly distill the impact of the Internet into a single sentence. Some describe it as the opportunity for people to join communities of common interest without boundaries or borders. Others view it as the ultimate network across which data, voice, and video communications are carried. Some see the Internet as an expansion into a more mobile information society in which the individual has universal access to personal data, not accessed from a home base but from wherever he or she may be sitting, standing, or traveling.

My simplistic view is that the Internet is *shifting power from the seller to the buyer—irreversibly*. The ability for the buyer to access incomprehensible amounts of data using search engines to seek out products and services is now unbounded. The buyers’ increasing desire for unique requirements will likely force suppliers

to respond with increasing flexibility. This may add costs to suppliers as pressure is placed on their prices.

Ironically, suppliers are assisting in the shift of power to buyers. They are providing increasingly more information about their products and services via their websites. Teenagers will perform exhaustive searches to identify the exact make and model of an appliance they want, then they will locate a much cheaper source from which to purchase the appliance. Adults are learning to do this, too.

Internet portals and exchanges are creating digital marketplaces that introduce increasing flexibility to match suppliers with buyers via virtual auction websites and bidding systems. The buyer has access to a much greater market than ever before. The Internet is a gift to buyers everywhere.

The buyer who benefits from this shift in power will not only be the end-consumer shopping at a retail store. Purchasing agents and requisitioners in businesses and governments will also gain the upper hand over suppliers. This is the new business-to-business, or B2B, economy. Buyers are already exhibiting new capabilities to determine for themselves broader ranges in terms and conditions with their suppliers. They can compare and contrast features of products and services offered by competing suppliers. To complicate matters for suppliers, consumer expectations are rising faster than some businesses can deliver. Consumer tastes, preferences, and expectations are not static. Many customers base their standards on their last best service experience. The bar rises constantly.

Some argue that e-commerce is not as major a factor as the media are presenting it. They see e-commerce as simply streamlining the matching of resources to customers. But it is removing, in a single punctuated change, substantial transaction costs, including some intermediary organizations, such as wholesalers and distributors. From this viewpoint, e-commerce is not considered a major transformation because the market exchange behavior will continue to exist as it has for centuries—only much faster and more dynamic. But the Internet will continue to shift power toward consumers. The historical pattern has been that competition will award to consumers long-run savings generated from new technologies in the form of lower prices.

Pressure on Prices: How Will Suppliers Counter?

Suppliers must now react more quickly than ever before. Call centers and customer support functions have become integral for suppliers, and these services involve new costs not present in old business models. A major consequence of the shift in power to buyers is that tremendous pressure is placed on supplier prices. Suppliers will no longer be capable of protecting a niche market or of enjoying as large or long lasting profit margins as they have in the past.

How can suppliers counter this change? One option is for them to alter their customers' behavior to minimize the shift. In addition, trading partners along the supply chain can mutually measure and remove the unnecessary costs that they create among each other. Each trading partner can gain much better insight into

the true and relevant costs for their products, stock keeping units (SKUs), service lines, freight, channels, and customers from major advances in profit contribution reporting and analysis and margin management.

This section describes the role that activity-based costing is now playing and will play as the Internet, e-commerce, and supply chain management mature. As previously mentioned, the Internet is shifting power from sellers to buyers—irreversibly. Search engines and great data access have become prevalent.

Before discussing activity-based costing I want to cover the current situation of most suppliers. Suppliers are in upheaval. They are the organizations that have to adjust the most to changes caused by the Internet.

Quandary of Reengineering

Imagine that an organization has completely and successfully reengineered itself and become lean and agile, not anemic. Further, imagine that it has streamlined its business processes and workflows, *then* it discovers that its board of directors, owners, and shareholders are demanding even better performance and ever higher returns on investment (ROIs), market share, and profits. What are this organization's options? Across-the-board cost cutting and employee layoffs may no longer be an acceptable option without risking rapid deterioration of customer service and eventual sales decline.

Some of the actions the company can take are discussed in “Seven Options to Raise the Profit Cliff Curve” in Chapter 3; they are summarized here. One possibility is to raise prices to increase revenues, but in many markets small price increases can lead customers to delay their purchase or to switch to competitors or substitutes. Both outcomes lead to lost sales.

Another possibility for the organization is to abandon unprofitable products, service lines, channels, or customers. However, this action first requires the ability to properly and accurately measure costs to determine true profit margins. Measuring the revenues is not a problem, but measuring costs is. ABC/M solves that problem. With knowledge of profit contribution margins, the organization can more intelligently rationalize what to change and which business lines or customers to drop. However, as an organization drops its products, service lines, and customers, to actually *realize* increased profits, management must either:

- Simultaneously *remove* the resulting unneeded costs, usually in the form of employees, at a faster rate relative to the abandoned revenues, or
- Fill the created idle capacity with new and profitable orders.

Pruning and dropping products and customers is not easy and is a fairly emotional process.

Another less draconian option is available to suppliers. They can alter the behavior of their trading partners. Through collaboration, persuasion, or creation of incentives for one's suppliers and/or customers, fewer demands on work can be placed on the organization's employees. The newly freed-up time of employees

plus their associated operating expenses can then either serve new customers or handle increased business from existing customers. (Alternatively, employees can be transferred to where they might be needed elsewhere in the organization.)

Influencing Trading Partner Behavior

Initially some trading partners will exclusively and perhaps selfishly use their activity-based costing data for their own private benefit. They will use it for incremental price and cost trade-off analysis. For example, to entice a customer to reduce its current level of services, they may offer the customers a reduced unbundled price incentive. Assuming the customer accepts the new arrangement, an organization must know in advance how much of the resulting costs will be available and realizable for savings. The critical test equation comes from basic economics:

For service reductions, the incremental change in price and revenues must *always* be less than the incremental change in cost (and vice-versa for service increases, where changes in revenues must *always* exceed changes in costs).

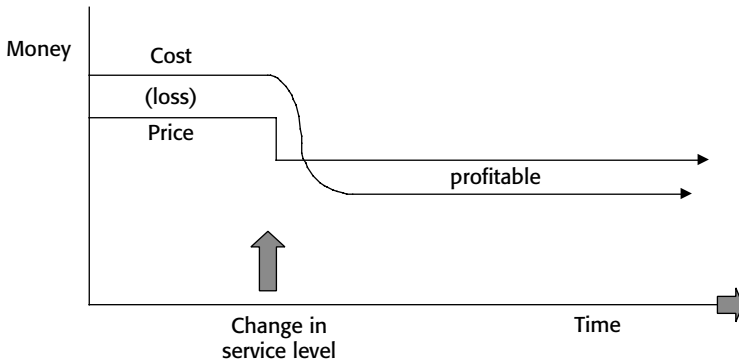
If this condition is not satisfied, the supplier loses profit if the customer elects to select the option.

Figure 4.1 shows a case in which an unprofitable service is converted into a profitable one by reducing both the service level and price—but the change in cost must decline more than the change in price and revenues for a positive profit impact.

This is a very different and important use of ABC/M data. Note that the data are not used in this application for internal productivity improvement but rather to influence external demand. The key for the supplier is to somehow alter the behavior of its customers in harmony with its own cost structure. The supplier is brilliant if it can do this. The supplier must have a very good understanding of its own cost structure and how it varies with changes. ABC/M data are essential for this.

The trade-off of price and cost can go in both directions. The service level can be raised, but presumably the price and resulting revenues will rise even more than the incremental costs to yield incremental profit. In the Internet twenty-first century customer order entry process, progressive companies will provide their customers with online access to select their own options using web-based pricing. Suppliers may communicate with customers in several ways. Some might proactively “push” their promotions at customers by offering various product and service-level options. Suppliers can also wait for customers to visit and shop at their websites. But with Internet auction sites, exchanges, and e-bidding, suppliers

Increasingly, organizations will drive “desired” customer demand by offering lower prices for less service (or vice-versa). Knowing the incremental cost trade-off is critical to assure that profits increase.



Example: Providing incentive to a customer via a lower price to receive weekly rather than daily shipments will require keen understanding as to which and how much activity costs change.

FIGURE 4.1 Influencing Customer Behavior

will be forced to have cost estimating and profit margin acceptance testing capabilities that are far more advanced than what they have today.

Forget the past methods of pricing and quoting. When a customer asks the sales or order entry function of a supplier what the price might be for a personalized order with various options and features, the reply from a clerk or tele-sales person cannot be, “I will get back to you in a day or two after our operations, cost estimating, and pricing people have given this a look.” The information must be calculated at Internet speed. The calculation will require rule-based logic leveraging ABC/M data. Suppliers without this automated and web-based capability risk selling orders at a loss or unwittingly pricing too high and losing customers.

It will not be sufficient for a supplier to have a “static” web-catalog that is periodically updated, such as annually or quarterly. A supplier’s web-catalog must be near dynamic and include product features, options, pricing, and availability data. Figure 4.1 illustrates how Internet exchanges can expose buyers to more suppliers. Supplier auctioning systems will be commonplace to match the buyers’ bidding systems. Figure 4.2 further illustrates why a supplier’s host system will require a more robust, rule-based predictive cost system than what suppliers have today.

In short, price quoting and customer order acceptance testing cannot be a back-of-an-envelope exercise. It must leverage rule-based models that reflect a supplier’s cost structure.

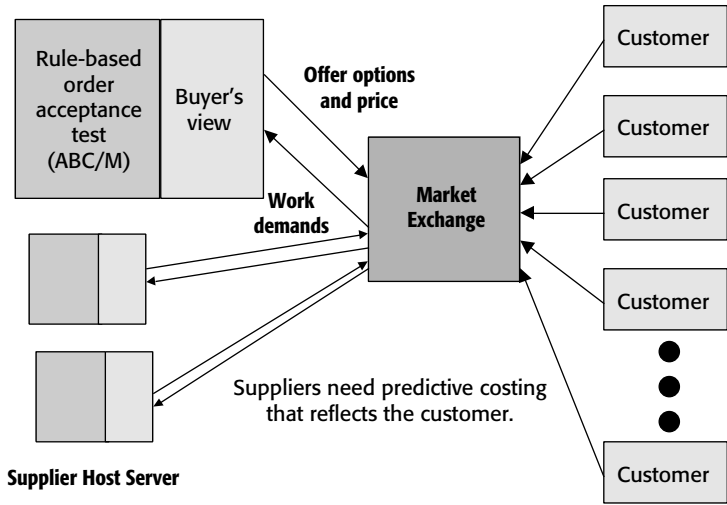


FIGURE 4.2 How Suppliers Counter the Shift of Power to Buyers

Big Risks from Flawed Thinking

One of the risks the supplier will encounter will be the assumptions it makes about the inclusion or exclusion of the business sustaining costs that can optimally be absorbed in calculating the costs to be used for the profit margin acceptance test of each customer order:

- If too much of the business sustaining or presumably near-term fixed costs is excluded, there will be a temptation to opportunistically offer low pricing. This creates a risk that repetition of similar orders will gradually replace the company's pricing structure below the level required to fully recover its business sustaining cost structure.
- If too little of the business sustaining costs is excluded, meaning that too much of fixed costs are included in the assumption, there is a risk that selective reduced pricing may not be tried to attract a new customer or prevent an existing customer from switching to a competitor.

As the Internet spawns the digital market via website auctioning, some believe that companies will start to do things typically reserved to commodity exchanges, such as soybeans, wheat, sugar, and cocoa. There will be opportunities to do things that only commodity traders or brokers have done in the past. With Internet exchanges, every business becomes a broker in a free-floating market with what appears to be a transparent pipeline (transparent to supplier prices, but not to their profit margins, which are still undisclosed except in rare seller-buyer relationships). Others believe that buying and selling in most businesses is much more complex than what occurs in commodity market trading.

Perils of Throughput Accounting

Regardless of how auctioning will work, organizations will need much better predictive financial data to understand the profit impact outcome of their decisions compared to what they have today. Some companies will find the logic of a relatively new costing method, called throughput accounting, appealing. However, one must be careful when using this approach. Companies can be lulled into thinking that every exchange event is similar to spot-purchasing of a commodity. Throughput accounting treats momentary lapses of idle capacity as being free, and therefore it excludes their cost from the profit margin acceptance test of an order.

If an increasing number of customer orders rely on throughput accounting for profit margin acceptance testing, the company risks creating a permanent price structure level that is well below what is required to sustain an ongoing economic profit. In short, throughput accounting is very process and capacity-centric, but it can create myopia for companies that think *inward* at their production capacities and not *outward* at their customers and shareholders.

Throughput accounting and predictive cost estimating is discussed in Chapter 8. The risks of using suppliers using so-called process optimization, disguised by names like “profit optimizers” and “profit velocity,” are also discussed in that section.

Technology is no longer an inhibitor for suppliers to economically capturing true costs, estimating costs for quotes, and testing profit margins. Businesses now face a thinking problem. They must really understand their assumptions about fixed and variable costs—and the implications of each assumption.

The supplier’s option of altering the behavior of its trading partners is not commonly pursued because many organizations haven’t adequately considered it yet. Most organizations are habitually inward-focused and concentrate on how they should manage their internal costs. Many companies do not adequately understand how much of their cost structure is in fact a consequence of the collective suppliers’ and customers’ demands-on-work. Costs measure effects. The thought of influencing a customer or supplier to behave differently to lessen the organization’s employee workload is often outside the realm of many organizations’ thinking. Supply chain management will force organizations to truly understand their inter-firm costs. To understand inter-firm costs, one has to measure inter-firm costs (see “Measuring Supply Chain Profits and Costs: ABC/M to the Rescue” in this chapter.)

Altering trading partner behavior requires trust among suppliers and customers. Businesses have historically been wary of releasing information to trading partners even when that information will aid mutual understanding, and one area where disclosure is needed is regarding an organization’s cost structure. Yet

many organizations mistrust their own cost data. As previously mentioned, they operate with a resigned acceptance that their cost accounting data are “a bunch of lies—we all agree to.” Understanding true and actual costs is not the entire solution, but it is a part of the solution to increase inter-firm trust and better manage costs and profit margins.

What Role Will ABC/M Play in E-Commerce and Supply Chain Management?

Today buyers are increasingly dictating terms, conditions, and pricing. Megadigital marketplaces continue to be under construction as cyber-exchanges consolidate the place where consumers and producers go to buy information, products, and computing capability as well as to process transactions. Suppliers face additional risks from exposing more of themselves on their websites. How can suppliers recover the power they are losing to buyers? They do have options, but suppliers will need to be savvy. Information technology is the wild card. Activity-based costing will be part of the supplier’s solution.

Information technology is enabling the trading partners along the value-creation chain to better coordinate and collaborate for mutual benefit. But trading partners will require cost accounting systems, including activity-based costing, that are superior to the accounting systems they all struggle with today.

E-commerce is causing major changes in two of the major core processes of any commercial or public sector organization:

- The *Generate Requests and Orders* process (the “front office” where marketing and sales reside)
- The *Fulfill Requests and Orders* process (The “back office” where operations reside)

The “Front Office”

The revolution in the supplier’s “front office” is that the buyers themselves can now directly participate in specifying, selecting, and acquiring goods and services with little or no assistance from their suppliers. To the experienced shopper, securing a bank loan or specifying options and purchasing a new automobile may be as natural as retrieving cash from an automated teller machine (ATM).

I previously alluded to the ability of sellers to influence and alter (i.e., manipulate) the buyers’ behavior by offering various service level options with associated higher or lower prices. This tactic may be the supplier’s best defense to minimize the shift in power from the seller to the buyer. Supplier auctioning will be commonplace to match buyers’ bidding systems. ABC/M will play an important role in assisting sellers to understand and test the profitability of their decisions. Those suppliers without an ABC/M calculation engine risk motivating a customer to change purchasing habits and potentially buy goods and services where the seller loses money as a result. The impact of ABC/M in the front of-

office is discussed in “How Can ABC/M Rescue Customer Relationship Management Tools?” in this chapter.

The “Back Office”

The revolution in the back office is located in the execution systems where a supplier’s processes are designed to source, make, and deliver requests and customer orders. Some organizations expect their enterprise resource planning (ERP) systems to solve any and all of their execution problems. Others view advanced planning system (APS) technologies as their answer to improved delivery performance and customer satisfaction. Still others see that improvements in organizational execution will require cultural changes toward lean thinking principles, Six Sigma quality methods, or constraint-based thinking. Regardless of which techniques or solutions managers select to improve their execution, cost visibility will become increasingly more essential. ABC/M cost data will increasingly help process teams to identify opportunities, assess how they are doing on what is important, and determine if the outcomes of their decisions have been or will be profitable or wise.

I describe these two core processes in reverse order of how they occur in time, starting in the following section with the “back office” execution system of suppliers that fulfill orders. Many suppliers rely on commercial ERP systems and associated APS to manage their “back office.” Then, the section “How Can ABC/M Rescue Customer Relationship Management Tools?” describes the “front office” system that increasingly relies on customer relationship management (CRM) to win customers, retain existing customers, and generate orders.

Remember that ABC/M is an analytical application. The data from ABC/M can draw on transactional data from the ERP and customer order management systems and then, after translating this information into business intelligence, the ABC/M data may be returned to these same systems to support rule-based decision support.

MEASURING SUPPLY CHAIN PROFITS AND COSTS: ABC/M TO THE RESCUE

Don’t Be the Weakest Link in the Value Chain

An overly simple definition of supply chain management is the reengineering of the global economy—one convoluted chain at a time. There are many popular prescriptions for achieving business success in the supply chain. William C. Copacino, a managing partner in Andersen Consulting’s worldwide supply chain management consulting services, once listed these as customer differentiation, low cost provider, effective asset utilization, and flexibility.² An organization’s departments usually attempt to optimize all four of those success factors. The supply chain managers’ contribution to this optimization is to make effective decisions about distribution network and warehouse planning and to develop

logistics alternatives. Trade-off analysis will become increasingly critical for supply chain managers. Decisions such as, “Should we expand our warehouse space 25 percent? Or should we bypass the distribution centers and ship direct?” must be made. Those two alternatives require specific information about the pick, pack, and delivery costs for specific products, freight routes, carriers, and customers. Traditional cost accounting data do not capture sufficient information to make such a comparative analysis easy. Traditional cost accounting systems are not designed to accommodate what-if analysis.

As organizations have begun to adopt “process-based” thinking, they are recognizing the greater importance of managing their outputs, in contrast to just managing their hierarchical, stove-piped functions. Business processes create and deliver customer value as the work outputs traverse organizational boundaries. Process-based organizations view themselves less as a stand-alone business and more as a link in a value chain that, in its entirety, might possibly extend from the source dirt and minerals all the way through to the consumer hand-picking a product from a retailer’s shelf. Each link effectively matches the organization’s individual customers with its resources.

Ideally, value is added at every step along the way. Unfortunately, at some steps costs are added but not much value. Continuously improving planning software tools assist in this process that matches customers with resources. ABC/M mirrors these execution systems with excellent cost data visibility. Some of the ABC/M data are applied within the ERP and planning tools for optimizing schedules and delivery routes.

In a very broad sense, individual supply chains (of products and services) are competing against *other* supply chains for the same consumers’ limited discretionary spending money and their keener sense for value. Today’s supply chain contains redundancies, waste, and low-value-added costs.

Future business competition will increasingly place higher importance on high retention rates for existing customers. Competition will focus on addressing the needs of supply chain customers and their end-consumers. Sustained customer loyalty is now touted as a key organizational objective. Companies who aim to maintain high rates of customer retention like to use the phrase “market share of wallet.”

Implications from the Decline of Mass Production

The migration toward mass customization from an economy initially based on agriculture and resources is not surprising. In earlier days, organizations competed using strategies of either low cost or high product differentiation. This approach to selecting a strategy is becoming obsolete. We are moving toward an Information Age in which large product-centric mass-production organizations either collide or collaborate with niche specialists. Specialists have always been customer-centric. Now the mass producers must also be customer-focused, which means that they must place less emphasis on standard products and services. Al-

liances of companies, some for only short terms, are predicted to abound, creating virtual enterprises.

Mass customization for consumers, tailoring products and service lines to individuals and individual companies, will be key to addressing customer and end-consumer needs. Suppliers will need to differentiate between the words *personal* and *personalized*. *Personal* is when I go to my barber and am greeted with, “Hi Gary, how have you been?” *Personalized* is going to a website that says, “Welcome back. We have determined which business books you are going to be very interested in buying.”

As suppliers become more proficient at new product development, they are still not safe from competitors. Product-related competitive advantages are no longer sufficient. This is because lean and agile competitors can promptly produce “me-too” versions before customers can become educated about the initial market entrant’s product. Strategy consultants might defend the “first-to-market” adage as being the clear approach to being the winner; however, the emphasis on new product introduction management is shortening this cycle with capabilities to rapidly tailor or copy products and services.

Suppliers will continuously struggle with the trade-offs between personalized offerings to individuals and standard delivery platforms and standard business processes. Any shifts in the direction of customization mean more complexity, and complexity has always manifested itself in greater indirect and support overhead costs. This is the reason ABC/M has become required—to trace indirect costs to outputs. The need for ABC/M systems will intensify to a near mandatory level as customization for customers becomes the norm rather than the exception.

All of this will lead to a new basis for strategy and competition. Many say the new basis will be the rate of innovation. Others say it will be the rate of organizational learning. Whatever the new strategic approach is, cost management will be a prerequisite to even participate. Accurate cost data and an understanding of how one’s own cost structure reacts to suppliers and customers will be important. Useful cost data will be essential not only to know what is profitable today but also how to drive future profits and execute new strategies.

Need for Cost Data by Suppliers Farthest from the Consumer

In the supply chain one can think of there only being a single independent decision, and all other decisions are dependent decisions, based on that independent decision. The end-consumer located at the end of the supply chain makes that independent decision when he or she decides to exchange money and wealth for a supplier’s goods and services. All upstream suppliers are indirectly making dependent decisions about what they should do and when they should do it. The suppliers’ decisions are a consequence and thus dependent on that consumer’s decision to buy.

The Internet may create more of a supply web than a supply chain. However, there will still be suppliers serving other suppliers. Vertical integration within a

single company, like Henry Ford's company that produced the Model-T automobile, proved unmanageable. In the supply chain, the upstream suppliers (e.g., second, third tier) are much farther removed from the end-consumer and his or her independent decision. Those suppliers that are farthest removed will need to rely on ABC/M data much more in the "back office" execution systems than in their "front office" order management systems. This is because suppliers that are farther removed from the end-consumer may be hostages to the exchange events, promises, and commitments that already will have occurred downstream from suppliers nearer to the consumer. They will also need to be more responsive to unplanned events, such as delays, that amplify toward them in a chain reaction and whiplash manner.

In contrast, those suppliers that are closer to the end-consumer at the end of the supply chain will leverage their ABC/M data more in the "front office." This location is where customer requests and orders are generated and received. These suppliers will try to own and influence more of the chain to make the economics work in their favor.

Extended Enterprise: Opportunities for Higher Profits

Regardless of where a supplier is located in its supply chain, one can view *each* trading partner participating in the supply chain as having a vested interest in a reasonably high level of productivity and effective performance by *all* the other participants in the chain. By working together in a collaborative manner, the trading partners can behave as an extended enterprise. They must perform together as if they are one company. We are no longer in a "what-is-good-for-me-is-bad-for-you" era of business. Instead, in the future the emphasis will be "one team . . . one mission." The pipeline across all the suppliers in the chain will be the inventory, including the information related to the inventory. Speed is becoming the rule of business.

As shown in Figure 4.3, the supply chain leverages information technology to perform as a value chain. With improved communications and less uncertainty, buffer stock inventory is reduced everywhere. Buffer stock was traditionally used to protect companies from their unreliable suppliers and from unpredictable surges in demand from customers. But "demand-pull" methods, like kanban, as well as better forecasting methods, have changed the ways producers produce goods. Advanced planning and scheduling systems with powerful simulation logic are increasing material throughput and workflow with less waste. Risk and uncertainty are sliding to the side, taking inefficiency with them and allowing higher customer service levels. However, as cycle times are shortened, the value of information rises. The selection of the relevant cost information for supply chain management is becoming an important topic.

Today, each participant, including each step it performs, is increasingly scrutinized for the value it adds to the process, and weak performance will lead to removal from the chain.

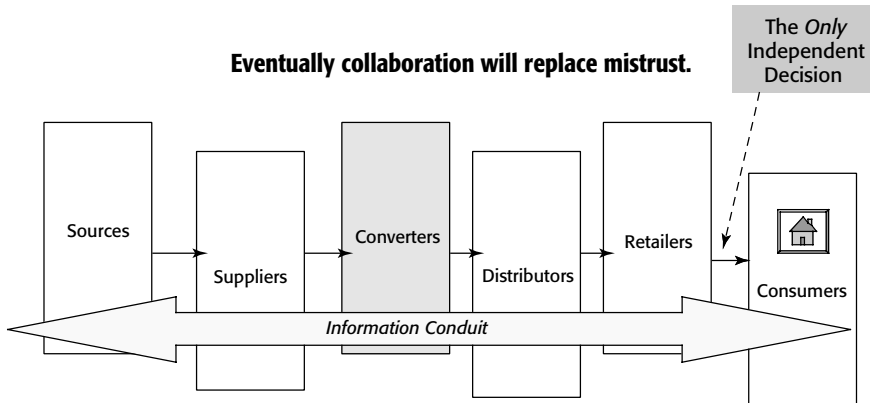


FIGURE 4.3 Information Connects the Supply Chain

It is a fact of life that trading partners routinely create costs for each other. These costs are usually not intentional but are assumed to be just part of doing business. As an example, a customer requests that one of its suppliers deliver goods five days per week. What would occur if the customer could get by with deliveries on only three days per week? The effect would be that the customer’s change in its ordering habits would save the supplier considerable time and effort. In another example, consider a purchasing agent who is required to physically examine and process a supplier’s paperwork. What if that administrative paperwork could be handled electronically (or is reduced, or is not even required)? The effect would be that *both* parties might save time and effort.

Close observation of the supply chain reveals opportunities for significant cost savings. The potential revenue increases and cost reductions attributable to efficient supply chains are enormous. According to supply chain management experts, the savings to be realized from inefficiencies in the supply chain can be as much as 6 percent of annual revenues. This figure includes all costs required for all activities in the processes required to take a sales order from inception to customer delivery, both front office and back office. For a \$10 billion revenue customer, this amounts to an astounding savings potential of \$600 million.

A large portion of the cost savings and increased profit potential will come from the avoided cost of unnecessary legs of transportation and unnecessary express transportation. It has been observed that post-manufactured finished goods travel on average three times the distance actually required to get those same products to the end-consumer. These are costly ton-miles. During this journey each product may be handled 40 to 50 times when only a fraction of those material handling events are actually required.

Another large component of cost savings will be realized on the avoided costs of brick and mortar physical facilities required to store inventory. And part of these savings are the associated indirect costs of carrying inventory along with the avoided write-offs of excess and obsolete inventory.

Some of the savings will result from discarding bad habits. Buyers would deliberately over-forecast demand so that suppliers would over-produce. The motives for this practice were to drive prices down and reduce risks of shortages. This kind of behavior leaves lots of unnecessary inventory with high carrying costs all around the world. Then when the slack in the product pipeline runs out, suppliers waste additional energy scrambling to replenish their products. Like a frictionless plane, a more synchronized continuous flow of materials and work-outputs is more economical. It wastes less energy, which equates to less cost. Digital exchanges will be so dependent on information that misleading data from the buy-side or sell-side will not be tolerated.

But an even larger component of cost savings will be generated from the current supply chain via the elimination of the redundant communication and information exchanges due to more powerful and intelligent software connecting the buy-side and sell-side information technology infrastructure. Much of the non-value-added time within the supply chain is spent in the “front office” of the order cycle. New and better information technology, in the form of high-speed networks and standards, is the enabler that will facilitate the faster, more accurate information exchanges between the parties that are essential to the procurement and movement of goods within the supply chain. Non-essential, non-value-added information exchanges will be eliminated, or at least minimized. ABC/M data will be used to identify the opportunities, assess the investment justification, and measure the post-realization of the savings.

Resolving Mistrust and Conflict to Generate Mutual Cost Savings

How can redundancies and excesses be eliminated? One way to encourage collaboration between trading partners is for each partner to better understand how it affects the other’s cost structure. Better yet, consider the benefits if trading partners could credibly measure the cost impact that they create among themselves. Reliable measures can foster better communications, analysis, and understanding about how trading partners might *collectively* reduce costs.

One dilemma is measuring the relevant costs, be they inter-firm or intra-firm costs. As described throughout this book, the general ledger accounting system, although very useful for posting bookkeeping transactions to various accounts, is structurally deficient for reporting costs in a format useful to managers and employee teams for decision support. In addition, many organizations simply do not apply the appropriate assignment methodologies for tracing costs, (e.g., they do not use drivers used in ABC/M) and do not have adequate analytical application software, such as ABC/M and online analytical processing (OLAP) software.

The relevance of this new visibility of ABC/M-generated costs and the insights to supply chain managers becomes apparent when one appreciates the types of decisions they must make. Managers are routinely asked to report and base decisions on costs by territory, commodity, channel, method of sale, class of trade, order size, SKU, delivery method, route, carrier type, terms of sale, and so forth. With so much diversity in each of these, yet with all these costs ultimately consumed by individual customers, ABC/M becomes a vehicle to measure how *all* those different costs are individually consumed by *each* customer. As a bonus, ABC/M computes the costs of the intermediate work elements and outputs through the value chain. ABC/M provides the detailed cost information to support contribution analysis and assess trade-offs. There will be continued pressures to understand the cost implications of merchandising, storage, space, purchasing, inventory investment, product handling, freight, discounts, and allowances—for both products and customers.

In summary, as trading partners better measure and understand how they create costs for each other, they can begin thinking about how to help each other reduce their collective costs. Trust in others must be well placed. Collaboration leads to high-fidelity relationships.

Moving Outside an Organization's Four Walls

An increasing number of ABC/M-proficient organizations have designed, developed, and automated their ABC/M models into permanent, repeatable, and reliable production reporting systems. Many ABC/M systems are also tightly integrated with their inventory cost accounting procedures legally mandated for external financial reporting. As managers and employee teams benefit from ongoing access to the cost data of their work activities and the units of work outputs, they begin understanding not only *what* things cost but *what causes* their costs to fluctuate: their cost drivers. Understanding cost drivers is central to understanding an organization's cost structure and cost behavior. Through self-discovery and asking lots of new questions resulting from the ABC/M data, these ABC/M-proficient companies have begun to understand why their internal cost structure exists as it does. In effect, ABC/M covers the complete enterprise, inside the firm's four walls. ABC/M assures visibility for full cost recovery (and hopefully profit) from revenues.

Although ABC/M as practiced reflects how an organization's external parties—suppliers and customers—create and shape its cost structure, it is usually treated with an inward-looking focus. That is, improvement opportunities tend to be in the category of what we can change about ourselves and our *internal* processes. However, ABC/M data also reflect external forces and are useful for outward looking, too. The pressures for improvement to the *entire* supply chain costs are forcing organizations to now look *outside* their four walls at the entire value chain. We have already discussed how suppliers can influence a customer's behavior by offering them different service level options. There are other possibilities.

passing the excess costs all the way through to the end-consumer inevitably reduces overall product demand for the entire chain. The elegance of ABC/M is that it combines all the costs—upstream costs, the production costs, and the downstream costs.

Inevitably costs spanning all the supply chain firms will require understanding to simulate and test the effect of proposed changes on overall supply chain costs. The invisibility of costs, combined with a reluctance by trading partners to share cost information, is a significant hurdle for evaluating supply chain performance. ABC/M data remove the blindfolds and create the visibility and transparency that the supply chain trading partners require to make their chain realize its full profit potential.

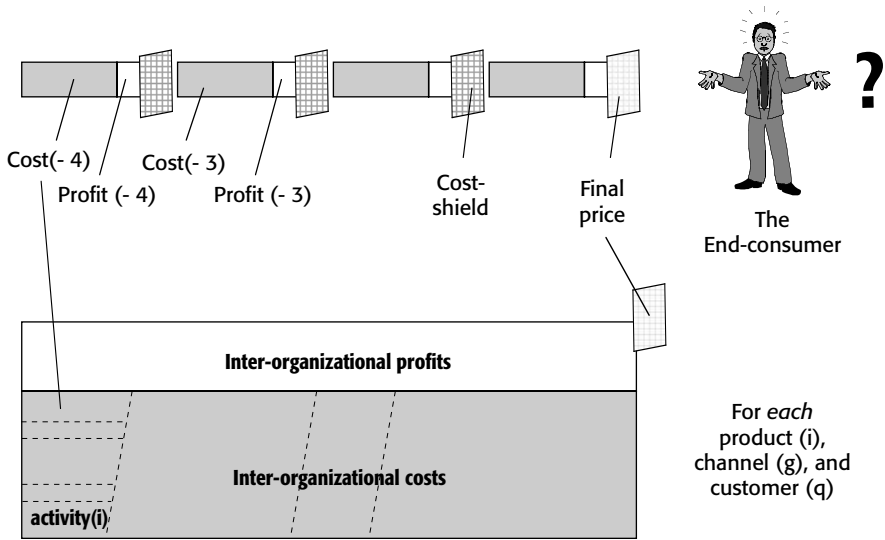
Intra- versus Interorganizational Costing

Supply chain management is forcing all the participants in the value chain to want to know what the costs and profit margins are for their upstream and downstream trading partners. Intraorganizational costing refers to enterprise-wide cost management, but supply chain dependencies require that companies practice network-wide cost management. How can an organization see all of those costs and margins? Many are operating under the misconception that the only view of this information would be a cumulative time-flowchart buildup starting from minerals and resources and ending at the retail store's shelf.

Figure 4.6 illustrates the problem. Each trading partner cannot see the true costs up to its point in the chain; they are blocked and shielded by not only the direct supplier's price but also the "cost-shields" of the supplier's suppliers. The cost data that each trading partner sees also include profits (or losses) that each predecessor supplier has claimed. So no one in the chain can see the pure costs in isolation. In short, the viewable data are muddied by profit margins blended with the costs—and the chain cannot differentiate them. But ABC/M can. ABC/M can miraculously separate an egg from its yoke after the yoke has been broken.

If one of the suppliers in a supply chain is benefiting from obscenely high profits, how would any of the trading partners know? Imagine a scenario in which that particular lower-tier supplier reduced its price. Then assume that price reduction gets fully passed through the supply chain to the end-consumer. The lower price would attract greater consumer demand, assuming a little price elasticity. The increased volume would ultimately raise sales volume for *every* partner in the *entire* value chain. In fact, the profits of the lower-tier supplier that reduced its price in this scenario may become relatively higher than its profits before that price reduction. And that would certainly be true for every other trading partner.

The issue here is that for the entire supply chain to effectively perform interorganizational margin management, the companies must be able to have some form of "open book" visibility of their suppliers' product-specific costs. Today each buyer can already see the invoice or catalog-listed price of its suppliers'



The only way that interorganizational profit can be measured for a consumer’s purchase is to isolate and sum *each* trading partner’s costs for that specific product, channel, and customer.

FIGURE 4.6 Interorganizational Cost and Profit Blindness

products and also those of its suppliers’ suppliers, but no one can see the profit margins specific to each product, to each channel, and to each customer.

An obvious way to get a view of these costs will be through open-book collaboration and trust. And because the only relevant costs to a buyer are those specific products and services that it is procuring, each supplier requires a strong cost system. This means that each supplier needs a reasonably accurate cost assignment system with “bill of activity” cost visibility. The visibility of work activity costs—segmented by product, service line, channel, and customer—enables mutual and intelligent discussions among the trading partners about where to remove waste and redundancies or to shift functional skills and tasks among the participants in the value-chain.

This is a very significant realization. It means that the *only* way that participants in the value chain can separate the costs from profit margins is if *each* participant has an ABC/M system. This also means that people who believe that costs across the supply chain—from partner to partner—are best visualized as a sequential chain will eventually realize that such data is not very useful. Cumulatively adding the activity costs that belong to the process (i.e., the process view) does not provide the relevant information. Figure 4.7 shows the only method that can separate the costs and profits from the buyer’s price paid—and at the intersection of a unique product, service, channel, and customer—is ABC/M (i.e., the

Many believe that measuring costs and margins across the supply chain involves process costs. But that method is insensitive to the *mix* of product, channels, and customers. ABC/M is the only measurement method.

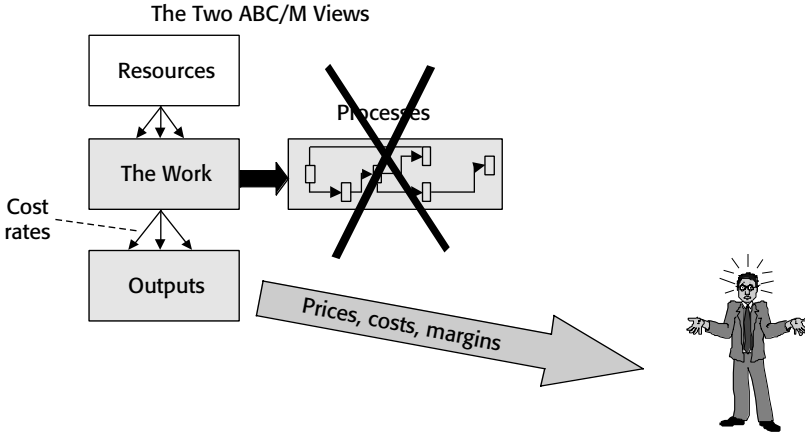


FIGURE 4.7 Supply Chain Costing Is Not Possible Using the Process “Flowchart” View

cost assignment view. This removes the profit blindness and cost-shields and provides transparency.

Revisit Figure 2.9 (page 53), the ABC/M cost assignment network diagram, and examine the final cost object module. You will appreciate how supplier-related, channel-related, and customer-related costs are uniquely traced and accumulated. I previously used the predator food chain analogy for this. When each participant in the chain has ABC/M data, it then has uniquely computed profit margins for all the specific supplier, product, channel, and customer combinations. ABC/M’s assignment structure, extremely sensitive to segment all the diversity, makes it possible to deliver these data.

Figure 4.8 illustrates how the ABC/M Cost Assignment Network traces profitability among various sales and distribution channels apart from products. Supply chain management, and the introduction of so-called virtual networks and webs, is making decisions trickier regarding where to squeeze or push contribution profit margins.

Figure 4.9 illustrates the solution to the question of how to measure costs and profit margins across the supply chain. It reveals the inter-firm integration of multiple ABC/M and sales billing systems maintained by each trading partner. Only with this structure can the true cost transparency across the supply chain, which is discussed but never demonstrated, be practically calculated.

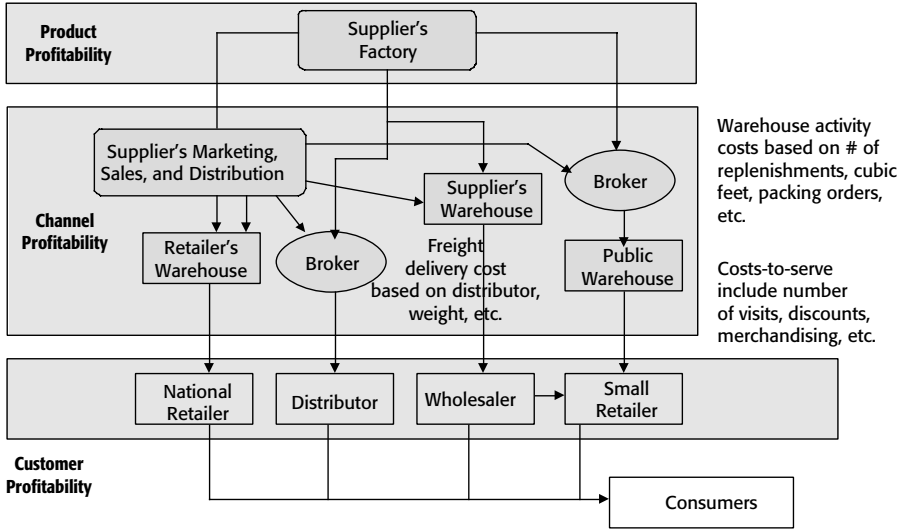


FIGURE 4.8 Measuring Channel Profitability

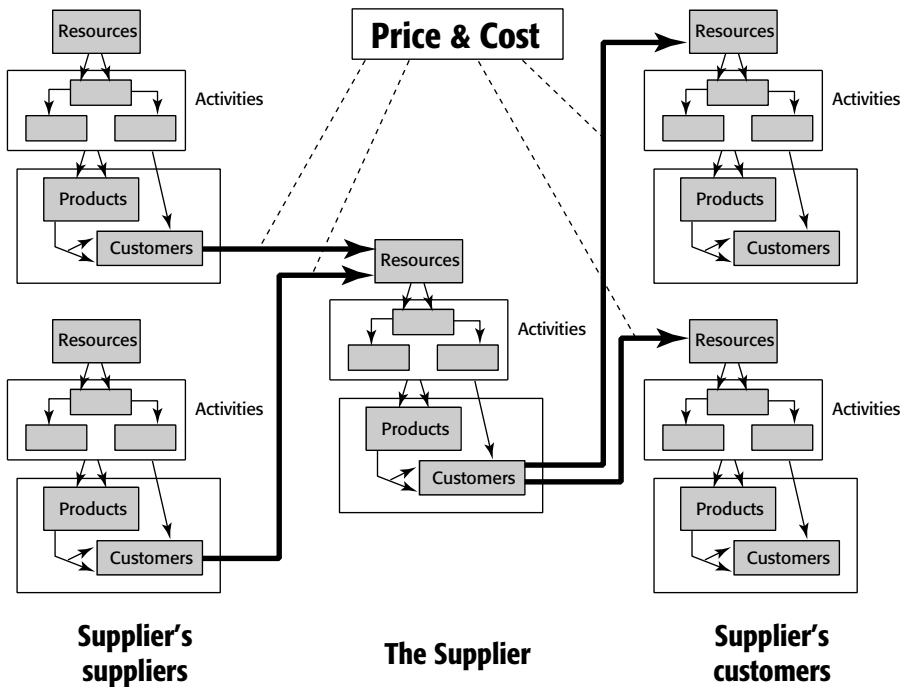


FIGURE 4.9 Interorganizational Cost and Profit Transparency

Unfortunately, many trading partners across the supply chain have archaic and poor product cost allocation practices. In addition, most have no repeatable or reliable cost assignment methods for their expenses from distribution, sales, and customer management. Therefore, their cost assignments are incomplete. The consequence of this is that even if suppliers disclose their specific product and service costs, from which profit margins can be derived, the calculated costs are likely to be bogus, or at least have uncertain error. This means that all the suppliers' products are probably over- and under-costed within most supplier's own cost accounting systems. Until each of the trading partners in the supply chain applies some form of activity-based methods for absorption and direct costing, the supply chain participants will be weakened by making uninformed decisions. Any dream of interorganizational costing will be just that—a dream.

During the transition period when companies will be implementing their ABC/M systems, some customers in the supply chain will be impatient. They will *deduce* their suppliers' costs and profit margins. This means they will model their supplier's cost structure based on known and estimated data. There is already evidence that customers are hiring consultants who are skilled at constructing cost and profit models of a customer's suppliers. The consultants produce these models from knowledge provided by purchasing agents, buyers, and public domain data. In some cases, costs and profits are derived for even the supplier's suppliers—one step farther back in the chain.

It is inevitable that trading partners will want to know costs and margins across the chain. During the transition period for shared inter-firm ABC/M systems, where there will be broken gaps from suppliers without an ABC/M system, the downstream suppliers will apply best-guess assumptions about their upstream suppliers' profits and margins. However, the best way to know for sure will be when *each* participant has its own ABC/M system in place.

ABC/M Integration with Enterprise Resource Planning Software: A Dramatic Shift by Vendors

One factor that may accelerate improvements in understanding among trading partners is the increasing popularity of ERP software systems. An ERP software system provides a method for effective planning and control of all the resources needed to take, make, deliver, and account for customer orders in a manufacturing, distribution, or service company.

These systems can be purchased from a single software vendor, or an organization can pursue a best-of-breed vendor approach. In the best-of-breed approach, several software packages are selected and combined as multiple, linked solutions. In the best-of-breed vendor approach, each software package is chosen on the basis of the fit of its features with the organization's functional needs. ABC/M can reside in either approach.

The information technology community enjoys endless debates about using a single vendor versus a best-of-breed solution. The single-package purists ad-

here to a philosophy that the package should be tightly integrated. They believe interfacing diverse systems should be condemned. Maintenance of software is their main concern. The best-of-breed advocates feel that as time goes on, business application software packages will be designed with standard interfaces—referred to as middleware—to allow the user to link-plug-and-play multiple vendor applications. Until then, some interfacing is required. Many software applications increasingly have built-in configurators and adapters that link to the middleware. This allows the host application software to link to the middleware, which in turn uses standards to integrate with other software as well as with Internet tools.

It is evident that mature ABC/M users have not found information technology integration or interfacing of ABC/M software to be an obstacle. In the late 1990s, there was a dramatic shift in the integrated application software industry. Major ERP vendors, such as SAP, the giant German ERP market leader, made significant moves into the “analytical applications” arena, including the ABC/M application. These applications performed as data mining and conversion tools by using data that have already been accumulated or summarized from mainstream source transaction-intensive systems. For the ABC/M analytical application in particular, this indicated that:

- ABC/M was considered the foundation for a number of senior management initiatives (e.g., strategy, value-based management, performance management, profitability assessment, business process reengineering, etc.).
- ABC/M had become a fundamental selection criterion for organizations evaluating financial/operational software applications resident in ERP systems.

The ABC/M data are clearly located at the intersection where an organization’s level and type of resources meets with the level of profit and degree of alignment with senior management’s vision and strategy. The ABC/M data match customers with the specific resources they consume.

As examples of this shift in ERP software vendor emphasis, SAP made a substantial equity investment in ABC/M Technologies Inc., the worldwide market leader in stand-alone commercial ABC/M and performance measurement software. The ABC/M Technologies software product, Oros, extends the SAP ERP functionality.

Variations in the ERP vendors’ approaches to ABC/M involve the amount of prior experience the ERP vendors have had with ABC/M systems and how passionate their end-users have been about ABC/M. SAP had ABC/M functionality for many years prior to its competitors. But SAP learned from its customers that there was much more to managing costs and profit margins than just the math. There are substantial issues dealing with organizational learning rates and the human discovery experience that ABC/M can positively catalyze.

The ERP vendors now better appreciate that non-accounting personnel, such as supply chain managers, truly benefit from being involved in determining the assumptions about costs that have historically been made for them by those in the

accounting functions. Operations and line personnel benefit from the exposure and involvement in designing and constructing their cost measurement systems. These people no longer wish to rely on convenient cost allocation rules selected to make the numbers tie-out and balance on a cost accountant's desktop computer. Managers, teams, and employees are increasingly in need of valid data to analyze and make trade-off decisions.

Another reason ERP vendors are increasingly receptive to analytical applications is that analytics accelerate attaining meaningful results from the ERP software. Implementations of ERP have traditionally been phased in over time. This means that ERP software modules are implemented sequentially, rather than in parallel. One consequence of this approach is that the time required for implementing the entire ERP system greatly exceeds the timeline required to implement an ABC/M system. This denies to managers data they need now, not next year.

Customers of ERP vendors have stated that they traditionally implement the financial modules first, followed by purchasing, materials management, then the managerial modules. The managerial modules are the ERP analytical applications within which ABC/M functionality is usually contained. Typically, a large ERP implementation would not allow for the managerial modules to be implemented until *after* the transaction-intensive baseline modules are implemented. But there is hope. Many organizations have realized that because ABC/M is basically a modeling methodology, it can actually be implemented at the beginning, not at the end, of an ERP implementation. The ABC/M model can be maintained at a higher and more aggregated level in parallel with the ERP implementation. In this manner benefits and results can be much more quickly realized. At a much later stage in the ERP implementation, ABC/M can then be more tightly integrated.

Four-Wall Intra-Firm ABC/M versus Inter-Firm ABC/M

As previously described, for those organizations that have already become lean and agile through reengineering efforts, a substantial portion of their cost structure now tends to exist to respond to the “demands on work” placed on them by their suppliers and customers. Organizations that use ABC/M realize that managing their costs is best accomplished by managing how their trading partners place demands on them. In ABC/M lingo, this involves the frequency, quantity, and intensity of the activity drivers that cause activity cost.

When some of the demands on work from customers or suppliers are questionable, of low value, a result of errors or nonconforming events, or in some way a candidate for reduction or outright elimination of the cost driver, then further discussion among the trading partners becomes possible. By using ABC/M, these discussions can be based on fact-based data. In other cases, to better serve customers, a supplier may wish to self-impose increases for the demands placed on it through more services—but perhaps it should charge for them. With ABC/M data, supply chain managers can evaluate alternative supply chain networks and

structures. They can better understand the costs of the complexity they strive to manage. They may even select alternative supply chain trading partners.

If only one of the trading partners has ABC/M data and the others do not, discussions may be limited. The ABC/M-enriched company understands how its cost structure is being affected by cost drivers; however, its trading partners will not adequately understand how they generate their portion of cost impact on others. When all trading partners understand their costs at their boundary-spanning activity touch points, they can better discuss how they might collectively shift, lessen, or altogether remove costs. The combined effect of their actions can result in lower overall costs.

The touch points, similar to the flat surface that results from pressing two balloons together, will usually involve the following three pairs of organizational relationships:

Supplier	Customer
Shipping	receiving
Sales	purchasing
Design engineers	process engineers

For example, if the supplier packages its product in a complicated way, and perhaps uses nonstandard containers, then there will probably be extra work for the customers' material handlers at the receiving dock. Figure 4.10 presents the inter-firm relations. Any changes that may be mutually beneficial will also imply reduced time and effort, resulting in increased capacity to be redeployed or eliminated.

The extended enterprise requires B-R-O-A-D-E-R scope beyond the enterprise's boundaries.

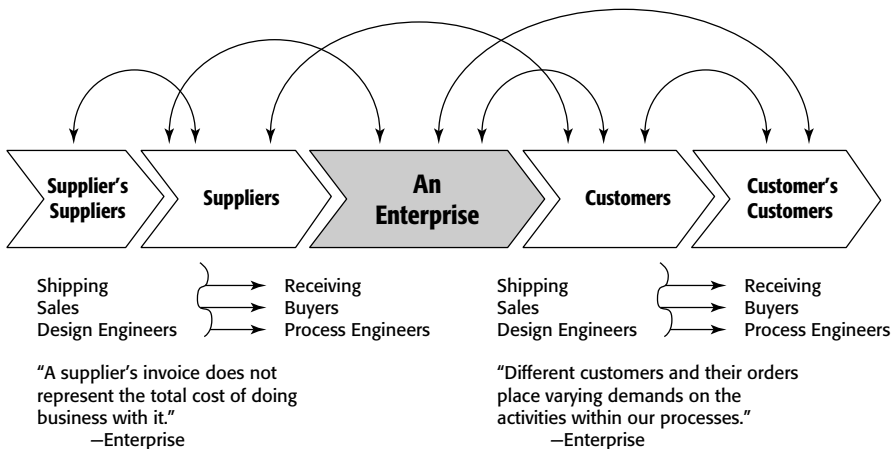


FIGURE 4.10 Extended Enterprise

Source: Gary Cokins, *Activity-Based Cost Management: Making It Work*, © 1996, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

By better understanding inter-firm costs, opportunities will surface to re-structure which trading partner may be more efficient at performing an activity. Redundancies can be eliminated. Functional shiftability can be deployed to reorganize which trading partner should do what specific work activities. Functional shiftability is what I would call micro-outsourcing. One organization agrees to have the other perform work that it previously did—and the fee must somehow be reflected in a change in price or service. These costs are usually transparent to the consumer at the end of the value chain. In many cases, consumers may simply be interested in low cost.

Who Benefits from the Cost Savings?

When cost savings are indeed generated and realized, who benefits? How are the cost savings to be shared? This will always be a thorny problem. ABC/M will not provide the answer, but it will at least provide unarguable data to use in discussing sharing the newly generated savings.

From a supplier's perspective, there are three potential beneficiaries from improvements and cost savings itself, its direct customer, and that customer's customers all the way through to the chain's end-consumers. The last beneficiary could potentially be you or me in the form of a lower price. But for that to occur, the upstream groups of trading partners will have consciously agreed to a no-profit-impact arrangement in which any change in their cost is identically matched with an exact same change in price. In practice, this incremental savings "pie" from productivity improvements can be split among the chain's trading partners, in various-sized portions.

Predictably, the profit motive of each trading partner will make the sharing of cost savings an awkward experience. ABC/M data can at least lessen any debates; but they cannot stop greed and aggression. The more proficient each trading partner is with its ABC/M system, the more practical these discussions can be.

ABC/M and Professional Societies

One way to increase the chances that trading partners are effectively communicating with each other is for them to share a common framework of understanding and terminology. International professional societies and trade associations, such as the Supply Chain Council International (SCCI), the Council of Logistics Management (CLM), and the American Society for Production and Inventory Management (APICS), have helped address this area. For example, SCCI has constructed a descriptive framework, with a standard glossary of terms, named SCOR (Supply Chain Operations Reference-model). SCOR breaks down, from the highest level of any organization's four basic business processes (plan, source, make, and deliver), to a fifth level containing hundreds of recognized work activities. Much of SCOR's structure and elements are drawn from existing

materials, such as the American Productivity and Quality Center (APQC), so it avoids reinventing the wheel.

The SCOR “template” is an ideal mate for ABC/M at any level of disaggregation, summary, or detail. One can visualize SCOR as a material and document process flowcharting tool. It maps the flow of product, paperwork, and decisions from suppliers to warehouses to distribution centers. At the lower levels of the SCOR framework, software tools for process documentation and simulation can be applied for learning and problem solving. ABC/M links to these process-oriented tools. ABC/M reinforces SCCI’s desire for consistent and standard measures. It calculates and reports allocation-free “unit costs” (e.g., cost per processed invoice) that traditional accounting cannot. ABC/M can also perfectly and flexibly scale up or down, level-by-level, in harmony with SCOR. ABC/M’s power is in segmentation, and then providing reliable and consistent benchmark data.

As supply chain management consultants (internal or external) and ERP vendors further encourage organizations to adopt SCOR as a framework to think, communicate, and accelerate learning toward solutions, ABC/M will probably become the accepted basis for measuring costs.

Regardless of how well an organization’s “back office” execution systems serve to fulfill customer orders, the “front office” may be even more critical. Organizational effectiveness may be necessary but is not sufficient alone. In the end, customer satisfaction is essential. The next section discusses the “front office.”

HOW CAN ABC/M RESCUE CUSTOMER RELATIONSHIP MANAGEMENT TOOLS?

The consumer will become king or queen as Internet-enabled e-commerce shifts power from the seller to the buyer. From a supplier’s perspective, customer retention becomes even more critical and treating customers as “a lifetime stream of revenues” becomes paramount. With e-commerce each customer can express his or her unique desires and will increasingly search for customized goods and services. Technology can make this possible. As widely varying customization and tailoring for individuals becomes widespread, how will supply chain manufacturers and distributors distinguish profitable customers from unprofitable ones?

Information technology, provided by ERP and other business planning and execution software vendors, is enabling all the trading partners along the value-creation chain to better coordinate and collaborate. Some of the essential ingredients for successful supply chain management are

- Continuous replenishment (demand-pull material flow)
- Electronic commerce (EDI, bar coding)
- Category management
- APS and ERP systems
- Customer relationship management (CRM) systems
- True and actual cost information (activity-based costing)

ABC/M translates the traditional (but incomplete, structurally deficient, and often inaccurate) cost accounting system's data into a more usable structure.

Role of Customer Relationship Management Systems

It used to be that lowering costs and quickly bringing product to market could ensure a company's success. Now e-commerce is creating a customer-focused approach to business. Suppliers are seeking ways to engage in more content-relevant communications and interactions with their customers.

Increasingly companies are realizing that improving their profitability requires more customer contact and more intimate customer relationships. Although the marketing and sales functions clearly see the links between increasing customer satisfaction and generating higher revenues, the accountants have traditionally focused on encouraging cost reduction. Some of the best opportunities may be in improvements, such as attaining higher quality, that achieve both lower costs and higher revenues from increased customer satisfaction.

Regardless of whether the focus is on the top line (sales) or middle line (costs), profitability measured by each customer (or customer segment) is becoming critical. It is inevitable that customer profitability reporting will become standard reporting. Customer profitability reporting, enabled by ABC/M, brings marketing, sales, operations, and accounting together to analyze and improve customer profitability.

Customer relationship management systems evolved as a result of advanced information technology and large databases used to refine marketing and sales efforts. Its tools enable companies to target individual customers or micro-market segments with pinpoint accuracy and manage the dialog and interactions. In the earlier applications of CRM in the 1990s, the goal was to simply promote products and emphasize key services to specific types of prospects or existing customers, individually and collectively.

However, without measures of customer profitability in CRM systems, proclamations about CRM and customer value management strategies were at best statements of good intentions. One should not construct one-to-one customer propositions, a CRM tactic, unless one understands the profits and profit potentials of individual customers and their expected behavior from the proposition. Beware of unintended consequences. Customer relationship management systems are a promising start but not the final bell. Without measure of customer profitability, CRM systems have not fulfilled their potential.

Companies who already have ABC/M cost measurements can advance their application of CRM to determine if a customer is spending, or will spend, enough on the right items to warrant a marketing effort. Alternatively, an ABC/M-enabled supplier can adjust its marketing effort, including its level of expenses, to optimize the expected profit from a customer segment—not more or less than is needed to maximize the return.

Together, ABC/M and customer profitability analysis provide the foundation for managerial decision making and actions. The information available from these methods is essential to attain corporate goals and strategies and to increase profitability. Customer relationship management systems without ABC/M are limited.

The success of ABC/M and customer profitability reporting systems can be measured as much by the employee awareness they raise as by the decisions and actions they directly affect. The analysis, discussion, and understanding of the drivers of customer-related costs can motivate managers to improve their own performance.

Do Customer Relationship Management Systems Produce the Right Kind of Revenues?

With CRM systems companies will experiment with customer communication programs designed for certain effects. However, if, for example, a company's revised direct mail campaign attracts teenagers or pension-dependent senior citizens instead of the targeted affluent market, then the campaign's follow-up costs may never be recovered from revenues. An ABC/M customer profitability system detects problems like these. A company's total revenues might be increasing, but are they the right kind of revenues? Perhaps not if the costs exceed the revenues.

Customer relationship management systems may give misleading information. System users may conclude that their best customers are the biggest spenders. With ABC/M and profitability data, companies have learned that key accounts can erode product or service line margins with excessive customer support, customization requests, and other hidden costs.

Customer relationship management systems are extremely customer-centric, whereas ABC/M is work-centric. Customer relationship management cares about customer feelings and preferences. ABC/M pays attention to how product and customer diversity both requires and consumes greater resources. In isolation, CRM provides a partial picture. When combined with ABC/M, CRM gives a more full picture.

Cynicism in the form of humor is usually a precursor to the improvements that fix shortcomings. Some of the sarcastic alternative definitions of the CRM acronym are "costs reams of money," "causes real migraines," and "can't really matter."

Missing Piece of Customer Relationship Management

Customer relationship management systems are designed to ensure that an organization is optimizing value and satisfaction for its customers through the methods that the organization uses to communicate with them, sell to them, and service them. Through integration, CRM allows marketing, sales, and service employees to coordinate as they plan, gather data, track events, and organize

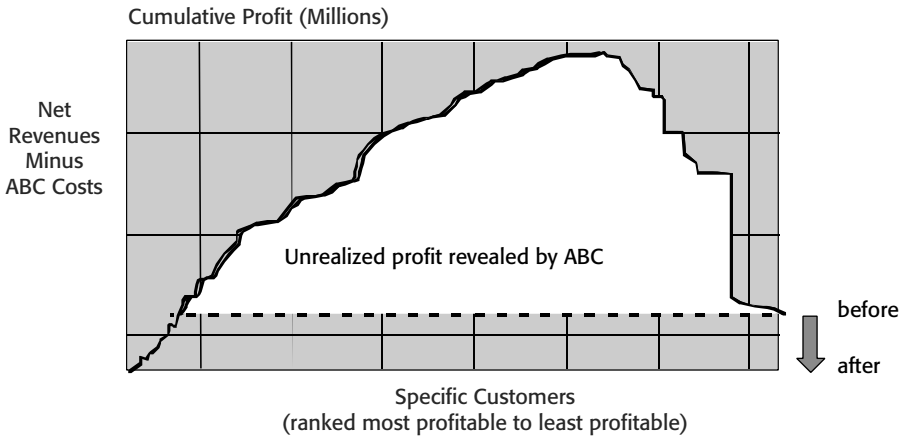
themselves from pre-sales to post-sales for both prospects and existing customers. What ABC/M adds for CRM are key elements of information usually neglected or excluded from CRM systems:

- What level of absolute and relative profit contribution does the customer provide today and potentially in the future?
- What actionable steps can economically increase each customer’s profit contribution margin layer for high payback?
- How are we doing on what is important? Is the direct marketing and customer planning for a specific customer worth it?

Customer relationship management systems are wonderful for managing the life cycle of every sales opportunity to its successful conclusion. They allow for managing the sales pipeline and funnel to better forecast when actual sales events will occur, remove administrative work by automating routine tasks, and empower a sales team with call tracking history and relevant intelligence about prospects and customers.

But CRM does not compute the profitability or worth of a prospect or customer. ABC/M does. Without customer profitability data, the team using a CRM system may potentially be investing greater effort and resources which, even if successful, may also be permanently unprofitable. Figure 4.11 illustrates how the sales function can be selling more, earning higher commissions, yet producing lower profits. At a minimum, ABC/M provides data to prioritize where sales efforts should be invested.

If the sales function sells more of products and services to the right ...



... then the company profits decline! CRM without ABC/M data can result in the sales force unintentionally destroying shareholder wealth!

FIGURE 4.11 Missing Piece of CRM Systems

ABC/M is a tremendous complement to CRM systems, with compelling benefits. It enables a company to draw a complete picture of customers. This is key to understanding what to do with a customer and how much to do it.

Possibly even more important, ABC/M links CRM to shareholder value, which is heralded as essential for value-based management. The true tug-of-war is now becoming clear. It is the trade-off between adding more value for customers but at the risk of reducing wealth to shareholders. Not enough people realize how important this link is that connects customer value with shareholder value. ABC/M will serve as the scale to help companies measure the trade-offs.

Next Generation Customer Relationship Management: A Competitive Edge

In the past, competition has been based on products, whether they are tangible, from manufacturers, or intangible, like an auto loan, from service providers. There is a higher form of competition coming in the future beyond just selling products. For suppliers to retain customers for life, it will be essential that they collaborate in some form that is mutually beneficial to both buyers and the seller's employees and shareholders.

Many believe that with today's integrated information tools, suppliers have realized that superior service, speed, and convenience are the key to retaining customers and increasing market share. Acceleration in new product development and innovation are fueling each competitor's ability to achieve service, speed, and convenience.

But the real challenge for suppliers is to find different and additional ways to create customer value. Lots of people talk about this, but few have discovered what it takes. Some competitors will add value by focusing on the "customer's experience." This will apply somewhat less when commodities are purchased, but even those purchases can be spiced with an experience. Adding value to a customer's purchasing experience requires a deep understanding. Very few companies or consultants have moved into this territory. Strategy consultants rarely touch this and prefer to stick to giving traditional marketing advice. Consumer product companies may not know the ultimate consumer's psyche.

In the end, services will be added to products, and services will be tailored to the individual. ABCM data will be essential to test and prioritize the financial merits of which services to add and for which customers. They will also be essential for a supplier's host system, with rule-based costing and profit margin acceptance testing capabilities, to influence customer demand in a way that is in harmony with the supplier's existing cost structure.

Customer relationship management systems are intended to ensure that customer satisfaction is addressed so that true customer value is provided. Enterprise resource planning and APS systems are intended to ensure that good execution and organizational effectiveness are present. Performance measurement scorecards are intended to ensure that the work of employees aligns with senior

management's strategies. But it takes ABC/M data to ultimately compute the measures that ensure that shareholder value and wealth are being created.

ABC/M data are foundational. They measure whether customers are consuming more resources than they are paying for, and ABC/M points employees to opportunities for improvements and corrective actions.

USING ABC/M ATTRIBUTES TO INCREASE REVENUES

Customer-Driven Preference Traits and ABC/M Attributes

One of the shortcomings of ABC/M is that it is usually perceived to be inward-focused. That is, because all the enterprise's expenditures can be traced, there is an impression that these costs are those that belong to the enterprise. Although that is true, we now understand that a substantial portion of the cost structure is caused by the behavior and interests of its customers and service-recipients. Costs measure effects, so ABC/M can provide an outward focus also.

ABC/M attributes provide an innovative way for understanding where future resource expenditures should be shifted to, added, reduced, or deleted to create greater customer value. Because ABC/M can be thought of as a reflecting imaging system, one can leverage the property that costs measure effects. Instead of an inward focus, ABC/M can provide an "outside-looking-in" view to assess how customer preferences relate to an organization's activity cost structure. Using ABC/M attributes, one can measure the degree of alignment between an organization's work activities and the preferences by its customers for the traits of outputs of those activity costs. With this information, ideally one would directionally shift resources toward the kind of work that customers highly value and away from what they value less.

In short, a good way for a supplier to improve its market performance, such as achieving higher sales, market share, and profits, is to identify on what specific preference traits its customers place greater and less relative value. Armed with that knowledge, more or less resources can be applied. The balancing of resource usage should be customer-driven. The ABC/M technique of scoring attributes against activities can help untangle the complex mesh of interpreting customer needs and matching them with the appropriate level of effort.

By applying ABC/M with the techniques I describe in this chapter, ABC/M integrates with the recent thinking of one of the gurus in strategic planning for competitive advantage, Michael Porter.³ Porter believes that operational effectiveness is necessary, but not sufficient to succeed long term. Being effective, efficient, and lean is not enough because every competitor is striving for the same level of agility in all business processes, including new product development. In the past, leaders in their industries were fortunate because there used to be more inept competitors. But those times are passing. Porter advocates strategic positioning, which means choosing to do some things differently from competitors to achieve a different outcome. Combining ABC/M with customer segment preferences allows shifting scarce resources to where they can earn a high payback.

This technique comes close to maximizing ROI from one's work. The following sections describe a methodology that links marketing and financial data.

Disconnect between Marketing and Financial Data

A major shortcoming of financial reporting and its inward view is that there is little or no connection between the financial data and customer-related marketing data. A methodology that integrates customer preferences with ABC/M data provides the needed linkage that can guide in adjusting the level of consumption of the resources by customers.

On the flip side, one of the least-discussed topics in the field of marketing is the unknown payback from many of the marketing methods—such as promotions, advertisements, private labels, or coupons—that can make up a considerable percentage of a business's cost structure. Today every dollar of contribution margin matters. For manufacturers and distributors, this means all the non-product costs that related to brand valuation, distribution channels, sales channels, and customers are now under scrutiny. Historically, marketing professionals have distanced themselves from the accountants. Managing the business relied on intuition, smelling, and guessing. Marketers can no longer shy away from the financial numbers.

The issue here is not that marketing is unimportant. In fact, I believe the opposite is true. Marketing is increasingly becoming the key for organizational success. It may be more important than the sales function for long-term success. The issue is maximizing the return on what the marketers spend.

The vast majority of companies do not measure customer profitability using reliable ABC/M cost assignment principles. As a result few organizations are even capable of applying much financial quantitative analysis to customers. However, for those advanced ABC/M companies that are routinely reporting reliable profit margins down to the customer level, some are taking their analysis to an additional stage. They are linking their data with topics such as customer retention or loyalty and understanding the effects of cross-selling and customer referrals. But such companies are in a minority. The majority of marketers are unsure whether the tools and measures they rely on are truly business-critical for increasing the top line revenue growth and bottom line profits.

Linking Customers to Resources

One must recognize that in commercial markets, because a customer has choices, the supplier or service provider is more of a price taker than a price setter. This means that if suppliers set prices too high, they will lose market share or lose customers who stop purchasing or find substitutes. At some point along the elasticity curve that connects price to sales volume, the supplier also loses profits. In short, this is no longer an era in which suppliers say, "My cost is your price."

By applying a customer's perspective against the expenses reported in the supplier's profit and loss (P&L) statement, the supplier can move toward

optimizing its resources to increase its financial returns by linking its resources to what its customers most desire.

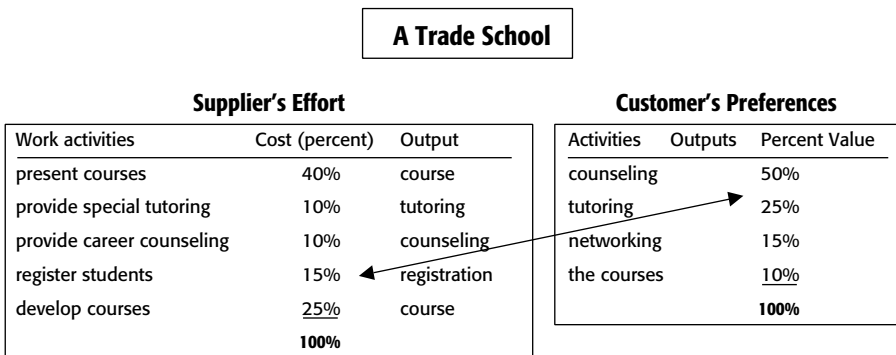
Customers do not simply purchase products or services—they satisfy their own relative and important needs. From a customer’s perspective, the supplier’s cost is irrelevant. Customers could care less if the supplier is unprofitable or not. They could also care less how a supplier spends its money to produce products and deliver service lines. The customer is independently making its own purchasing decision. The price that a customer will pay depends on customer-centric conditions such as desires, wealth position, and other factors. Customers do not give charity to suppliers.

When selecting items or services to buy, customers are basically comparing the various traits they most desire. The preference traits of products and services that truly matter—and have value to individual customers—result in a sales transaction. All other preference traits are interesting to a potential customer but can be deemed too costly and result in no purchase, therefore no sale.

An effective approach for a supplier is to assume the perspective of the customer’s view of the offered products and service lines. By scoring specific preference traits associated with the products and service lines as ABC/M attributes, a supplier can much better focus on—and apply its resources to—those things that matter most to customers.

Matching Outputs to Work Activities

Figure 4.12 illustrates the mismatch that can exist between what a customer likes and what a supplier actually does with its time and resources. (Popular methods for collecting the customer data include focus groups or customer surveys.)



Organizations tend to spend more costs on work less desired by customers and vice versa.

FIGURE 4.12 Mismatch between the Work Done and Work Appreciated

The basic message from the figure is that the supplier, in this example, spends minimal time on what the customer likes—and vice versa. As the supplier shifts its employees' time and efforts toward what its customers prefer, the tighter alignment will bring about higher customer satisfaction, which will result in an improved market share and higher profits without any change in price. In Chapter 5, I discuss fresh thinking about performance measurements using weighted scorecards. A key point is the shift in emphasis toward considering leading indicator customer-related measures such as customer satisfaction. The methodology described here can tightly fasten ABC/M to the customer perspective measures used in scorecarding.

There are usually only a few customer preference traits that are tagged with ABC/M attributes; most are not important enough. Admittedly, there are a multitude of features, functions, and capabilities that a product or service can possess, but only a few of these significantly influence a customer's decision to purchase. Many of the features from the multitude that exist merely represent an absolute minimum for the product or service to even be considered.

Popular examples of truly differentiating preference traits commonly used as criteria for purchasing decisions are quality, pre- and post-purchase customer service, key features, brand name, durability, warranty, and degree of customization. A buyer implicitly weighs these few traits against each other. This weighing, which can be conveniently distributed among 100 percentage points, provides a simple yet effective way to measure the misalignment of the customer value with the ABC/M costs.

When selecting preference traits for this analysis, note that the purchase price level trait can be thought of less as another one of the differentiating traits and more as the monetary amount that a customer will concede in exchange for the product or service. In simple cases, a price is singular and in one number the price tag combines all the complex considerations by the customer. The weighting of the price level as a preference trait will be scored higher by customers for commodity products and services and lower as products and service lines are less commodity-like.

Customer Preference Traits

A simple way to envision preference traits is to consider the sections of a newspaper. Also, to keep this example simple, let's exclude "price level" as a trait. Figure 4.13 illustrates how one type of reader of newspapers in what could be a dozen different types of readers might spend a hypothetical 50 cents on various sections of a personal newspaper. For this example, assume that the "sports fanatic" represents 10 percent of a hypothetical \$5 million annual sales for all the customer segments combined (i.e., \$500,000).

Note that the "sports fanatic" type of customer either never cares to read or would not have enough interest to pay for several sections of the newspaper (i.e., the Metro/Region and Arts & Entertainment sections). Of course, purchasing a

Customer Type: The Sports Fanatic (10% or \$500,000 sales)

Trait	Revenue Equivalent		
	Percent	Per 50¢	Part of \$5mm
Front Page	20	10¢	\$100,000
Rest of Front Section	10	5	50,000
Editorial Page	10	5	50,000
Metro/Region	0	0	0
Sports	50	25	250,000
Arts & Entertainment	0	0	0
Obituaries	10	5	50,000
NOT USED	0	0	0
TOTAL	100	50¢	\$500,000

Buyers get this section even if they do not want it

FIGURE 4.13 If Buyers Could Purchase Only the Parts They Like

newspaper is an all-or-nothing deal, but for this hypothetical arrangement, the “sports fanatic” type of customer could in theory pay à la carte, let’s say, 30 cents for only the sections that he or she wants to read. Then the customer could spend the leftover 20 cents that was “not used” on buying a ticket to a ball game. Note that the last column of the figure applies the same distribution extended against the \$500,000 revenue segment. In effect, individual line items represent that part of the revenues that all the sports fanatics would purchase for each section of the paper. Each amount is referred to as a revenue equivalent.

Defining preference traits can introduce ambiguities that can be uncomfortable for those analysts who like things black-or-white and not gray. But the purpose of defining these preference traits is merely to construct a foundation to complete a mental model for associating customer value with the cost required to attain that value. The intent of the exercise is to identify imbalances: spending too much effort on areas not valued by customers, and vice versa.

Using the sections of a newspaper applies substantially more firm and concrete traits than the softer choice of less tangible kinds of preference traits. However, regardless of how firm or soft the traits are defined, the principles remain the same for analyzing the gap between cost and customer values. In the end, the challenge is not to be distracted by semantics but to gain the insights that can result from this method of gap analysis.

Profitability Attributes

Financial profits are the derivative of a sales *price* less the associated *costs*. These two parameters are not directly connected. A supplier’s profits are not necessar-

ily a sure thing. Suppliers are not automatically entitled by the marketplace to fully recover their expenses and have some extra leftover. Profits are what remains after costs are subtracted. Today there is a constant squeeze on profit margins as competitors move in and once-new products and new service lines mature over time.

One of the popular ABC/M attributes previously mentioned is the level of importance of the work, usually scored based on the degree to which each work activity supports the strategic plan. Customer profitability attributes for ABC/M are similar to those applied to strategy; however, in this application they are scored according to how much the activity supports customer value, not the strategy. One hundred percent of the resource expenses can still have attributes assigned, and all attribute-costs consume profits. If the attribute-costs are excessive, they have gone beyond being profits to create financial losses. Some logical attribute categories, related to the preference traits of work outputs earlier referenced, ranging from lower to higher customer value, are the following:

- **Waste:** These are costs related to defects, product returns, idle capacity, and so forth that can be an opportunity cost where the resource's time could have been better used. In some cases, the extra cost of processing a product's return or rework involves real extra expenses. The quality management community refers to this spending as "costs of nonconformance." Whenever waste is identified and reduced or eliminated, resources are freed up to be devoted to higher value activities (or for handling new business). This attribute has been simplistically labeled "non-value-added."
- **Business or organizational sustaining:** This category was discussed in Chapter 2. It simply represents the costs of doing business apart from making products and delivering services. An example would be the accounting department closing the financial books each month. Some refer to these types of cost as overhead. These costs may have value to the senior management of the supplier; however, a customer cannot relate to this as something he or she is (or should be) paying for. (A subset within this category is government regulatory attributes. Examples are work activities to assure compliance with laws.) Business or organizational sustaining costs are often a result of a policy being the cost driver.
- **Future sustaining:** An example of this category of activities is new product research and development or employee training. The payback is in the future. If there is under-spending in these areas, the supplier's ability to maintain or improve customer satisfaction will decline. Unfortunately, existing customers do not see this work or consciously place value on it.
- **Customer sustaining:** An example of this category of activities is order processing or customer service. If these work activities were performed poorly, it would adversely affect the customer's experience. Therefore the risk associated with this category is that customers do not consciously place value on it but will consider alternative suppliers as soon as they experience any

disappointment with this work. This attribute has been referred to as a “dissatisfier” category because a good outcome is usually expected by customers. Anything less than perfect can lead to customers changing their mind about continuing to buy from the supplier.

All of these categories can be considered as adding little or no direct value as perceived by a customer. The activities of these categories produce costs that are unavoidable; however, they can be minimized with careful management. They are all useful categories to target the profit-reducing work-related costs, but they are not revealing of what to change for revenue enhancement. That is, cost reductions in all the non-value-added core activities—from a customer’s perspective—can be used to increase profits without loss of customer value.

The supplier activities that matter the most for the analysis to determine where to better shift resources are those work activities that produce outputs that customers have a preference for. These activity costs can be scored as the following:

- **Value-added core:** This is the critical category of costs that truly generates sales from customers. An output of a product- or service-related activity is of value to a customer only if the customer is willing to pay for it or if it influences a customer’s choice among a basket of competing alternatives. Of course, these activity costs should be consumed efficiently, so in effect poor processes can be thought of as a portion of the activity that is “waste.” On the flip side, the removal of value-added core costs due to indiscriminate downsizing of employees reduces spending on work for this category and will ultimately adversely affect customers. Protecting and leveraging value-added core work activities is mission-critical. Only these value-added core costs are used in the methodology described below.

The general implication of assessing a supplier’s mix of costs by attributes is simply this: The most effective way to improve profitability is to increase resource spending on work activities that support the value-added core. This is effectively a reinvestment of resources from the lower to the highest value-adding activities to customers. In contrast, any increases in costs that are not in the value-adding core are not easily passed through to customers as price increases. In many cases, few non-value-adding costs can be passed through.

Suppliers often deceive themselves with the illusion that their waste-induced higher costs will automatically be covered with a higher sales price willingly borne by customers. An extreme interpretation of this logic is that only value-added core costs generate customer revenues. Value-added core activities and outputs are the only leverage opportunity for growing profits with existing resources. Companies can become confused about the difference between spending and investing. In the simplest terms, if the benefits exceed the costs, it’s an investment.

In short, a key revelation for you is that the scoring of the customer attributes resides in information that exclusively comes from customers; and that data are

external to the supplier, not internal. A supplier using this analytical method of applying ABC/M customer attributes is basically examining its existing resources with the intent to alter its future economics to reflect the realities of the marketplace. The supplier can and should leverage its better competencies to acquire and sustain the more profitable customer segments of its market. An essential starting point for any supplier is knowledge of its customer segments and what each segment's preferences are. I return to customer segments following a brief discussion of target costing and value engineering.

Shortcomings of Target Costing and Value Engineering

Some people might confuse these customer-related ABC/M categories of attributes with the product-focused cost management methodologies prescribed by proponents of value engineering and target costing. Although those two techniques are important, they tend to be restricted to only the product—not including the customer who is buying the product. These two methods focus on removing waste and on perfecting the lowest level of consumption for how a manufactured product relates to the equipment and labor that makes that product.

Target costing and value engineering analysis do not directly include the customer. In an indirect way, trade-offs are analyzed regarding how changes in product features may affect different preference levels of customers. But ultimately, value engineering is product-focused and does not traditionally address the interest that customers have in services that increasingly accompany products. Hence value engineering only provides a partial picture. Customer profitability analysis completes the picture.

Customer Profitability Calculus

Calculus is an area of mathematics that relates to relative changes in measures. For example, a car may be traveling across a line at 30 miles per hour. But calculus would be further interested in the change in speed between that line and perhaps another line located ten yards after that line. If the speed is 31 miles per hour ten yards past the line, then not only can we conclude that the car is accelerating, but calculus can calculate the exact measure of acceleration and project the car's speed at all future points down the road (assuming the acceleration remains constant).

The method of tagging customer profitability attributes has similarities to calculus. It assesses the gap between where a supplier is today relative to the alignment of its cost structure with its customers' preferences. Using customer attributes allows a supplier to also know directionally where to best shift its energies going forward to increase profits. As the supplier and service provider shifts its efforts, it is no longer exclusively examining only its internal cost structure, but in fact is primarily understanding its customer requirements first, then subsequently seeing how its costs relate to its customer segments.

Customer-driven preferences are the central focus, and the ABC/M data assist in providing orientation.

Of course, customers periodically change their preferences based on fad, fashion, whim, or their most recent consumer experience. As customer preferences change, the ABC/M attributes can reflect the shift and the supplier can adjust where it applies its resources.

Real Key: Segmenting and Pursuing Different Customers

Different segments of customers have different preference traits and therefore have varying weighted distributions among their traits. This diversity makes the ABC/M attribute method all the more important as a tool for a supplier to realign its resources.

For example, a regional bank can serve small privately owned companies, divisions of large corporations, and other customer groups. Each type of customer segment can represent a major sales and profit potential for this bank. However, each segment will probably expect different offerings and service levels from the bank.

If the bank performs an analysis of the “average” customer, it may be misled into pursuing a be-all-things-to-all-customers strategy and wind up being nothing-to-anybody. That is, this type of strategy—that will probably result in the dilution of the bank’s scarce resources and skillsets—may produce far less profits than if the bank identified and pursued the most profitable customer segments. To focus, ideally the bank would like answers to questions such as the following:

- Which customer segment provides the highest profits and financial returns based on the bank’s existing capabilities and assets?
- Which customer segment provides the greatest potential for profit improvement if we adjusted the bank’s work activities and resources?

By combining ABC/M attributes and weighted customer preference traits, the potential impact on profitability of each customer segment can be derived using a term and methodology that C. J. McNair of Babson College refers to as revenue equivalents.⁴ A revenue equivalent is defined as the approximate amount of the supplier’s current or projected revenues for a specific group of products and services that is associated with a specific preference trait. In Figure 4.13 the revenue equivalents for the “sports fanatics” are computed. Revenue equivalents can serve as a translator between the market and the supplier’s potential profit and cost structure.

Figure 4.14 illustrates the math for deriving revenue equivalents using a different organization than the newspaper publisher in Figure 4.13. This organization makes and sells products and realizes that its customers can be segmented into two types, fussy customers and savvy customers. The math to determine the revenue equivalents is surprisingly simple. The total revenues are subdivided by the sales for each customer segment and then multiplied in percentage proportion

This supplier's annual revenues are \$500,000, however its two main types of customer segments purchase portions of the sales differently.

Customers	Fussy		Savvy	
Sales (\$000)	\$ 200		\$ 300	
Trait				
Price Level	40%	\$ 80	20%	\$ 60
Brand	20%	40	10%	30
Appearance	20%	40	10%	30
Service	20%	40	60%	180
TOTAL		\$ 200		\$ 300

FIGURE 4.14 Revenue Equivalents

to each customer's weighted trait preferences. This normalizes the total revenues by customer segment and preference trait.

This methodology is based on understanding how well the value-added cost category costs (i.e., only the value-added core activity costs, not the waste or business-, future-, and customer-sustaining costs) align to the traits prized by the supplier's customer segments. That is, only the levels of value-added core activity costs must be matched against each customer segment's revenue equivalents for each preference trait.

The methodology is intended to shape the supplier's work activities and spending to be more in line with its specific customer requirements, not simply the supplier's management's whims, favorite programs, and past policies that often become "one-size-fits-all." Without understanding the weighted preferences of its customer segments, the supplier's strategy may not adequately serve *any* of its customers! A value multiplier is a key metric applied by Professor McNair that serves as the basis for interpreting the degree of alignment or misalignment. The value multiplier provides the "gaps" for the gap analysis.

Value Multipliers

The profitability of each customer segment is calculated by ABC/M by combining the volume and mix of products and service lines purchased along with their "costs-to-serve." To match the revenue equivalents for each customer segment, the ABC/M activity cost equivalent is calculated. Figure 4.15 illustrates how each customer segment's value-added core activity costs can be weighted to reflect the contribution of the supplier's work to each customer preference trait. The weightings are scored by the supplier, not by the customer. (All activity costs that are not value-added core are excluded because the customer has no sensitivity to that work of the supplier.)

For each activity traced (via activity drivers) to customers, each customer segment will weight their traits differently. (Only value-added core activity costs are included.) This example is for the "Fussy" customer segment.

Value Attribute Weighting of Costs											
Customer: Fussy											
-----TRAITS -----											
Activity (only value-added core)	cost	Price Level		Brand		Appearance		Service		TOTAL \$	
		%	\$	%	\$	%	\$	%	\$		
process design changes	\$ 20	20%	\$ 4	10%	\$ 2	70%	\$ 14	0%	\$ -	\$ 20	
add product sizes	\$ 10	30%	\$ 3	70%	\$ 7	0%	\$ -	0%	\$ -	\$ 10	
wrap product in gold foil	\$ 30	20%	\$ 6	20%	\$ 6	60%	\$ 18	0%	\$ -	\$ 30	
process "help desk" calls	\$ 5	0%	\$ -	0%	\$ -	0%	\$ -	100%	\$ 5	\$ 5	
etc.	\$ 10	20%	\$ 2	60%	\$ 6	20%	\$ 2	0%	\$ -	\$ 10	
etc.	\$ 20	15%	\$ 3	60%	\$ 12	25%	\$ 5	0%	\$ -	\$ 20	
etc.	\$ 10	20%	\$ 2	70%	\$ 7	10%	\$ 1	0%	\$ -	\$ 10	
TOTAL COSTS	\$ 105		\$ 20		\$ 40		\$ 40		\$ 5	\$ 105	

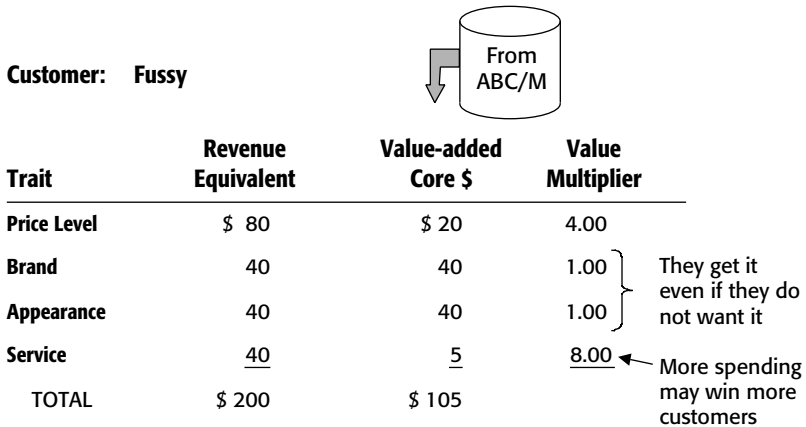
FIGURE 4.15 Value Attribute Weighting of Costs

These cost equivalents provide the denominator to the revenue equivalents in the numerator. The value multiplier ratios are calculated using both equivalents.

The goal of value multipliers is simply to compute ratios (in the form of indices) from which to judge if the supplier is overspending on a preference trait. Precisely calculated indices are much less important than simply determining what range the multipliers fall into for each unique intersection of a customer segment and its valued preference trait:

- If $0 < \text{value multiplier} < 2.0$, there is overspending (i.e., the customer gets costs even though it does not want them).
- If $2 < \text{value multiplier} < 6$, the spending sustains the customer but perhaps is inadequate for long-term customer retention and loyalty.
- If $6 < \text{value multiplier}$, interpretation is a bit trickier and a second measure is needed—one for customer satisfaction as high or low. The combined interpretations are:
 - If customers are reporting high satisfaction, the situation is a competitive advantage. The supplier is leveraging its investments in customer-desired areas, and increased spending may likely further increase customer satisfaction.
 - If customers are reporting low satisfaction, the situation is a competitive risk. The supplier is underspending on a key customer-desired area that, if not fixed, means the customers in that market space may go elsewhere.

The calculation of the value multiplier is not difficult. It is simple spreadsheet math after ABC/M has traced the product and “costs-to-serve” to each customer segment. Figure 4.16 illustrates the math for one of what is usually several



Value multipliers reveal if too much spending produces relatively little payback.

FIGURE 4.16 Value Multipliers

types of customer segments, in this example a “fussy” customer. Two tables are initially constructed for the revenue equivalents of each customer segment and for the value-added core activity costs. The ABC/M system is used to further score attributes of the value-added core activity costs to the individual customer preference traits. The first table is then divided by the second at each intersection or cell to compute a unique value multiplier for each intersection.

In this example, the fussy type of customer does not care much about expensive advertising for brand name recognition or fancy packaging and appearance. However, the supplier is spending considerable resources for brand name and appearance. This type of fussy customer also cares much more about utility and post-sales service. However, the supplier is spending relatively less on this customer preference trait. Hence, more spending in service-related activities may win more business from this type of customer. Also, less spending in brand and appearance may be done without any impact.

Just as with the selection of activity drivers, there will be some ambiguities, but ultimately being directionally correct provides sufficient hints about where an organization is and where its opportunities lie. The same goes with associating each value-added core activity cost with a specific preference trait. The impact of a less than perfect association will not materially alter the picture. What matters the most, as with any methodology, is what adjustments the supplier makes after examining the data. A supplier’s main options are to:

- Separate the distinct actions that will alleviate profit-reducing, lower value-adding, and waste-related work from those actions that will be revenue-enhancing and customer valued. The data alert management about which activity costs should not be cut without further analysis of the impact on customer value, loyalty, and satisfaction. The supplier protects these activities.
- Develop a value-based marketing strategy that considers pinpointing those customer segments that can provide relatively higher profit returns on spending.
- Weigh the costs and benefits of serving one customer segment against others.

After adjustments have been made, the success and impact of the adjustments can be assessed by monitoring trends in the direction of the value multiplier for each segment as well as each amount of customer segment profitability.

Customer-Caused Costs versus Customer Satisfaction

The application of customer ABC/M attribute costs and preference traits enhances the ABC/M analysis of customer profitability. Customer profitability reporting reflects the resource consumption view and how customers cause costs. However, using the analogy that ABC/M is an imaging device like an X-ray machine, ABC/M can provide an image of the enterprise’s skeleton. But many diseases do not show up on an X-ray—a loss of market standing or failure to innovate will not register in an ABC/M profit report until the damage has begun.

By adding the preference traits and revenue equivalents of customer segments to ABC/M analysis, additional emphasis can be applied to how well the supplier is matching customer segment expectations with its work. As a bonus, this satisfies the shift in emphasis toward customer satisfaction, which is strongly endorsed by advocates of weighted scorecard performance measures.

Relative to only using ABC/M data in isolation, the combination of revenue equivalents with ABC/M data to compute value multipliers allows a supplier to go well beyond inferring what has happened to its profits in the the past. The combination provides beacon lights on which directions to intensify or scale back. The combination also measures the level of proper effort to assure that the supplier regulates its effort to what is valued by a customer segment, and not much more. The imbalance between the supplier's work activities and its customer preferences can adversely affect the supplier's profitability and performance.

A less obvious insight is that certain supplier work activities, which may be scored as "high-value-added" using other ABC/M attributes, may also need to be protected from any cost-cutting efforts. As an extreme example, even a supplier having great difficulties improving its profits may need to increase—not decrease—its spending in those targeted activities that match customer preferences where the market demand could be substantial. This can increase market share as well as the total market—a larger pie and a larger slice of it.

The combination of ABC/M with customer preferences weaves the customer into the supplier's analysis of understanding its profits and where to align its resources with the tastes of its customers. When an ABC/M system is used with only an inward view, it is useful because expenses are managed by controlling the activities that in turn are controlled by managing the cost drivers. This can lower operating costs. But when ABC/M is configured with a customer's outward view, it converts spending into investment. Revenues are increased, and there is far greater profit potential from raising the top line than squeezing the middle cost line.

CONFUSING PURSUIT OF VALUE ENTITLEMENT

One of the most ambiguous terms in these discussions about business is *value*. Everybody wants value in return for whatever they exchanged to get value. We can have endless philosophical debates about the definition of value. The ancient Greek philosophers have already put a lot of time into that. The much more interesting question for the twenty-first century is: "Whose value is more important?" In the supply chain there are three groups who believe they are entitled to value: customers, shareholders, and employees. Are they rivals? Is there a hidden hand of checks-and-balances that maintains an equilibrium so that each gets its fair share? When cost savings from a project are expected or realized, how will the savings be divided among these groups?

Figure 4.17 illustrates the interplay among the three groups. The customer concludes that it received value if the benefits or pleasure it received from a

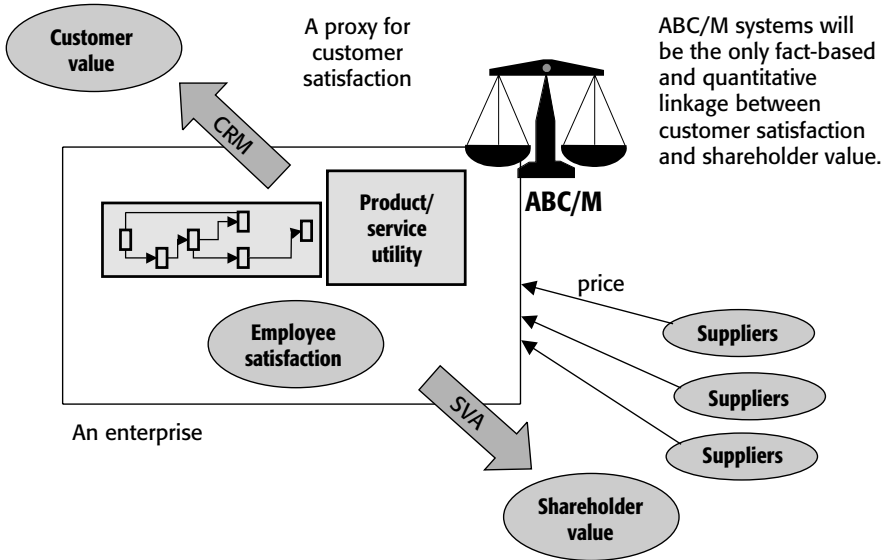


FIGURE 4.17 Value Is Ambiguous—Whose Value?

product or service exceeds what was paid for it. At the opposite end of the figure are the owners and shareholders. They also have entitlement to value. As investors, if their investment return is less than the economic return that they could receive from equally or less risky investments, then they are disappointed; they would feel they got less value.

The scale in Figure 4.17 indicates that there is a trade-off between customers and shareholders. Under certain conditions, increasing customer satisfaction can result in reducing shareholder wealth. For example, if the enterprise drops its prices too much or it adds many more product features and services without a commensurate price increase, then the shareholders gave up some of their value to their customers.

Figure 4.17 also involves supplier-employees, which includes the executive management. Their perceived entitlement is their job value. For many this is their financial compensation. Heroes of the twentieth-century labor union movement, such as Walter Reuther of what is today’s USA AFL/CIO, confronted Henry Ford for “a fair day’s pay” for hourly workers. In today’s more mobile knowledge worker labor pool, employees who are dissatisfied with their job value simply vote with their feet by switching to pursue a greater value job with another employer. Or they become contractors and establish their own value with their billing rate.

With this reduction of value of entitlement, Figure 4.18 shows a broad picture of how the front and back office systems plus other systems serve as components in managing the value chain.

catapult ABC/M to front-and-center will be the recognition that ABC/M modeling can be the best link between what appear to be disparate systems. We know they all connect, but we struggle with how they do it.

NOTES

1. *The Future of Man* (1861).
2. William C. Copacino, speech presented to the 1999 Annual Conference of the Council of Logistics Management, Anaheim, CA.
3. Michael Porter, *Competitive Advantage: Creating and Sustaining Superior Performance*. Free Press, 1998.
4. C. J. McNair, Lidija Polutnik, and Ricardo Silvi, "Cost and the Creation of Customer Value." Paper presented by C. J. McNair at the AICPA Fall Industry Conference, Orlando, FL, October 2000.

The Holy Grail: Performance Measure Systems That Produce the Correct Behavior

“The three most important things you need to measure in a business are customer satisfaction, employee morale and cash flow. If you are growing customer satisfaction, your global market share is sure to grow. Employee satisfaction gets you productivity, quality, pride and creativity. Cash flow is the pulse—the vital sign of life in a company.”

—*Jack Welch, CEO, General Electric Inc.*

INTRODUCTION

At the close of Chapter 4, I alluded to a much larger picture that integrates ABC/M data with other uses. In this chapter and Chapter 6, I describe integration.

Some have said that the most dysfunctional part of an organization is its performance measurement system. The assumption is that if the measurements were more proper, aligned with strategies, and more tailored to the individuals and teams, then the organization would likely execute at a much better level of performance. Fixing the performance measurement system has been referred to as the “holy grail” that will wrench into place all of the improvement programs so that they work together in a coordinated way. The solution has been described by some as a “balanced scorecard.”

Others have described measuring shareholder value creation as the “holy grail.” They believe that if information systems were more linked to the actions needed to increase shareholder wealth, the organization would be achieving its ultimate goal. This area of business has been referred to as value-based management. When I use the term *stakeholder* rather than *shareholder*, I am broadening the pool of who benefits when the organization makes more money. The company can elect to selectively increase salaries, but that obviously reduces the after-tax profits that fall to the bottom line.

In this chapter I describe how ABC/M data can integrate with both performance measures and value-based management. I discuss how increasing shareholder wealth relates to satisfying customers and examine how ABC/M links to customers and to strategy.

In Chapter 6 I discuss a variety of other uses of ABC/M data, such as unused capacity management, that will help accomplish what I discuss in this chapter. But before discussing any of these items, I am going to introduce a robust and dense figure that connects all of these elements on a single page.

Organizational Model: A Cost Consumption View

Financial information is like the central nervous system for how organizations communicate. Everyone seems to understand terms like *costs*, *profits*, *budgets*, *paychecks*, and *bills*. Financial data are simply a representation of cash and money. Cash and money is the common language of business and commerce. Commercial companies, not-for-profit organizations, and governments all speak the language of money.

The world is made up of thousands of businesses and organizations, but there are few basic principles that can be generalized to all of them. One is that if an organization continues to spend more money than it takes in, it will eventually disappear. The money flows through the organization like a circulatory system. If net cash back is constantly less than cash laid out, the organization suffers.

Business textbooks and magazine articles display many different exhibits of business models. They all convey how an organization operates. Figure 5.1 is an extension of Figure 1.6, the ABC/M Cross. What has been added are two important elements missing in the Cross: the organization's strategies and its performance measurements. Figure 5.1 describes how an organization operates as a total system. It is a circulatory system based on the flow of money. At a lower level of detail described later in this chapter, this exhibit integrates popular terms and elements taught in business and management schools.

In one sense the model begins and ends with customers, but it ultimately describes how the creation or destruction of wealth is a result of the organization's efforts. At the center of the model is the ABC/M Cross that is considered the standard for understanding cost management. The end game of the model is for the organization to continue to increase the financial wealth of its shareholders. In life, the organizations that excel in learning win—but there is no finish line.

Exploring the Map

Figure 5.2 is a lower level and much more detailed view of Figure 5.1. The money flow properties remain the same. I explore in this section each of the major zones or regions of the map:

Beyond the scope of the CAM-I Cross is a broader framework that includes defining strategy and measuring the alignment to it.

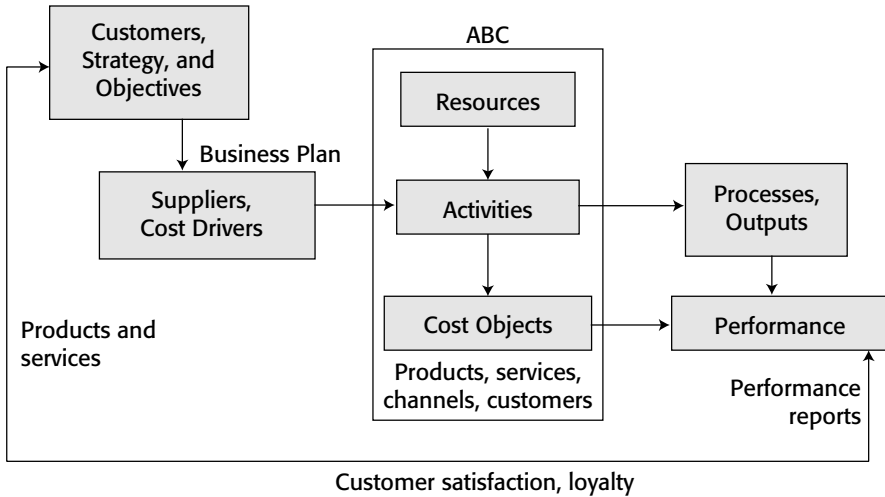


FIGURE 5.1 Strategic Management System

- Strategy and customers
- Profits and resource consumption
- Supply chain, cost drivers, processes, productivity, and value

Strategy and Customers

Examine the upper-left region of Figure 5.1. An accepted key to an organization’s success is having a sound strategy. The strategy requires goals and objectives defined to guide employees who execute them to make the strategy realize its benefits. The two inputs for a strategy are customers and strategy definition methodologies.

Customers are essential. The strategy considers the customers’ values, preferences, and needs. These provide the ideas for what products and services will satisfy customers so that they will exchange money for them. If customers continue to like the products and services as well as interacting with the supplying organization, the relationship will produce customer satisfaction and loyalty. This in part demonstrates that the organization is performing well, which is a necessary ingredient for increasing the organization’s stakeholder wealth.

There has been an evolution in strategy methodologies used to define and determine organization strategies. As examples, there have been models of “cats, dogs, and stars”; the SWOT model (strengths, weaknesses, opportunities, and threats); the four forces model; and the low-cost versus high-differentiation model. Management teams often go on retreats to define their strategy. In the

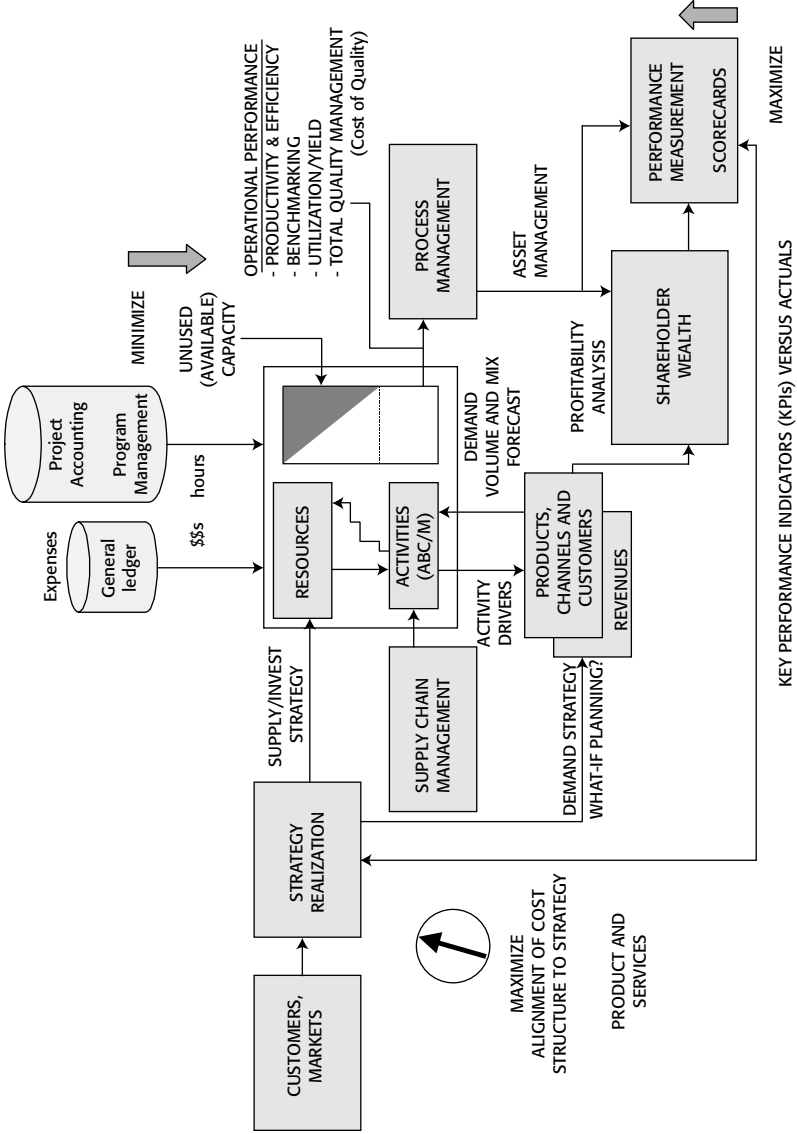


FIGURE 5.2 Performance Management

long run, strong management leadership is a necessary ingredient to make the strategy work.

Once the strategy has been defined (and as it is continuously redefined), the strategy's outputs provide inputs to other elements of the business model:

- **Demand strategy and investment strategy:** A strategy has two components: how to generate customer interest and sales orders and how to provide the required resources. Usually the demand strategy comes first, and the supply strategy then matches it. This minimizes the amount of unused capacity, which if not minimized will detract from creating stakeholder wealth.
- **Target measures:** These metrics are later used to test whether the organization is achieving the expected results. With that feedback, the organization can adjust its actions. Target measures are also referred to as key performance indicators (KPIs).
- **Scenarios:** These represent the many possibilities of what might result from alternative strategies and execution plans. Scenarios are used to simulate what-if analysis. They also provide some of the metrics needed to evaluate costs versus benefits and to quantify near-term target measures, spending plans, and budgeted resource costs.

If the demand strategy is successful and matched with the appropriate resources, the correct products and services flow back to the customer and marketplace. If a long-term and healthy relationship with customers is maintained, then customers' satisfaction converts to loyalty. The ideal goal for a supplying organization is a "customer for life."

Profits and Resource Usage versus Spending

The middle region of the model expands on the ABC/M Cross. In Figure 5.2, at the center of the ABC/M Cross and the map itself are activities. Work activities are central to how organizations create results. Organizations enact their strategy through the performance of combinations of work activities. The work of people and equipment is central to producing outputs, whether they be products, service lines, ideas, or reports to management. Some outputs appear intangible, such as a processed automobile loan, but are still outputs of work. Cost objects consume work activity costs. There is tremendous variation and diversity in how cost objects, such as products and customers, load demands on work activities. This is the location in the model that detects the different costs caused by diversity; activity-based costing has become accepted as the appropriate instrument to accurately measure these costs.

The resources are the economic costs of people, supplies, equipment, buildings, and other items. Resources supply the costs for activities. Then, as just stated, the cost objects consume the activities. If the activities do not consume all

the available resources, then there is some unused capacity remaining. (Synonyms for *unused capacity* are *idle capacity* and *excess capacity*.) In other words, the resource spending expenses occur, but the resource usage costs are less than 100 percent of the expenses. The adjacent and partially shaded box spanning the resources and activities reflects the unused capacity. If the unused capacity is substantial, then its cost is probably displacing profits. Profits are calculated as a derivative of revenues net of the cost of the cost objects.

Near the bottom middle of Figure 5.2 are the elements that determine profit. The revenues are a consequence of pricing and volume, where the volume is also governed by the customers' awareness, interest, and ability to afford the product or service line. In addition, volume is affected by competitors attracting those same customers' money. The costs of the cost objects are the combination of the costs-to-make products, the costs-to-deliver service lines, and the "costs-to-serve" the customer. The resulting level of profits is an input to the performance measures, commonly referred to as the balanced scorecard or dashboard. The profit performance is usually judged relative to the targets (from the strategy) and relative to past months and years; favorable variances and trends are praised.

In the long run, the end game for organizations is to minimize unused capacity while maximizing cash flow returns and economic profit to increase shareholder wealth. Other popular measurement terms are EVA™ (EVA is a trademark of Stern, Stewart & Co.) for economic value added and EVM™ (EVM is a trademark of KPMG LLP.) for economic value management. These two goals, capacity management and wealth creation, are noted in Figure 5.2 by the large up and down arrows labeled "minimize" and "maximize."

Cost Drivers, Processes, Productivity, and Value

The zone or region across the map's middle and ending at the right is where the business processes are located. Cost drivers are an input to the work activities. A cost driver, such as a customer's order, is an event or factor that creates the need for and influences the type and amount of work activities. (As previously mentioned, drivers can have their own drivers. ABC/M uses activity drivers to assign and trace activity costs to capture variation and diversity unique to cost objects. Cost drivers result in activity drivers, cost drivers are of a higher order in relation to the root cause why work occurs, and activity drivers are more like symptoms that measure outputs.)

An increasingly popular term is *value based*. Value-based management (VBM) usually refers to maximizing cash flow returns and economic profit; however, in Figure 5.2 VBM is also associated with business processes and their outputs. A business process can be defined as two or more logically related (or sequential) work activities with a common purpose. (The term "activity-based cost management" was coined a few years after activity-based costing was being

applied. ABC/M stresses the importance of acting on the activity-based costing data to manage the organization through better decisions.)

The inputs to VBM are tools and measures related to execution and operational performance. Examples of these are productivity improvement, benchmarking, yield management, efficiencies, throughput velocity, and responsiveness. Some people refer to this as *lean* or *agile* process management.

Some of the operational performance measures can be inputs to the performance measurement reporting system. In the map the outputs of VBM are realignments of the organization to synchronize with the strategy and transformation or reengineering of business processes. Eventually both of these outputs become accepted and expected as continuous improvement actions.

ABC/M is powerful in that it allows user-defined attributes, such as degree of value-adding (VA), to be scored or graded for each activity in the business process. Another popular attribute assigns strategy weightings to indicate the relevance, fit, and degree of alignment of each work activity with the organization's strategy. With these scores, the activity-based costs can be reported to produce VA thermal heat maps and bubble diagrams as graphical representations to view and focus needs, opportunities, and misalignment in terms of money.

From Customers to Shareholders

There are many ways to diagram an enterprise-wide business model of how an organization determines strategy and then satisfies customer needs to create wealth for its stakeholders. Figure 5.2 is one of those diagrams depicting performance management. But Figure 5.2 does make, in terms of money, the critical link between minimizing unused capacity costs and maximizing stakeholder wealth, and it links the projected resource levels back to strategy and customers.

Processes like EVATM, EVM, and VBM may be the “ends,” but ABC/M is one of the important “means.”

ABC/M AND PERFORMANCE MEASURE WEIGHTED SCORECARDS

A mystery in business today is how to support a manager's claim that, “We did well last quarter.” The normal follow-up question is, “How do you know?” Despite a sea of collected data, organizations struggle with making sense of it all. Organizations are generally data rich and information poor. Attempts are being made to fix this with “data warehouses” and “number crunching software.” But are those technologies simply Band-AidsTM and medications or a real cure?

The subject for discussion here is performance measurement. When the manager referred to above does state that “we did well,” how does the organization detect if the *entire* organization benefited from whatever that department did when it supposedly “did well?” One way to find out is to improve the organization's

measurement system itself. The weighted and balanced scorecard is the popular technique for improving the measurement system.

A scorecard provides a framework for literally keeping score of the functions and processes that are most important to an organization. Just like at a sports event, a scorecard quickly answers how teams are doing at what matters. Unlike with a sports event, a performance measurement scorecard allows managers and employees to keep digging deeper for explanations and answers. Measures have measures within measures.

The outputs of ABC/M are excellent inputs to a weighted scorecard system. Let's not confuse ABC/M and performance measures. ABC/M is *not* the measurement system. As mentioned, the *output* of ABC/M can be an important *input* to performance measures. And the presence of ABC/M data can lead to actions and decisions, not just sighs or an "oh my."

ABC/M is not a prerequisite for designing and using a scorecarding system. Scorecards are much more about communicating strategies to employees and increasing alignment of execution of the work to stay focused on the strategies. But the existence of ABC/M data can populate the scorecard framework with robust and high-octane information.

Executive Headaches with Employees

High on the list of the major frustrations of executives is their inability to get their employees to execute their strategies. More specifically, when executives adjust and shift their strategy, they find that their employees continue to perform without much change. Failing to execute a good strategy is a major disappointment in the boardroom and to the governing body. Chief Executive Officers and managing directors usually get blamed.

The massive inertia of the balkanized measures keeps employees doing what they have been doing. A change in course may not happen despite the executives' appeal. The executives are not particularly interested in employees just getting better at what they have always been doing. They want employees to change their priorities. What people focus on is more important than improving on things that don't matter.

Another explanation is that today's employees are "empowered workers." Unlike many years ago, when employees dutifully obeyed a snap-to-attention command-and-control senior management style, things are different now. Empowerment is a two-edged sword. Empowerment means employees can now choose what they believe they should do but also reject what they think they should not do—regardless of their orders. So when today's executives announce new changes in direction for their organizations, today's knowledge-worker employees ask themselves, "Am I persuaded? If not, I continue with my current ways."

To the executives, this is like driving a car with excessive play in the steering wheel. When they turn the steering wheel left or right, the car barely turns.

Weighted scorecards are intended to provide precision steering. Like a good golf swing or tennis stroke, scorecards give the follow-through that separates the novices from the professionals.

Poor Alignment of Strategies and Measures

One of today’s organizational problems is a disconnect and absence of alignment between *local* measurements of things a manager, team, or employee can control or influence and the subsequent organizational results. Worse yet, in many cases the measures in place today tend to be internally “competing” measures that result in employee behavior such as, “As I do well, I adversely affect your measures so you do poorly”—classic sub-optimization. Figure 5.3 reveals how dysfunctional measures create undesirable behavior and results.

New thinking in the areas of performance management and balanced performance measurement systems is making great strides to directly connect local employee behavior to the organization’s strategies and goals. Two attractive aspects of this new thinking are:

- An increasing emphasis on nonfinancial measures, such as customer satisfaction and employee innovation, and
- A greater focus on predictive measures (leading process indicators) in contrast to after-the-fact historical results that are reported too late to change the outcomes (lagging results indicators).

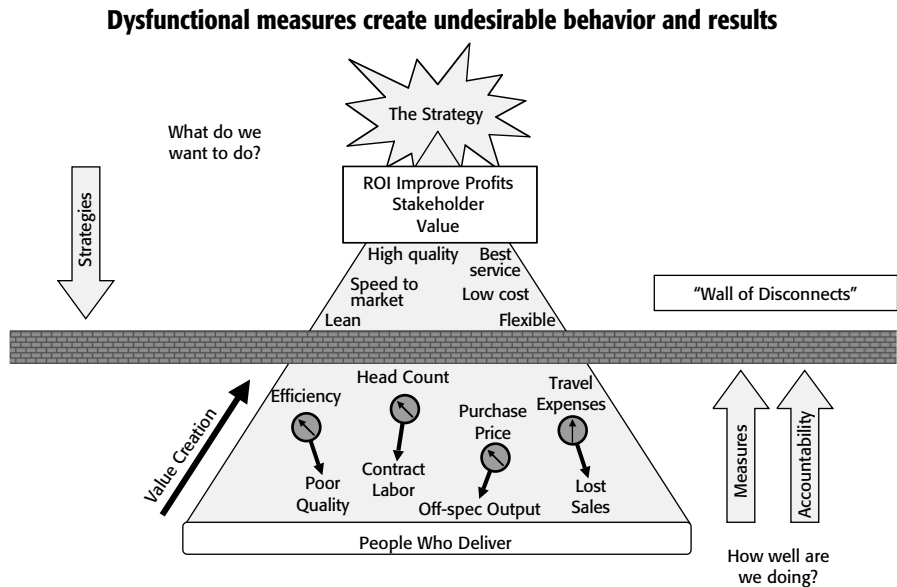


FIGURE 5.3 Goal Incongruity and Conflict

In summary, the need for reforms with organizational measures is due to executive needs to communicate strategy changes and get their organizations to execute in alignment with the revised strategy. In addition, excessive emphasis on financial measures, like profits, involves lagging indicators reported too late. To senior managers, managing financial results is like pushing a rope—it is hard to do. Leading indicator measures are more important because they are predictive of financial outcomes.

In the original idea for the balanced scorecard, as introduced in 1992 by Professor Robert. S. Kaplan and Dr. David Norton, there are four perspectives:

1. **Financial:** profit and investment return results
2. **Customer:** customer satisfaction and needs attainment
3. **Internal core business process:** efficient and effective execution
4. **Innovation, learning, and growth:** The “soft” side measures describing new product and service development as well as people development and learning.¹

A popular description of a weighted scorecard is

a multidimensional framework for describing, implementing, and managing strategy at all levels of an enterprise. This is accomplished by linking objectives, initiatives, and measures to an organization’s strategy. Scorecards provide an enterprise view of an organization’s overall performance by integrating financial measures with other key performance indicators around customer perspectives, internal business processes, and organizational growth, learning, and innovation.²

The mantra for weighted and balanced scorecards is the answer to a simple question: “How am I doing on what is important?” This question should be answerable at every level of the organization—from the operational teams to executives to the governing board.

Focus on Outputs

One of the primary ways in which ABC/M will accelerate the flowering of information-enabled productivity is by providing fact-based data. ABC/M’s reliable data can be used to both assess past progress and support future decisions. In its most basic form, ABC/M is simply data that are a means to an end. ABC/M should not be considered as an “improvement program” because then it may be perceived as a temporary fad or project-of-the-month. In reality ABC/M simply reflects the economics of how an organization behaves and consumes expenses, and the output of the ABC/M calculation engine is always the input to something else. More specifically, the output of ABC/M is an excellent input for performance measurement systems.

Most organizations have very little insight about their outputs: not the obvious products and standard service lines that they deliver to end-customers and

service-recipients, but a minimal understanding of the internal “outputs” of work, such as knowing what the work effort and cost are to generate

- A new enrolled account,
- A processed invoice,
- A returned and put-away good,
- A completed engineering change,
- A completed new customer sign-up,
- A completed executive report,
- A registered student,
- A sales call, or
- A set-up or changeover of equipment.

These are not simply the “work activities” that people perform but the descriptions of the results after the activities have been performed; they are the outputs of work. ABC/M does a great job tracing resource expenses to all sorts of various outputs. This does not mean that the work processes that produce the outputs are unimportant. It simply means that people react more to the visibility of output costs relative to the process costs, even though they are equivalent amounts of the same costs just reported differently.

In short, when unit costs are trended, employees and managers gain more insight. They can benchmark to deduce if they might have a best or worst practice. Per-unit-of-each costs should not be included in the scorecard’s financial perspective but should appear in the other three perspectives. They may have a money currency sign, but they are much more like a surrogate for and representation of the equivalent resources consumed by the unit measure, stated in terms of money.

Whether or not the ABC/M data measure the work activity costs, the processes that the activities belong to, or the outputs, ABC/M makes scorecards easier to populate. This is because ABC/M already has correct and true numbers in place, and in a format designed for decision support. Some organizations have initially designed their scorecards without cost data. This leaves gaps or incorrect “allocations” that corrupt the result measurements. Adding ABC/M fills in the weak spots.

Cascading Measures

“Local” measures can be selected and cascaded downward for teams, and results can then be rolled up that are aligned with the organization’s strategy. Figure 5.4 provides an example of how an employee can have the line of sight on how what he or she does can affect other performances that eventually affect achieving the strategic goals. Employees can see how they contribute to the organization’s success. If management is bold, they will allow the employee teams to see how the others are contributing to success.

Employees ask, "How do I impact the executive's measures?" Here is how:

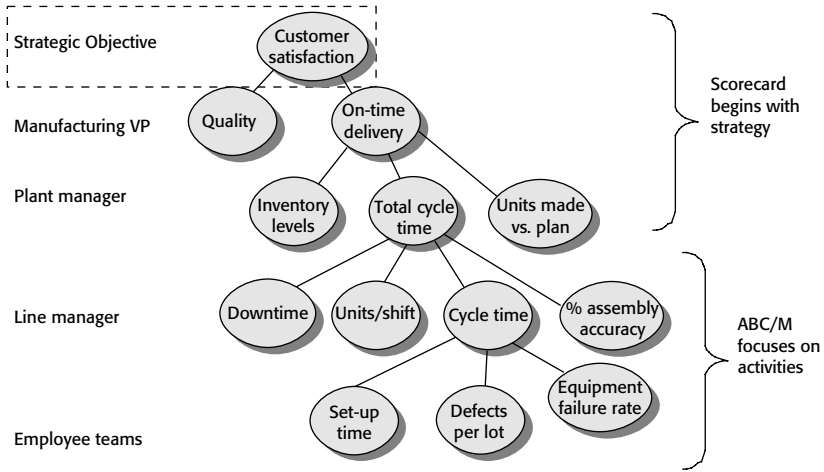


FIGURE 5.4 ABC/M Links Scorecards to What People Do

Figure 5.5 shows that the overall idea is to have the more operational leading indicators at the employee team level measured more frequently. The higher level lagging indicator results, measured less frequently, should respond in sync if there is a reasonable level of correlation.

Figure 5.5 also illustrates that when the senior executives shift strategy, they can replace a measure or two of the vital three measures with different and more applicable measures and rebalance the weightings of the measures. Rebalancing the weightings by modifying the coefficient percentages is like an airline pilot slightly adjusting the ailerons on the wings to slightly alter the plane's course. But replacing an old measure with a new one is more intense—like banking the plane left or right.

ABC/M as an Enabler for Performance Measures

With fact-based and relevant cost data, managers and teams can see things they had never seen before—and some of it might not be pretty. They might really find out, for example, what the true cost is to process an individual customer return. They can differentiate profitable from unprofitable customers. They can isolate the location, amount, and cost of unused and available processing capacity. It is important to treat ABC/M data responsibly. Often organizations are surprised when they see the truth about the consumption patterns from their cost structure. Finding someone to blame is not the point of having ABC/M data. The key is to use the ABC/M data as a guide for better decisions, and use the data for performance measures as a valuable benefit.

**When executives shift strategy,
the selections and weightings are adjusted.**

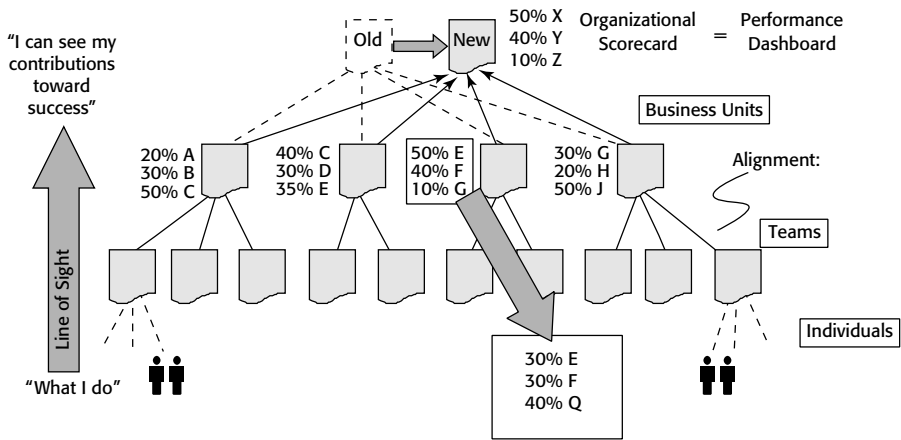


FIGURE 5.5 Shift of Cascading Measures

With the visibility created by ABC/M, organizations can identify where to remove waste, low-value-adding costs, and unused capacity, as well as understand what drives their costs. With ABC/M, businesses can measure where they are and are not profitable, and also understand why. Figure 5.6 illustrates ABC/M’s location in an information system and its more popular data outputs used in scorecarding systems.

In today’s environment, a business’s road is no longer long and straight, it is windy with bends and hills that don’t allow much visibility or certainty about the future. Organizations must be agile and continuously transform their cost structure and work activities. This is difficult to do when employees and managers do not understand their own strategies, cost structure, and economics. It is much easier for organizations to transform themselves when their weighted and balanced performance measurement system links and communicates their strategies to the behavior of their employees. Following are some reinforcing observations about scorecarding:

- The weighted scorecard helps organizations move from being financially driven to mission-driven.
- If you fail to tie measures to strategy, you miss the chief benefit of the scorecard: alignment.
- The scorecard’s purpose is to translate strategy into measures that uniquely communicate your vision to the organization.

In short, failing to link measures to strategies will cause misalignment of the cost structure with the strategy. Because monitoring strategy attainment usually relies

The output of activity-based costing (ABC) is *always* the input to something else...including to performance measures.

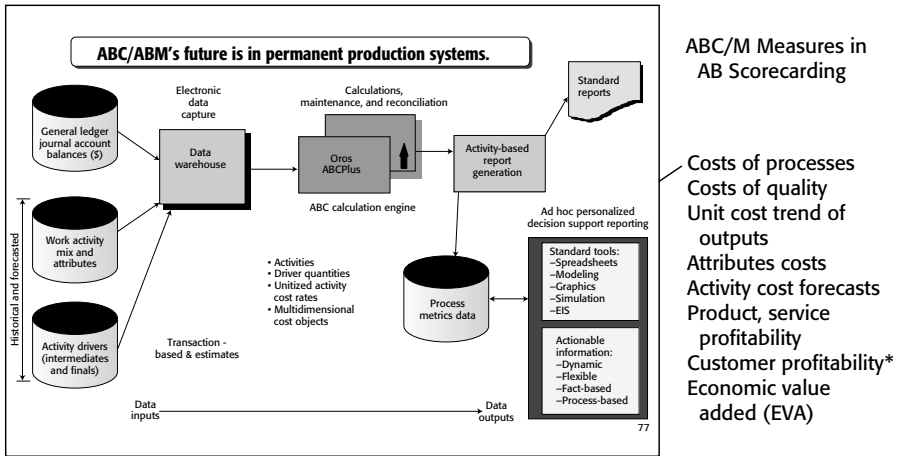


FIGURE 5.6 Scorecards: Aligning Activities with Strategies

on output or results measures, those lagging measures need to be translated into more process-operational leading measures. Competing measures need to be minimized.

In the end, if the organization is performing, the rewards go to the investors in the form of returns or to the governing boards in the form of mission accomplishment. Therefore, what we do to satisfy our customers ultimately achieves our business objectives.

Value of ABC/M with Scorecarding

As previously mentioned, some perceive ABC/M as just another way to spin financial data rather than as useful, mission-critical managerial information. Also, in the past, an ABC/M project was just that, a project, and not viewed as a repeatable and reliable reporting system. As a project, ABC/M helps fix the problem and then the project is done. In contrast, scorecarding quickly becomes essential to be maintained and regularly reported. By combining ABC/M with scorecarding, there is an imperative to maintain the ABC/M system because ABC/M becomes an important feeder system of data into the scorecarding system.

Effective performance measures align employee behavior to the organization’s strategies. Hopefully the strategies support customer satisfaction in a way that maximizes the value of the shareholders or governing board. ABC/M is essential for good decision making. It all fits together.

**WHO BENEFITS FROM INCREASED VALUE?
CUSTOMERS OR SHAREHOLDERS?**

Investors and stockholders have been expressing concerns that traditional methods of evaluating companies and compensating managers are not adequately linked to changes in the economic value and wealth of the company. For example, the portion of a company's total value that is explained by its short-term financial performance continues to decrease. For most companies their market value continues to diverge from the accountant's book value measure. A better alignment of company performance and valuation measures is needed.

To address this concern, corporate leaders are being drawn to relatively new management improvement programs that emphasize "value." This topic is immediately attention getting for senior executives and managers. But as executives and managers investigate what "value-based" programs are all about, they quickly realize there is ambiguity involved: Whose value? What value? Value defined by whom? Value for customers or for shareholders? If for shareholders, is the market rational in its valuation of publicly traded companies? If for customers, what risks exist that customers are given extra service at extra work but without an incremental price increase? Will increases in sales volume offset the extra costs or will the shareholders wind up paying for it?

Increasing shareholder value is routinely verbalized in corporation annual reports and press releases. Despite the words, few organizations have a clear idea of what makes up shareholder value and how creating shareholder value is balanced with creating customer value and maintaining employee morale. In the end, satisfying customers is the main source for increasing shareholder wealth. However, this is accomplished by investing in or redeploying the correct resources, both people and assets, in a balanced way that motivates employees and produces more profitable results.

These management methodologies and programs are sometimes referred to as value-based management (VBM), which surfaced when some organizations realized that their shareholder wealth was actually decreasing despite increasing accounting profits. Part of the explanation for this paradox has been the failure to consider the cost of capital invested to produce the profits. Money is a resource too, just like employees and equipment. And money also has a cost.

This section identifies how ABC/M bridges the gaps between boardroom and operating level decisions. How do the efforts of people and the spending of resources convert to create shareholder value? Whereas VBM helps set strategy direction, ABC/M helps make the right decision about customers, products, and processes necessary to execute the decisions. ABC/M adds value to VBM by providing actionable information.

We all talk about breaking down the "silos" between functions like marketing and finance and operations. Value-based management and ABC/M are two tools that have grown in popularity due to cheap and efficient computing power now on everyone's desktop; they help facilitate silo-breaking thinking. I argue

here that VBM and ABC/M should be used in tandem to help break down the communication barriers between the boardroom concerns about stock price and capital allocation (VBM) and the managerial decision support at the customer, product, and process level (ABC/M). If you focus on either tool alone, decisions will be far from optimal. Integration of VBM and ABC/M provides a much better view of the proverbial low-hanging fruit.

Paradox: Profits Up, Wealth Down, and Vice Versa

The paradox of “profits up but wealth down” is caused by unrecognized limitations of conventional financial reporting. The income statement, which basically reports total customer sales less the expenses to generate those sales, has a major blind spot. It does not reflect how efficiently or poorly a company is using capital, the cost of money, to generate its profits. (Note: The cost of capital is more encompassing than just bank debt interest expense.) An example is an airline carrier getting the most from its fleet.

In short, company financial statements do not effectively report the consequences of deploying capital or the future value of current and future capital expenditures. Accounting profits do not equal economic profits. In the end, the financial statements do not show the real value of the enterprise or the location where real value was created within the enterprise. They reflect the what has happened, not what will happen.

The limitations of the financial statements are due in part to their past origins. The history of an income statement reveals that it was created to report to owners how much profit was made from a single venture at the completion of the venture. Because the venture was also then liquidated, the income statement and the balance sheet very accurately reflected the profits and wealth derived from the venture or project.

Modern enterprises do not liquidate themselves every year to provide accurate measures of income and wealth. No one has yet found a way to accurately value an enterprise that all stakeholders can agree to. Until this all-but-impossible valuation measure is available, valuation and income reporting issues will remain a matter of debate. The balance sheet captures some of the build-up of wealth but is weak in predicting liquidation value.

Changes in the quality of a company’s income statement and balance sheet, including the impact of its decisions and projects, are generally reflected in changes in its stock price. So the financial and capital markets—where buyers match sellers—are the ultimate valuation mechanism.

Organization Is an Endless Series of Projects

A company cannot rest on its laurels of brand-name products and loyal customers. That is, a company cannot coast without eventually slowing down. A nontraditional but valid view is that a company continuously injects spending into an endless

stream of projects, such as product promotions and sales campaigns. Some projects are large, and many are micro-projects. Think of this at the extreme, as if a company rehired every single employee every day, where an acceptable payback from an employee's effort might not justify the next day's work. If the composite collection of projects becomes less innovative, losing impact on customers or processes relative to past projects, then overall profit performance will inevitably suffer.

Financial statements do not shed much light on individual project economies and their individual returns. But as time passes, significant changes in the financial statements do reflect all of a company's concurrent projects and therefore eventually reflect whether the company is improving or falling behind. For publicly traded companies, changes in the quality of a company's income statement and balance sheet, including the impact of its decisions and projects, are generally reflected in changes in its stock price.

Cost of Capital: What Most Managers and Employees Neglect to Consider

Your company may not compete with giants like the Ford Motor Company or General Electric, but all companies compete against each other in the financial markets. Those companies yielding an acceptable return to investors will survive and grow. Those that do not will be starved of renewal capital and charged a premium for raising capital. This adversely affects companies with low financial returns in their ability to compete. In short, generating some profits is not enough. The profits must be large enough to reward investors who risked their cash when they had the alternative of investing it elsewhere.

There is a growing consensus that the three major influences on wealth creation are reasonable year-to-year revenue growth, healthy profit margins (relative to your industry), and good capital utilization. Everyone understands the first two, but not the last one.

As previously mentioned, money—investment capital—is not free. It also has a cost for its use, no different than paying for vendor supplies and for wages of employees. However, when an income statement reports net income, the net income includes only the interest cost of debt and ignores the cost of equity. Therefore, it does not report the total cost of money used to finance the enterprise.

According to economic theory, capital eventually moves to the investment opportunities with the best returns because investors want to maximize their profits. An income statement, even if it deducts for taxes and depreciation, does not reflect the opportunity cost of the money that equity investors could alternatively have made if their investment had been placed elsewhere, such as in stocks, mutual funds, or money market accounts. Although equity capital does not require cash outlays, as does debt repayment, it does have a cost.

To solve for this omission, most VBM approaches further subtract the cost of both debt and equity capital as a "capital charge." This subtraction calculates a lower level of profit margin than net operating profits after tax (NOPAT), and

it is often called economic profit. Economic value-based methodologies include shareholder value analysis (SVA), residual value, economic value added (EVA™), and cash flow return on investment (CFROI). Their common thread is to incorporate the value of the investment capital provided, and their focus is on cash flow and the long-term cash return impact of discretionary expenditures, such as for research and development. Value-based management methodologies involve consideration of both the income statement and the balance sheet.

Brief History of Value-Based Management: “Cash Flow—Not Just Earnings”

More than 30 years ago economists, investors, and security analysts began to look beyond traditional accounting statements to simplify the reasoning behind their valuation of a corporation’s stock price. The analysts began considering how they might value an enterprise as simply as they would value a child’s lemonade stand. They disregarded all accrual accounting and judged whether the amount of money in the lemonade stand’s “cash box” register was increasing or decreasing. They focused on cash flow, not accrual accounting.

In 1961 Nobel Prize-winning economists Merton Miller and Frances Modigliani published an article that has been basic reading in business schools ever since.³ They suggested that all the accrual accounting and adjustments the accountants use in external financial reporting are basically a smokescreen. They introduced and advanced the concept that shareholder value was a function of two cash flow streams—the first from existing assets, reflected in the financial statements, and the second from future investments (e.g. micro-projects) not yet reflected in the financial statements.

Today’s security analysts refer to this measurement concept as residual income, free cash flow, CFROI, or NOPAT less the cost of capital. A positive residual income number indicates that the company has created economic value for its owners and stockholders during a time period, whereas a negative number means that economic value has been lost. It seemed more logical to the security analysts that the inclusion of any cash impact, whether it is a net inflow or outflow, provides the broadest and best means to judge the rates and directions of wealth creation for investors.

When interest rates were low (2–3 percent), the cost of capital didn’t matter much, but with the inflation of the 1970s and 1980s, cost of capital over 10 percent made a significant difference. At the outset of the new millennium, substantial declines in valuations of dot-com e-businesses with no earnings or positive cash flow demonstrated the importance of future cash flow expectations.

A startling observation was then made from applying these valuation measures. When the wealth position of some major corporations was measured with these cash flow metrics, the results closely matched the changes in these corporation’s stock market prices. When these two measures are graphed along time, their data-points are highly correlated. The security analysts concluded that the

ultimate market-based valuation heavily considered cash flows—both current and future—as well as basic earnings and profits. They further concluded that the market’s valuation of a company’s stock price is derived from *all* costs, including financing costs and the timing of financial costs. They included consideration of both the income statement and balance sheet.

It did not take long for analysts to further realize that the VBM calculations could also be used prospectively to predict future directions of wealth creation or destruction. By inputting estimates of the “leading indicator” parameters that drive those same numbers used to measure past wealth positions, the security analysts and the investment community in general began to more widely accept the VBM calculations. During the 1970s and 1980s, business schools graduated increasing numbers of MBAs and CPAs who understood the logic of discounted cash flow (DCF), further leading to its broader acceptance.

A stock-price-derived metric, total shareholder return (TSR), developed that was based on cash flow to the investors. This is composed of dividends plus the change in stock price over a period reduced to an annual rate. As investors embraced TSR, the focus on stock price appreciation grew.

As investors grew more confident that VBM calculations were truly an indicator of wealth creation, they—and boards of directors responsible for corporate governance—began to advocate modifications to the existing performance measurements and reward systems. It was becoming obvious that the enterprise’s operating managers should no longer simply be evaluated based on how much profit they generated *last* period (i.e., the prior period’s earnings per share, EPS) or on loosely defined objectives. It was apparent that this more robust and encompassing value-based measure should judge the management team. If the VBM measure is directionally positive, then the investors’ wealth creation is more likely to be increasing—and vice versa.

During the 1980s, high interest rates, DCF-educated MBAs, and the rise in personal computers with dynamic spreadsheets combined to produce gradual technical acceptance. However, the dramatic increase in leveraged buy-outs (LBOs) and hostile corporate takeovers threatened managers’ complacency with using traditional measures—and quickly got senior management’s attention. These threats and structural changes produced by personal computers accelerated the interest in and need to focus on creating wealth for stockholders. In the 1990s, U.S. tax law changed and the Securities Exchange Commission began requiring public corporations to present data and graphics comparing TSR of a public company to an index such as the Standard & Poors Index or to a peer group. After that legislation, management, investors and security analysts began to take VBM more seriously.

Creating Value, Not Just Measuring It

Although VBM begins to address the issue of how to measure value in an organization, the real benefit ideally comes from managing for value by aligning strategy and key decision making to support the VBM measure. However, as

VBM practice grew, the alignment problem became more obvious. When executives shifted strategy, they discovered that employees regularly failed to execute to their revised strategy.

What became troublesome was a problem of broken linkages, or in many cases no linkages, in the VBM data. A VBM measure is for a corporation as a whole. It provides little insight into how and where value has been created *within* the business units that constitute the corporation. Value-based management metrics cannot be readily used for decision-making purposes. How does an organization drive the VBM measurement data downward to affect the behavior of the employees and managers? How do the employees and managers know *which* actions that they influence or control most contribute to improving the VBM metrics and to maximizing shareholder value? Investments in one area, such as manufacturing, may detract from another area, such as distribution, that may hold an opportunity for relatively larger returns. Linkages are needed between VBM and the functions *within* a business unit.

The major strategic consulting firms rolled out their solutions, which helped companies identify their “value drivers” or “revenue drivers.” But high-level strategic business unit (SBU) VBM reporting introduces new problems. As a top-down method, VBM sends signals to top management, but other employees find the information very difficult to relate to or use. Most VBM measures are in terms that are foreign and far removed from the employee teams’ daily jobs. As a result, organizations do not confidently understand what to change or fix to improve “value.” It is different for the middle layer of an organization to pull the VBM levers. There are the lagging measures of VBM financial results at the top, leading indicators of operational performance at the rank-and-file level, and a “then-there-was-a-miracle” faith that somehow these measures work in harmony. Ultimately the typical front-line employee or middle manager could not answer the question: “What should I do today to positively influence the high-level corporate VBM number?” The use of weighted scorecard performance measures addresses this problem with linkages and weightings. Advances in managerial accounting, such as ABC/M, are helping link operational performance measures in financial terms.

In short, despite extensive educational efforts, in most organizations VBM measures are somewhat disconnected and distant from the employees and managers who do the work and make operational decisions. Currently, many of these employees are motivated and compensated by alternative measures, many of which may conflict with value-based measures. For example:

- Salespeople are still compensated for gross sales rather than the contribution margin or ROI of the products or service lines they sell.
- The use of customer satisfaction as a measurement is increasing, but it is rarely linked to compensation (although this practice is starting to grow).
- Quality is still pursued in many organizations without regard for its cost or required investment.

Managers may be subconsciously motivated to subvert the management system through actions that are counter to what will result in higher profits and value. If the present weak linkage between existing and VBM measures continues, or if some of the linkages are wrong, individual processes will continue to be pulled toward different targets and prevent any hope for unlocking the organization's maximum value.

Until VBM information can be related to other, lower levels of management and into operational terms, there will be heated debate about the general usefulness of VBM. Many chief financial officers claim that the VBM equations are not a new concept. They state that VBM is simply the same factors and measures that they have already been using for years, but with different names and labels. In many ways they are right: Discounted cash flow, economic value, and corporate valuation techniques have been growing in popularity for more than 20 years. Others complain that nothing much happens after VBM measures have been calculated; they expect that there would be next steps to somehow convert VBM measures into more detailed insights and actions for improvement, but that rarely happens.

After VBM metrics like capital, capital charge, and cost of capital are calculated, the discussion often flies up to a lofty 50,000-foot view and begins using terms like "revenue or value drivers," *margins*, *asset turns*, and *growth*. Those "value drivers" are applicable in theory but difficult to practice in reality. Some economic value evangelists believe that the only way to harness the power of VBM is for all employees and managers to learn and embrace the framework and principles of their version of VBM. These VBM consultants further believe that any attempts to subdivide or trace components of the single high-level VBM measure are wrong and will adversely affect performance. Their belief is that alternative measures will be "competing" among employee teams and result in sub-optimization. This position discredits new ideas of applying weighted, or balanced, scorecards. In one breath these VBM consultants say one must understand the operational levers that drive value; and in the second breath they discourage measuring the "levers" in the context of what one would think is a composite measure.

The growing experimentation and use of balanced scorecards and similar systems will help the next generation of managers. The ability of scorecards to cascade measures of lagging results down into leading indicator measures was described in the preceding section. But what do we do now?

In short, the debate involves subdividing VBM into "leading indicator" component metrics. This debate will continue until results are achieved and demonstrated by those organizations that do properly integrate their information. It is my opinion that VBM is most effective when pursued with multiple measures from within the organization rather than from the top only. I favor top down *and* bottom up measurement approaches. Consequently, I favor tools that not only suggest what to improve, like margins, but what customers, products, and processes need to change to improve margins. I favor understanding the VBM's causal linkages from top to bottom, and vice versa.

How does an organization drive the VBM measurement data downward to affect the behavior of the employees and managers? How do the employees and managers know *which* actions that they influence or control most contribute to improving the VBM metrics and maximizing shareholder value? Up until now, VBM math has not been easily de-composed into its subelements so that employee teams can act on the data. In effect, senior management has been left with an ambiguity that lies between their economic profit measure and the performance measurement information that employees at the lower levels of a company's operations rely on daily as their operating signals. The linkages between VBM and operational performance measures have not been adequately integrated. Presently, applying VBM principles to translate strategy into action requires a major leap of faith. In most organizations it has been designated to financial engineering and remains largely accounting, rather than operating, based.

This is an opportunity for ABC/M and its powerful techniques to reveal meaningful information. The "cost of capital" and "capital charge" can now be traced to processes, products, and customers using the same fundamentals that ABC/M already uses to assign other resource expenditures. The cost of money is simply another resource cost that should be assigned—but capital is a very significant resource. The only difference for ABC/M cost tracing is that the general ledger does not specifically, separately, and directly identify this cost. But this does not prevent companies from deriving their imputed capital cost and tracing it.

Pick a Cost of Capital . . . Precision May Not Be Necessary

The determination of a specific cost of capital rate has become a separate debate among theoreticians, academics, and consultants, with elaborate weighted coefficient formulas tied to risk levels. ABC/M is independent of these debates. At a basic level, ABC/M is a calculation engine that accepts whatever rate and/or charge is the outcome of the cost of capital rate debate. ABC/M applies that rate, often referred to as an imputed interest rate, and traces the capital costs to the costs of products, services, and customers to yield valuable information. Rather than waste time in theoretical debates and decimal points, companies may wish to select a commonly used rate calculation method, apply it, and start to observe the results in their own operations. They can later experiment with the sensitivity of the rate and debate which rate to apply after managers and teams have started learning how to use the new data.

Separating the Winners from the Losers: Making Strategy Work

Most economic VBM texts quickly move from description of their method to its strategic impacts. They also focus on strategies that affect some combination of the following "value drivers":

- Sales growth rate
- Operating profit margin
- Asset turns
- Incremental fixed capital investments
- Incremental working capital investments
- Tax rates
- Debt versus equity and leverage
- Weighted cost of capital

These factors, many of which were part of the traditional “DuPont Ratio Analysis,” are illustrated in Figure 5.7. Each factor affects value and should be considered when developing strategy for key parts of the business or business units.

However, a strategy described as “Increase Sales Growth” is not a strategy; that describes an objective. What needs to be described is a real strategy that will differentiate the enterprise from its competitors or that will yield an economic advantage. So, how does an organization arrive at a strategy that will actually realize its objectives?

The overall objective is to maximize the present value of cash flow, both current and future. This relates to maximizing profits returned while minimizing resources consumed. This is where ABC/M provides critical value. ABC/M is all

A one-year VBM value driver tree depicts how an executive-level measure results in shareholder value.

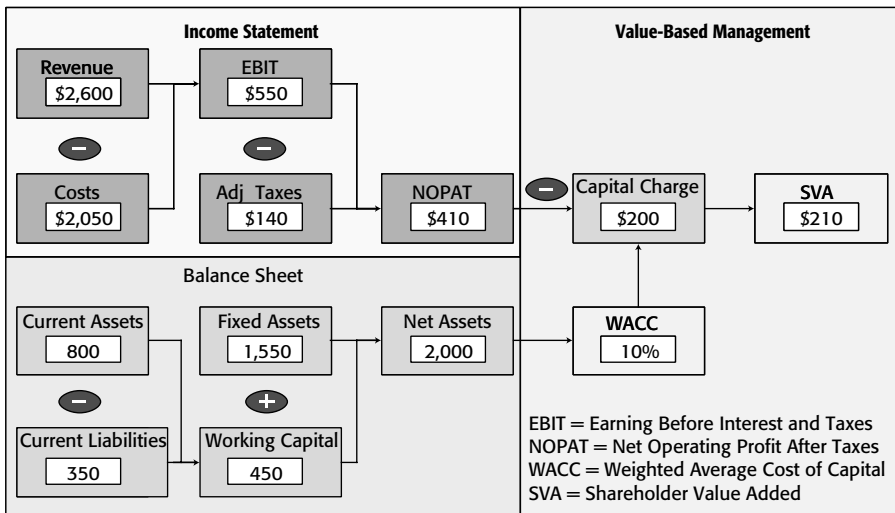


FIGURE 5.7 VBM Value Driver Tree

about tracing resource consumption (via activities performed) to products, service lines, channels, and customers. The tracing is based on cause and effect, not on volume allocations pertaining to the final outputs. Not all products are equally profitable; not all customers are equally profitable. ABC/M provides more accurate pictures of the product and customer profits than traditional accounting methods do. In short, ABC/M matches the resources to each and every customer. With the inclusion of the cost of capital into the resource consumption picture, ABC/M perfectly complements VBM objectives and provides more robust tools for employee teams to determine how to evaluate strategies and take the next steps.

Customer Profitability Measures as a Value-Based Management Solution

A typical ABC/M analysis of customer profitability reveals that most of the actual income is derived from very few customers. The remaining group of customers, and the majority of them in number, contribute little profits, and as a consequence they destroy wealth; that is, their costs exceed their revenues. (Rank-ordered customer profitability is discussed in Chapter 3.) When ABC/M customer profitability is combined with SVA value drivers (e.g., the capital charge), this richness gives management the opportunity to formulate more specific and fact-based strategies as well as action plans.

Often a strategy must address the value of adding capacity. However, the question must be asked, “Why add capacity to serve customers that are destroying value?” Of course, the question must be answered after considering the long-term potential of the customers. An excellent strategy would address how to transform value-destroying customers into value-creating customers. This can be accomplished by altering the customers’ behavior through offering alternative pricing, promotions, or various service-level options.

Similar strategies could be defined from a value-creation analysis of products and service lines. For example, a distillery analyzed its brands and began to fully understand the financial impact of the lengthy time required for aged scotch for storage and care relative to its other liquor brands. It was proven that the aged scotch did not generate as much profits as the company thought relative to vodka. Vodka could be sold within weeks of being distilled. As a result, the company shifted its production and promotions toward selling vodka.

This information, provided by ABC/M analysis that incorporates economic value principles, provides the missing link between boardroom VBM and operational level decisions, value-creating VBM. Value is created by the execution of operating strategies in the business units, not at corporate headquarters.

In a nutshell, ABC/M more appropriately assigns capital charges to customers, products, and processes so that decisions to change any of them are based more on economics than on guesses or outdated allocations. With ABC/M providing the linkage of the capital charge to the profit statement, employees and

managers have a much better way of focusing where to place their efforts and what to change.

Relating Value from Customers (Prices Paid) to Products and Services

A goal of good management is to make decisions that align with strategy; it's all about changing decisions about right products, customers, and processes. Value-based management helps companies determine how and where to allocate resources. ABC/M allows them to select the right places to make changes and facilitates making the changes.

ABC/M can generate individual customer contribution profitability statements at the “economic profit” level—beyond OPBT, NOPAT, and net income. That is, by using an imputed cost of capital, ABC/M traces receivables to customers; inventories to products; fixed assets to equipment; and payables to suppliers.

Why is this relevant? Employees often wonder if a bothersome or geographically remote customer is worth continuing to sell to. What they are really asking is, “If we added up all the costs of our time, effort, interruptions and disruptions attributed to those kinds of customers, *in addition to* the costs of the products and base services that that customer drew on, did we make *any* profit from that customer? Or did we lose money?” These are good questions. If we make enough profit, even an obnoxious customer is worthwhile.

How do we know the level of profitability of any or all of our customers? Most organizations do not. Because organizations are continually pursuing prospects to sell to, they might want to know how profitable those prospects will be relative to each other or to their existing customers.

A competitive company must ultimately translate its strategies into actions. For outright unprofitable customers, you would want to explore the options of raising prices or surcharging them for the extra work. You may need to squeeze lower prices from your suppliers. You may want to reduce the causes of your extra work for them, streamline your execution and delivery so it costs you less to serve them, or finally alter the customers' behavior so that they place less demands on your organization.

ABC/M is the cost measurement methodology that accurately traces the consumption of an organization's resource costs to those types and kinds and customer segments that place varying demands on it. Determining the “costs-to-serve” customers is a logical application of ABC/M data.

Increasing and creating value is all about making decisions that reallocate resources, including people, machines, and capital, to produce the greatest return. ABC/M furnishes the facts needed to make the right value-creating decisions on the operating level.

Figure 5.8 shows the framework for how ABC/M traces resource expenditures and activity costs to products and customers. All of the costs are based on

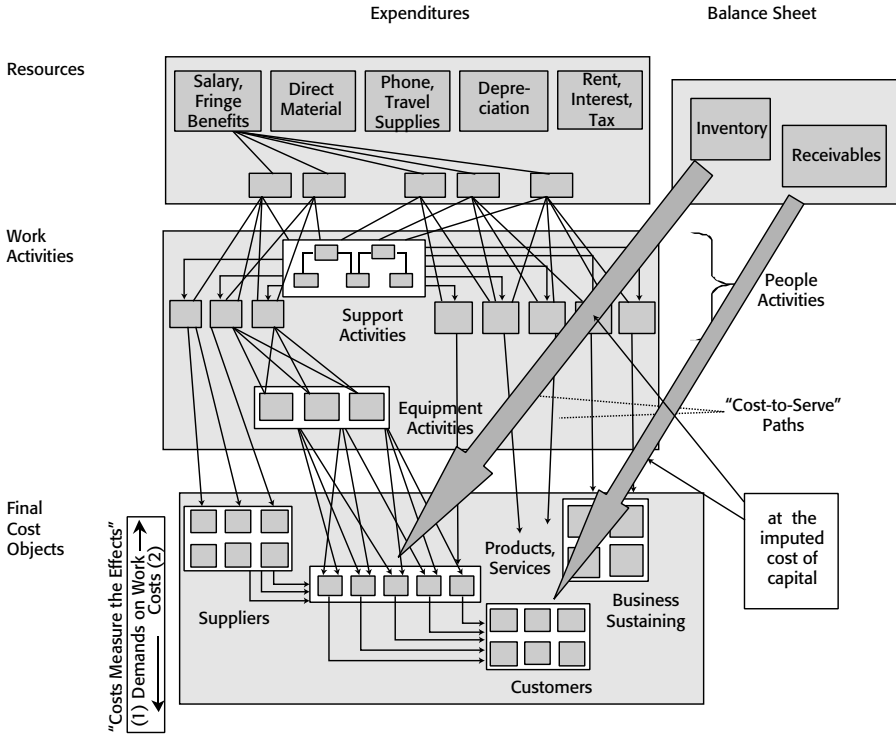


FIGURE 5.8 ABC/M Cost Assignment Network: Include the Balance Sheet

the cause-and-effect demands triggered by customers and their orders. When the costs of processing a customer’s orders and maintaining the customer relationship are subtracted from the sales to those customers, you can really know whether you actually made or lost money and what might be changed to maximize the value added. A cost assignment network captures differences driven by product and customer diversity. Computers quickly and easily allow costs to be viewed multidimensionally.

ABC/M flexibly measures costs at the level of work activities, regardless of a company’s organizational chart of departments or functions. ABC/M then links these same activities to products, service lines, customers, or channels. Cost is then assigned based on the requirements made on the activities. When the price and volume for a customer (i.e., each customer’s total sales) are netted against that customer’s costs, ABC/M reports how much profit, or loss, was uniquely derived from that customer. Because profit translates into wealth creation for owners and stockholders, ABC/M has created an important intersection where VBM meets the ultimate business drivers: customer demand and customer preferences.

Figure 5.9 shows a customer profit and loss statement similar to that in Figure 3.8. However, in this statement there is an extra profit margin line at the bot-

CUSTOMER: XYZ CORPORATION (CUSTOMER #1270)			
Sales	\$\$\$	Margin \$ (Sales - ΣCosts)	Margin Percent of Sales
Product-Related			
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%
Distribution-Related			
Outbound Freight Type*	xxx	xxx	28%
Order Type*	xxx	xxx	26%
Channel Type*	xxx	xxx	24%
Customer-Related			
Customer-Sustaining	xxx	xxx	22%
Unit-Batch*	xxx	xxx	10%
Business Sustaining	xxx	<u>xxx</u>	8%
Capital Charge** (inventories, receivables)	xxx	<u>xxx</u>	8% Operating Profit
			2%
			6% Economic Profit (for EVA)

* Activity cost driver assignments use measurable quantity volume of activity output
Other activity/assignments traced based on informed (subjective) percent

**Capital charges can also be directly charged as imputed interest to products and customers

FIGURE 5.9 ABC/M Customer Profit and Loss Statement (with VBM)

tom. It now includes a “capital charge” that is traced to categories that consume capital investment and that reduce the profit margin.

This charge is made up of several components that reflect an imputed “cost of capital” charge for net assets and liabilities of the balance sheet. A significant portion of the balance sheet’s “costs of capital” can be uniquely traced to activities, products, services, and customers:

- **Inventories:** The total inventory balance’s imputed capital charge can be traced to products. An appropriate measure may be based on the average balance (in money) of each inventory item. In this way a customer who purchased a disproportionately high mix of products for which substantially high inventory costs were carried would then reflect a relatively lower profit than an identical customer buying products with lower costs of work-in-process and finished goods inventories.
- **Receivables:** The total accounts receivable balance’s imputed capital charge can be traced directly to customers. This measure may be based on each customers’ average balances carried. In this way, ABC/M serves somewhat like a billing system for a bank, charging for each customer’s loan.
- **Payables:** With a reverse effect of inventories, products may be credited to benefit from favorable terms from suppliers.
- **Fixed assets:** The purchase costs are already traced to activities but over a number of years as depreciation. However, the net asset value still represents

an investment of capital. Therefore, the imputed capital charge can be traced to activities similarly to how the depreciation is currently traced.

Tracing these capital costs adds the economic view to traditional reporting. For example, a product with high traditional accounting profit may also require very high investments in inventory or expensive specialized equipment. Once the cost of these capital investments is also considered, the product might show a negative economic profit, and vice versa.

By tracing the “cost of money” or “capital charge” to the ultimate purchasing entity, the customer, employees and managers can better see the intersection where customer value and stockholder value meet.

Many believe that relative to sales growth and profit margins, improving capital utilization is the lever with greatest potential to improve overall financial performance and increase shareholder wealth. We certainly see this in the airline industry as the carriers fill seats to minimize unused capacity using yield management pricing techniques.

Many decisions involve trade-offs between adding capacity or increasing operating expenses. For example, to improve customer service, should we build more warehouse space or bypass the distribution centers altogether and ship direct? This is usually a capital versus labor decision. These questions are not easy. Managers who only worry about their spending budgets are usually biased toward thinking of short-term operating profits. They may miss the better opportunities to increase shareholder wealth by including the balance sheet effects in their analysis.

Managers who use VBM measures are more inclined to purchase used assets or refurbish existing assets than request capital budgets to buy new assets. This results in lower capital charges and higher profits.

One method to rally management to better decisions is with more robust, capital-aware customer profitability reporting. This stimulates more innovative thinking and ideas that are more sensitive to improving and leveraging resource utilization.

ABC/M Data as an Integrator for Value-Based Management

ABC/M data are a natural integrator for VBM to translate meaningful data and relationships down into the organization for wealth-creating action. ABC/M and VBM—when used together—produce tools for managers and employees that specifically focus on what behavior needs to be emphasized and done better. Combined, they pinpoint which customers, channels, and products create value. These two approaches, when integrated in an organization, create a synergistic— $1 + 1 = 3$ —opportunity.

Eventually management has to examine how all the effort and deployment of the organization’s resources (i.e., its physical and capital costs) relate to what customers will buy (where profit is the derivative) and translate this into how in-

vestor and owner wealth (VBM) is created. Regardless of titles, the ABC/M data will ultimately become recognized as the necessary ingredient for managers and employees to distinguish which work and how much of it connects the organization's actions with its wealth creation—and to consequently make better, value-creating decisions.

With VBM data driven down into the organization via ABC/M, managers and employee teams can increase shareholder wealth by

- Focusing on profitable customers, channels, and products;
- Addressing value-destroying customer, channels, products, and processes;
- Increasing revenue-related activities while holding invested funds constant;
- Reducing assets while holding revenue-related activities constant; and
- Investing in assets whose return is higher than the firm's cost of capital.

Without good ABC/M data you can't do these things. Without ABC/M data, there is considerable guesswork in the actions taken by managers and employee teams. Shareholder wealth may be decreased.

Value-based management affects an organization's core processes, customer satisfaction, strategic planning, resource allocation, performance management, performance measurement, and compensation. These are worthy of having better managerial information that connects these foundations to managing an organization. ABC/M allows management to assign the real economic costs of use of assets like people, machines, and capital to specific products, customers, and processes. Organizations that "do it right" will see dramatic results.

NOTES

1. Robert S. Kaplan and David P. Norton, "The Balanced Scorecard: Measures that Drive Performance," *Harvard Business Review* (January-February, 1992): 71–79.
2. Mark Frigo and Kip R. Krumweide, "10 Ways to Improve Performance Measurement Systems," *Cost Management Update* (April 1999): 2.
3. Merton Miller and Frances Modigliani, "Dividend Policy, Growth and the Valuation of Shares," *Journal of Business* (October 1961): 411–433.

Popular Uses of ABC/M

“A thing is not proved because no one has ever questioned it. . . .
Skepticism is the first step toward truth.”

—*Denis Diderot, French philosopher*¹

HOW ABC/M IS THE FOUNDATION FOR SHARED SERVICES

The traditional “overhead functions,” once widely despised by internal customers, are becoming today’s shared services organization. The initial consolidation of multiple support functions into a single service provider may have begun simply to remove redundancies to save costs. However, a pleasant consequence can be substantially improved levels of customer service.

Fact-based information is required to transform overhead functions, and the information technology (IT) function in particular, beyond simply performing as cost-effective internal suppliers. Fact-based information helps shared service providers to perform like their counterparts in the external market. Activity-based cost management (ABC/M) data provide the foundations of fact-based data for shared service providers.

Shared services have traditionally been called “overhead functions.” It is not an attractive label. Some users of the “overhead” services view them as a monopoly. But there is a sea change in progress. Today shared services are being defined as the sharing and leveraging of resources, people, and information to more effectively meet the business needs of an organization.² Figure 6.1 shows how an organization’s internal services can be placed on a continuum that leads toward a competitive marketplace model.

The objective is for organizations to move their internal services along the continuum. The central idea is for the internal service function to behave according to similar dynamics and economics of the external marketplace, including good customer service at a reasonable price. Ultimately an internally shared service provider is like any business: Customers determine its fate.

One extreme indicator of the growth of this movement is the election by some organizations to outsource their internally provided service to a third-party

supplier, such as food service, uniform cleaning, purchasing, or information technology data processing. Figure 6.1 reveals that organizations begin with a “basic model” of a shared service provider and progress from there. The “marketplace model” at the end of the continuum indeed becomes the marketplace. At this point in maturity, the shared service provider either remains internal or converts into an outsourcing partner.

The types of shared services are usually thought of as administrative or infrastructure support, such as accounting or janitorial services. Increasingly, the types of shared services being created are professional, technical, or advisory. These may include functions that were previously labeled as engineering, maintenance, or internal consulting.

The public sector, colleges and universities, and government organizations at all levels have recognized that they are being asked to do more with less. Shared services are one of the alternatives being examined and implemented to meet this demand.

Why Transform a Department into a Shared Service Provider?

Many organizations initially pursue a shared service as an effort to reduce overall costs. Their reasoning, right or wrong, is that there is likely to be waste in the

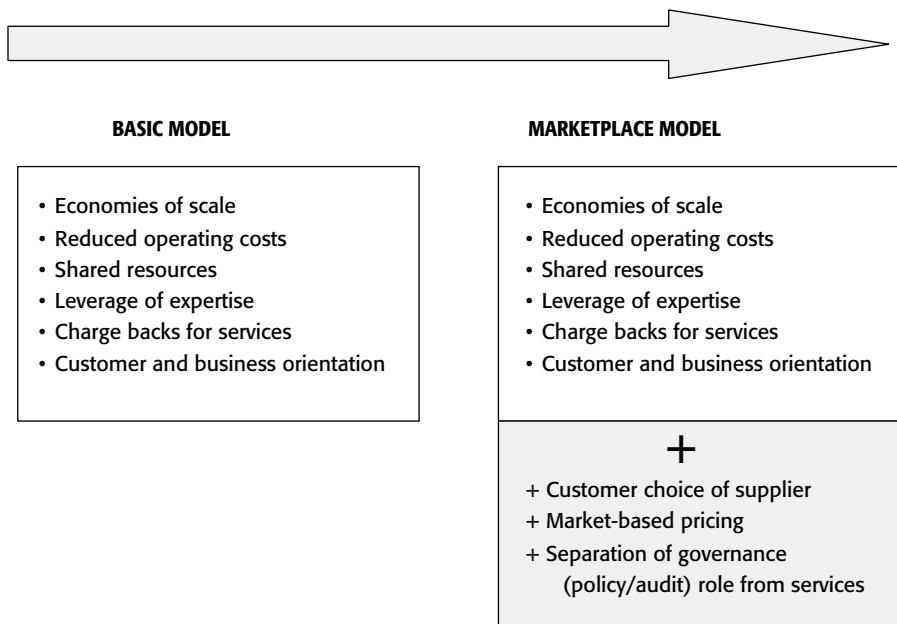


FIGURE 6.1 Continuum of Models for Shared Services

Source: The Society of Management Accountants of Canada, “Adopting and Implementing Shared Services,” *Management Accounting Guidelines*, 1999. Reprinted with permission.

internal functions. In some cases a confrontational environment exists between the service departments and their customers in the “core” business processes. Frustrations frequently exist for both parties, and the only thing that the customers seem to want are lower chargeback prices and costs from the service providers.

Often there is suspicion that there is duplication of similar services across the organization; a single shared service provider consolidates multiple service providers under a single banner and minimizes overlapping work.

In time, organizations realize that a successful shared service provider improves the service levels for their internal customers. Further, as internal customer needs continuously change, the shared service provider is agile enough to meet those changing requirements with cost-competitive services.

Ultimately, an effective cadre of shared services allows all customers to focus on their own respective core products and service lines, without nagging interruptions from poor support. After all, it is the performance of the core competencies that matters most to the shareholders in a public or privately owned company or to the service recipients of a government agency.

Chargeback Billing Systems

The premise behind the basic model in Figure 6.1 is that the support service function will attempt to maintain its cost structure in line with its volume of services and transactions. Simple economic theory acknowledges that all organizations have a “barrier-to-entry-fee” of fixed costs. As volume grows new resources and costs are consumed or added at either a variable or step-fixed rate (i.e., one can’t purchase one-third of a machine or hire one-fourth of a person).

In a fair and equitable system, customers of the internal support services would be charged directly in proportion to their usage of the service organization. Too often, these cost recovery chargebacks are based on oversimplified cost allocation schemes. That is, the service organization’s costs are too aggregated and too averaged to accurately reflect the relative use by each individual customer. As a result, some customers are always subsidizing others. ABC/M resolves these inequities.

Because increasing growth of sales volume for the internal service function spreads the fixed costs across an increasingly broader set of services and customers, the economies of scale that come with volume are valuable. The relative cost efficiencies may or may not be passed on to the internal customers as lower prices or as a reduced chargeback allocation. Regardless of the internal transfer pricing, these cost efficiencies make the internal service functions more cost competitive with the external market competitors.

Power of Consolidations

When routine, transaction-based work is consolidated into fewer locations or individuals, the fixed and step-fixed component of the service provider’s cost structure is reduced. In effect, functions previously decentralized or distributed

throughout an organization become more focused. Reduced expenses can be realized by consolidating fewer and more skilled employees to perform the same company-wide workload.

The spirit of shared services is to create a situation in which new and innovative thinking by the service provider is constantly inspired. This occurs in a competitive market environment. The service provider behaves as an entrepreneur and internal users and service recipients are treated with a “customer-for-life” attitude.

One conflict exists: Pricing should ideally be competitive with the external marketplace. There will be circumstances in which the shared service provider’s cost structure will exceed an unbridled competitor. An internal service provider’s work consists of the following activities:

- **Policy and governance:** Compliance with government or senior management regulations, policies, and rules will add costs. For example, an audit is not free. This work (and its related costs) relates to risk management and financial control. There usually is no choice; the work is mandated.
- **Business unit services:** Basic customer order fulfillment is skill-based and scale-oriented. It clearly is internal customer facing.

As another example, the accounting and finance function must comply with specified procedures while also delivering transaction-based processes such as payroll. In the end, one of the goals of moving to a shared service basis and eventually to a marketplace model is to do more with less through improved efficiencies, reduced costs, and future cost avoidance.

Ground Rules for Shared Services

Although one of the primary reasons that organizations pursue shared services is lower costs solely due to consolidations, proponents of shared services suggest that considerable customer service improvements can accompany this concept. However, these advocates strongly suggest that the shared service provider be allowed to perform (i.e., compete) under the following conditions:

- **Operating as a single entity:** The function should be a separate unit with its own profit and loss accountability. This encourages a pro-customer spirit.
- **Implementing full-absorption cost recovery chargebacks:** By fully costing, not only does the shared service provider realize that it must recover its costs via prices (that are market-pegged), but the internal customers also learn how they can be placing extra and unnecessarily costly demands on the service provider’s work. Here is where ABC/M is imperative to trace the service provider’s costs based on the variation and diversity of its products, base service lines, and high-to-low maintenance customers.
- **Not permitting duplication of services:** This preserves fairness by preventing a “boutique” department from selling its services well below cost simply to remain busy.

A move toward shared services is not a rebirth of centralization. In today's "virtual" world, geographical location has become less relevant. What a shared service provider is allowed to do is increase its timeliness and responsiveness to its colleagues in the parent organization's "core" business processes. A common practice is for the buyer to formally sign a "service-level agreement" to reflect rates, contract length, and expected volumes. A typical agreement will cover the following:

- Description of the service(s) to be provided
- Service standard: deadlines, response times, and other performance indicators
- Pricing
- Operating principles: for example, handling of excess demand
- Improvement initiatives

A final note about the service provider's reaction to its initial exposure to fully loaded costs: some employees can experience organizational shock from seeing the *true* costs for the organization to deliver support services to its internal customers. Some of these costs, however, are not directly caused by the customer, the base service lines, or the products. These types of costs are referred to as "business sustaining costs," such as completing reports for management, and ABC/M is capable of isolating those costs.

Migrating from the Basic to the Marketplace Model

Many organizations begin their shared service organization transformation by starting with the "basic model." Sometimes this is a result of a benchmarking exercise in which the support function discovers, for example, that its accounts receivable invoicing function is very poor relative to comparable organizations' invoicing functions—in either the public or private sector. This starts organizations off with some facts and a lot more focus. By moving to the basic model, the now shared service provider predictably achieves substantial improvement in its productivity per service output (e.g., cost-per-invoice).

Incidentally, the use of ABC/M data is becoming more popular as a metric for benchmarking. Often in benchmarking studies there can be attempts to compare apples-to-Oreos. That is, there is a lack of comparability among the participating organizations. There is no consistency in selecting which work activities or outputs are to be included or excluded in the study. An ABC/M methodology and system introduces rigor and is sufficiently codified and leveled for relevance to remove this nagging shortcoming of benchmarking.

The major feature of going from the shared services "basic model" to the "marketplace model" is that the buyers (i.e., customers) are given free choice of suppliers, including external suppliers. (Some limiting constraints may restrict a 100 percent free choice of suppliers, but this approach may be radical compared to current "overhead department's" relationships to internal customers.) The goal of this shift is to move from a cost-recovery model to a market-based-pricing model.

Moratorium: ABC/M as an Enabler

Premature conversion of a shared service provider from the “basic” to “marketplace” model creates problems. From the outset, it is predictable that the shared service provider’s cost rates will be uncompetitive relative to the outside market, despite the outside market’s added inclusion of a profit markup. One of the lessons some organizations have learned is not to prematurely abandon their internal functions and externally outsource simply as a quick-fix for an unmanageable mess. This can result in the organization not knowing whether the third-party outsourcer’s charges are reasonable, particularly different prices for varying service levels.

One approach to introducing the internal service provider to the anticipated, fierce realities of the marketplace is a gradual and phased moratorium. During this grace period, the shared service provider may be protected by a policy that restricts its customers from choosing external providers. The internal service provider temporarily enjoys an exclusive supplier status. This temporarily retains the shared service provider’s level of volume. Some minimal level of volume is required to recover the fixed and step-fixed entry-fee costs to provide the services.

During this transitional moratorium, the shared service provider can learn, discover, rationalize, and generally get its house in order. During this period the shared service provider can

- Understand its current costs of processes.
- Understand its current costs of products, base-line services, and special services.
- Perform benchmarking.
- Decide which products, services, and customers to retain or abandon (strategic).
- Reengineer, streamline, and improve performance (operational).
- Develop performance measurements and scoreboards, including measures for customer satisfaction, that are aligned with its strategy.
- Separate and isolate its costs-of-governance and policy from its pure “costs-to-serve” customers business service.
- Develop “service-level agreements” with its internal customers.
- Develop a price quotation process to deal with routine customer orders as well as with “large-volume” or “special” deals.

ABC/M systems and data are essential for all of these activities. ABC/M segments an organization’s cost structure and makes visible cause-and-effect relationships. Armed with actual data that reflect how an organization reacts to the demands made on it by its customers and their orders, it can focus on where improvements are needed. While under this temporary protection, the shared service provider can get its cost structure in order while altering its culture and attitude. It can investigate the impact and potential for its unused but available idle capacity.³

In practice, advocates of shared services strongly suggest that the governance and policy-related costs not only be separated from the cost recovery chargeback prices to internal customers but also be charged and paid for by (or

at least reported to) the executive management. ABC/M is very effective at segmenting these “business sustaining” costs.

Ultimately, at the end of the shared service model continuum, the market-place-ready shared service provider will earn a reputation for providing high-quality service at a cost (i.e., the customers’ price) that customers are willing to pay. To perform at this level, however, the shared service provider must begin to think in terms of “profit margin management.” It must realize that its profit contribution margins can vary significantly among its products, service lines, and customers. Some organizations use ABC/M to generate customer-specific profit and loss statements (P&Ls) that sum to their total P&L and are also inclusive of their product and service line profits.

Longer-term protectionism of an internal service provider is not necessarily in the best interests of the internal customers or of the organization as a whole. Although it may be a tough pill for the organization to swallow, if outsourcing the shared service provider becomes a consideration that provides more overall value to the internal customers, then outsourcing deserves analysis. ABC/M is a powerful tool for analyzing outsourcing and other trade-off or what-if analysis. The question is, “If I stop (or add) this or that function, what costs remain, go away, or are added?” ABC/M answers this question because it is work-centric.

Information Technology: A Prominent Shared Service

The recent explosion of computing, information technology (IT), and network communications has taken many executives by surprise—and so has the astronomical price tag that comes with these technologies. Back in the 1980s when IT was often simply called data processing and was not well understood, senior management found IT’s rising costs to be a nuisance. Today the sheer size of the IT budget has become astounding. Because IT is both a strategically critical support function and very expensive, it has become imperative to manage it cost-effectively.

In the earlier days of data processing, before personal computers became common and when mainframe computers were standard, the cost recovery chargeback method was straightforward. All of the IT department’s costs were allocated to the user departments based on a central processing unit (CPU), which is a composite measure of time and load placed on the computer’s central processor. Typical with the application of ABC/M, as the complexity and diversity of the IT resources, services, and users’ needs have grown, so has the need for an improved cost measurement system.

As a partial solution, the cost of some IT functions can be directly traced using project accounting methods. However, this method is administration-intensive and invasive; each employee may need to complete a timesheet. To complete this solution, the costs of the remaining IT functions, such as communications or personal computer support, could be assigned to base services or users by using ABC/M activity drivers such as the number of user requests of the

IT employees. In short, multiple activity drivers are now required, not a single-volume measure such as CPUs. Finally, these base-service costs are further traced to the organization's various products and external customers based on their individual consumption levels of those base services.

Unfortunately most organizations' IT costing methods are rooted in conventional standard costing techniques. In these cases, allocated charges to the user departments continue to be based on easily measured resource usage (e.g., disk usage) plus an overhead cost recovery percentage, rather than a more reflective cost basis. The accuracy of the actual costs degrades as the IT environment diversifies its rise in support costs. Ultimately, substantially inaccurate chargeback costs for IT services result. All sorts of irrational behavior by managers in the user departments might follow based on the misleading data (e.g., they may attempt to lower the number of their phone calls or database inquiries, actions that may adversely affect the overall business performance).

ABC/M Cost Assignment Network for Information Technology

Figure 6.2 shows the design of a high-level ABC/M cost flow assignment network for an IT environment. The ABC/M system takes in all of the IT costs, and it can even include "support costs" that IT uses from other parts of the organization (e.g., senior management, human resources).

Using the logic of ABC/M, all of the direct and indirect incurred expenses for IT are restated using the ABC/M system. ABC/M first calculates the cost of IT services provided to the internal user community and ultimately to the organization's business cost objects, which are its products, service lines, and internal or external customers.

In Figure 6.2, the general ledger's resource expenditures can be classified as wage-related (i.e., employees and contractors) and non-wage-related (i.e., all the other expenses). The IT function's cash outlay expenditures are traced to the types of work activities that it performs. Some of its work serves the current operations; other activities serve the future.

The operational and support activity costs are assigned to IT service cost objects, such as financial software applications or help desks. The research and development and software development activity costs can be assigned to new systems, which in subsequent time periods become the costs of the current system.

Ultimately the full cost recovery chargeback costs are traced to the business cost objects, which are the entire organization's products, base service lines, channels, and internal and external customers. These cost charges are derived from the volume consumption of the IT service cost objects. To ABC/M, IT is a business within a business. The assignment of the costs of IT services to the organization's products and customers assists in improving the accuracy and visibility of the profit contribution margins. Profit margin management is becomingly increasingly important as a means for organizations to relate their resources to the concept of value.

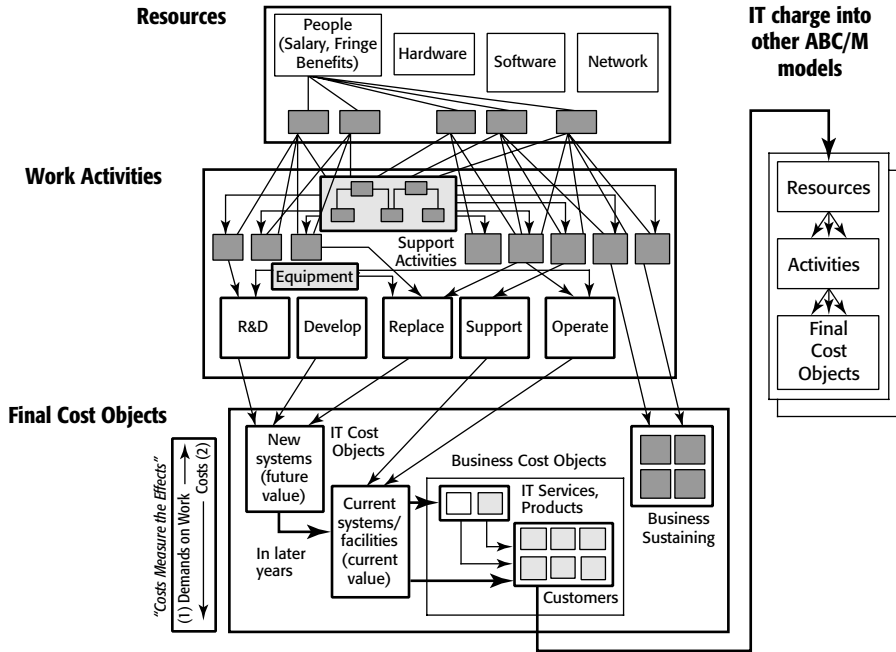


FIGURE 6.2 IT ABC/M Cost Assignment Network

Information Technology Cost Improvements via Visibility of Costs

Equitably charging back the IT function’s internal customers for their use of IT services is not the only application of ABC/M data. The same ABC/M data also provide IT managers and employees with the costs of their work activities and associated drivers. In typical ABC/M fashion, the data can be used to either identify IT services and business services and focus on costly or lower-value added costs or to benchmark their cost rates with other IT organizations to search for indications of best practices. A recurring problem in benchmarking is trying to achieve valid comparisons with benchmarking partners. There are always maddening differences that cloud results and analysis. ABC/M corrects for these inconsistencies, and it helps managers examine the levers that can increase the value that the IT function delivers to its internal users.

Decision Support for Investment Justifications

Due to IT’s capital cost intensity, one of the more critical applications of ABC/M for the IT service provider is evaluating capital investment justifications and performing “what-if” analysis. In today’s IT environment, a substantial amount of the IT cost structure is difficult to adjust. Most IT costs are either highly fixed relative to volume (i.e., capacity is not easily adjusted in the near term), or the IT

costs are outright sunk costs (i.e., the hardware or software has already been purchased; methods for amortizing can be debated, but the money has already been spent). Although ABC/M is strong at slicing, dicing, apportioning, and tracing cost consumption to users to achieve fair and equitable cost recovery chargebacks, the reality is that most of IT's monthly expenditures will continue to exist regardless of the level of usage by the users. Most IT costs are the unavoidable legacy of previous investment decisions by management.

Where ABC/M data significantly help managers and teams is in understanding the incremental changes in costs. These changes in costs result from adding or removing resources. Changing resource levels occur as new technologies or additional processing capacity is required. The IT function will continuously struggle with planning and budgeting its resources.

Justifying investments or dis-investments (e.g., disposals, abandonments, and outsourcing) always entails the problem of estimating and evaluating the realizable benefits. In the end, any investment in equipment or technology should be judged on whether it will enhance the value of the organization for competitive advantage. ABC/M can assist in measuring such benefits, which may include:

- Realizable savings in cash-outlay expenses (i.e., not just freed-up unused capacity, where expenses continue, but now as a cost of idle capacity)
- Future cost avoidances (e.g., handling increased volume load without adding as many new employees or expenses as might have been added without the investment or process changes)
- Revenue increases
- Avoidance of revenue losses

With IT in particular, there are also *intangible* benefits that may not be confined to simply improving operational efficiency. Information technology offers technologies that can unleash the power of employees to exploit databases and Internet feeds. Today's employees are using increasingly more powerful workstations and modeling software. These technologies are important to sustain a competitive advantage. Often an individual IT investment goes beyond achieving its business objective to provide a foundation of computing functionality that stimulates other innovations by employees (e.g., a software search engine justified for one project is applied to three others).

In the end, however, it is useful to start a discussion about investment proposals with a foundation of tangible measures of benefits, rather than intangibles, and ABC/M facilitates discussion by deriving those fact-based measures.

Much of what the internal IT function does today will be performed by others tomorrow. As examples, users themselves will more greatly participate in application software development (e.g., they use spreadsheets today). Contract programmers will write code. Functions such as desktop computing support will be a fee-based service from third parties. IT infrastructure will be outsourced (e.g., EDS). Data will be automatically captured. Given this trend, each incremental step in the transfer of a current internal IT function to an alternative group

or technology can benefit from ABC/M. And ABC/M data will be essential for determining the changes involved in or the timing of this transition.

Role of ABC/M with Shared Services

Following is a summary of the multiple uses of ABC/M data for shared services.

- Implementing full absorption cost chargebacks: costs of products, base-line services, and special services.
- Benchmarking to assure comparability and consistency.
- Measuring the costs of business processes.
- Reengineering and process improvement.
- Measuring performance (balanced scoreboard).
- Segmenting “governance” from “service” costs.
- Assessing alignment of the cost structure with the service provider’s strategy.
- Developing a basis for price quotations.
- Locating and measuring costs of unused capacity.
- Evaluating the case for outsourcing business (trade-off decision).
- Reporting customer P&Ls.

LINKAGE OF ACTIVITY-BASED COSTING TO UNUSED CAPACITY MANAGEMENT

When an industry like the airline industry demonstrates that it can fine-tune “yield management” to squeeze remaining profits from available capacity, then the rest of industry, commerce, and government take notice. The removal of excess and idle capacity is increasingly becoming an imperative.

Capacity is a measure of productivity for the time and usage rate of an organization’s resources, such as for its people and equipment. There is a broad range for a resource’s time-usage, from idle to full speed utilization. This section explores the implications for costs across that range. Managing capacity receives increased attention. Many organizations are exploring and adopting financial measures of increases or decreases in their investors’ wealth, using methods like shareholder value added (SVA) and value-based management (VBM). SVA and VBM are intended to influence managers to make better use of the assets that the organization has already purchased (or those assets of their trading partners). SVA and VBM are indicators. As the financial measures of SVA and VBM become better understood, there will be a need to manage the underlying influences resident in operations. Asset utilization requires understanding capacity.

As we enter the twenty-first century, it is becoming increasingly apparent that there will continue to be a major shift to increasing numbers of the U.S. workforce being employed on a subcontractor basis, similar to the way companies such as Kelly Services, Manpower, and AccounTemp provided fill-in laborers in the 1980s. Temporary labor services have become a major business. This emerging

temporary staffing industry gives us a sneak preview of what business futurists are referring to as the “virtual economy.” In a “virtual economy,” many smaller organizations provide complementary services to companies that are composed of the minimal number of “core competency” employees needed to manage the core business processes. In other words, the larger organizations aim to minimize the number of their permanent full-time employees, and “flex” any peaks and valleys in customer demand with supplementary subcontracted employees. But they will not commit to hiring the subcontractors as full-time employees. This way resource spending is restricted to “as-needed” expenses as opposed to “in-case,” which includes idle capacity costs.

Concurrently, there is a business trend toward relaxing traditional work rules of the past and allowing employees more flexible time (i.e., “flextime”) to leave work early when there are temporary “valleys” in their workload demands. This of course means leaving work without pay or at a deeply reduced pay rate. This saves the organization money and provides employees with more free time.

An oversimplified description of what is occurring is that enterprises are moving toward only paying for work when there is demand to fulfill customer orders for products and services. In many organizations the level of customer order demand is rarely a steady stream, so by removing the staffing levels above the minimum needed number, the enterprise would be paying *only* for the costs that are required. In simple terms, the enterprise would be only paying for the capacity to produce and deliver at the same level of variability as the demand rate. The operative term here is capacity.

First, Rethinking What Costs Are

Costs themselves are abstract and intangible. One cannot see costs or hold a couple of them in one’s hands. But we know that costs increase or decrease as there are changes in the workload that affect the costs via their cost drivers. In one sense, because costs are not tangible, ABC operates as “an imaging system” similar to radar, sonar, ultrasound, or an electrocardiogram. Costs measure effects.

As costs measure effects, they illuminate root causes. ABC systems provide an enterprise-wide image of all the collective effects plus the causal relationships causing the cost effects. Costs give insights to root causes, frequently through their inferences. An organization does not really directly manage costs; it understands the causes of costs. That is, it manages *what* causes those costs to occur (i.e., its cost drivers) and the *effectiveness and efficiency* of the organizations’ people and equipment to respond to those causal triggers.

Meaning of Unused Capacity

An organization paying for capacity that is not being used at a specific moment in time is like you paying for the costs of gasoline when your automobile is idling at a red light; the car is actually wasting fuel. But you don’t shut off your

engine while waiting at a red light. However, when some people are delayed at a railroad crossing and they realize that it is going to be a long, slow freight train, they will shut off their automobile's engine. They are saving unneeded capacity—and saving expense.

Is such skimpy cost control really necessary today? Perhaps not. But as business and commerce become increasingly competitive, some of these costs can no longer be overlooked. Just as with oil drilling rigs, sometimes the oil that is easier to extract is the first 90 percent. Subsequent to that extraction, innovative technology is brought in to squeeze out the last 10 percent. In the same way, business and commerce will also be looking to squeeze out more costs. One way to avoid spending more on additional capacity costs is to more fully use existing capacity.

Many organizations today already “flex” their staffing levels to balance with demand. For example, the agriculture industry relies on seasonal workers who are transient. In the ice cream processing business, the difference between a good and poor year's financial results can depend on how well the processor ramps *up* from two to three shifts as the warm summer arrives and similarly ramps *down* back to two shifts as the cool fall returns. A third example is the call centers operated by hotel and rental car reservations or credit card bureaus. Aside from the midnight to dawn skeleton crew, workers are scheduled to begin arriving at 4:30 A.M. in increasing numbers and begin departing from work as the inbound phone call demand drops off late in the evening.

In some organizations, unused capacity is substantial. For example, one nation's port authority, which unloads, redirects, and offloads boat cargo containers, once reported that annually on average almost 20 percent of its few thousand employees were idle due to schedule imbalances and unplanned delays. The workers in effect were not needed at various moments in time, but they were present and being paid while waiting to resume their work. If the total costs of this idle time, a form of unused capacity, could somehow be saved or applied to new business, then the port authority's profits could be substantially increased.

These examples reveal balancing acts that trade off the operating costs with service levels. If you carry too much “unused” capacity, there is a premium cost that potentially could have been “saved.” Yet if you carry too little capacity, you risk sub-par service performance, late delivery dates, and possibly missed profit opportunities, such as ice cream that could have been sold if available or prospective customers, who terminated their phone calls after too many rings, had placed their order.

Figure 6.3 shows the cost structure of two organizations, the top one with a traditional workforce and the bottom one “flexing” its subcontractor workforce based on the peaks and valleys of the order demand curve.

The potential cost savings to the “traditional” organization in the figure is the shaded area that lies *between* the bold line representing the total fixed and variable expenses (i.e., the production capacity) and the line representing the wavy order demand curve.

The bottom organization adds and removes temporary contract workers as the customer order demand wave fluctuates.

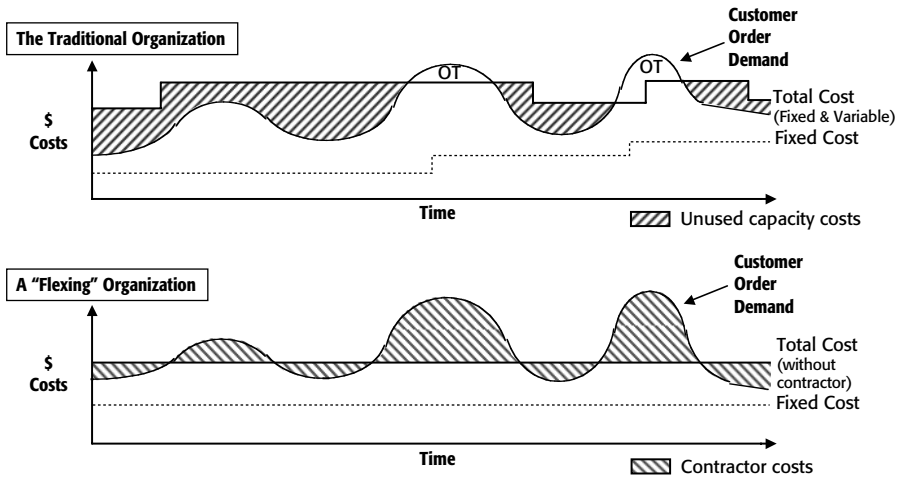


FIGURE 6.3 Minimizing Unused Capacity

CAM-I Capacity Model

An effective way to understand and view capacity is by partitioning each resource that delivers the product or service based on its total capacity, which is measured 24 hours per day, 365 days a year. This around-the-clock measure is formally labeled the *theoretical capacity*.

Equipment resources may be the best starting place for managing unused capacity. In most environments, the product or service delivered to customers is via some form of equipment or technology. That is, the equipment actually performs the work to make products or deliver service, while the employee runs the equipment. (In activity-based costing terms, the workers “operate equipment” and the equipment “makes product” or “delivers service.”) The two resources are in effect performing two different activities even though they occur at the same time. In this case, the employee’s time is being used (i.e., consumed) by the equipment along with other non-salary-related expenses such as utilities, operating supplies, and capital depreciation expenses.

Whether the resource is a person or piece of equipment, its status at any specific point in time can be classified in one of three time-status modes:

- **Productive:** making or delivering good salable product or service.
- **Nonproductive:** in use, but not making good product or delivering service.
- **Idle:** potentially available, but not in use nor manned by workers.

These three time-status modes are critical first for tracing the expenses associated with each mode and second for reassigning each of those equipment

Industry-Specific Time-Status Modes

- A. **Productive:** No further subdividing is necessary; “making good product” or “delivering service” is sufficiently detailed.
- B. **Nonproductive:**
 - 1. *Standby:* The equipment is temporarily waiting (i.e., starved) for work from an upstream process.
 - 2. *Waste:* The equipment is in reality not making good product (e.g., waste, scrap, off-spec) or delivering acceptable service (e.g., reject).
 - 3. *Maintenance:* The equipment is either being serviced (scheduled preventive maintenance) or repaired (an unscheduled breakdown).
 - 4. *Changeover or set-up:* The equipment is being reset to make or deliver its next order.
 - 5. *Testing:* The equipment is making sample or test products for research and development or is being tested for process improvement for increased feeds and speeds or quality.
 - 6. *Training:* The employees are acquiring new skills.
- C. **Idle:**
 - 1. *Off limits:* The equipment cannot be operating due to government laws, union contracts, or management policy (e.g., holidays, overtime rules).
 - 2. *Nonmarketable:* Excess product was exuberantly and prematurely produced too far in advance of the customer demand.
 - 3. *Marketable without sufficient demand:* The resource is available, but no open customer orders exist or are expected near term.

activity costs to their proper recipient and beneficiary (e.g., product, standard service line, customer, internally responsible function). When this degree of segmentation is combined with reporting the status and costs for each resource, there is much greater accuracy in the costs that can be traced to the consuming recipients (i.e., ABC’s final cost objects).

Revisit Figure 2.9, which illustrates the ABC/M Cost Assignment Network. This entire network represents what accountants refer to as “direct costing,” which ideally is a costing system’s main purpose. Direct costs are desirable because they are fair, and cost allocations are undesirable because they usually do not reflect cause and effect. An attraction of ABC/M is that it separates those specific non-equipment-related overhead costs, those that are not associated with the equipment, such as “inspecting product” or “moving materials,” from the equipment-related overhead costs. ABC/M accomplishes this by bypassing the equipment for these overhead costs and directly tracing their activity cost (using ABC/M’s activity drivers) to their cost object, usually to the products but sometimes to customers or even to senior management.

Note that in the ABC/M Cost Assignment Network the equipment activities “consume” various labor, supplies, and depreciation expenses. In most capital-intensive, equipment-based workplaces, the output of work is machine-paced, not people-paced. Therefore the cost flows of the outputs of the equipment are costed using either a per-minute time basis or a unit-of-output equivalent. Traditional standard cost accounting systems are built on this relationship. The ABC/M Cost Assignment Network reveals how “standard costing” is imbedded within the broader network. ABC/M is a full absorption costing system.

Figure 6.4 shows the CAM-I capacity model diagram. It subdivides the three broad time-status modes into additional elements. It is useful to view this framework as 24 hours/day for 365 days. That is, it is best to measure with the all-encompassing theoretical capacity. This maximum scope instills confidence that a complete picture of the resource is captured. All the evidence for analysis of resources is present. Imagine that this framework can be captured for *each* resource and at frequent time intervals such as weekly, daily, or hourly. Finally, imagine that at *each* time interval for *each* resource, the time-status mode of the resource is recorded. This information would give a reasonable picture of what every piece of equipment is doing at all times over the course of a year.

Rated Capacity	Summary Model	Industry Specific Model	Strategic Specific Model	Traditional Model
Rated Capacity	Idle	Not Marketable	Excess Not Usable	Theoretical
		Off Limits	Management Policy	
			Contractual	
	Legal			
	Non-Productive	Marketable	Idle but Usable	Practical
		Standby	Process Balance	Scheduled
			Variability	
		Waste	Scrap	
		Rework	Yield Loss	
		Maintenance	Scheduled	
		Unscheduled		
		Productive	Set-ups	
Volume				
Change-over				
Process Development				
Product Development				
Good Products				

FIGURE 6.4 CAM-I Capacity Model

Source: The Consortium of Advanced Management–International (CAM-I). Used with permission.

Both total and individual resource capacity can be monitored and measured. The effort is simply a matter of data collection methods and technology. The more important question is: What would an organization do with that information if it had it? I discuss the uses and benefits of the data after describing some of the possible insights and inferences to be gained from organizing a costing model that maps to the CAM-I Capacity Model.

Calculating Costs Based on the CAM-I Capacity Model

Figure 6.5 shows the disaggregation of equipment-related work activities for a single piece of equipment or work center. This is a picture of what was just suggested. For *each* resource, all these activities expand the options for tracing costs, both into and from the activities. In simple traditional cost allocations, all costs are traced to products using the single assumed activity, “make product” (or “deliver service” for service lines). ABC allows multiple cost tracings depending on each resource’s time-status mode.

Figure 6.5 expands on Figure 6.4 to reveal substantially more cost flow assignment paths relative to the single path practiced by traditional direct costing and overhead cost allocations. The increased number of potential cost flow assignment paths allows ABC to leverage its strength at segmenting resource consumption based on the diversity and variation of the products and order types. Note that in addition to the equipment-related overhead costs, the truly direct

Because the status of equipment can be in many modes, this allows many more options (and assumptions) to trace costs to and from the equipment work activities.

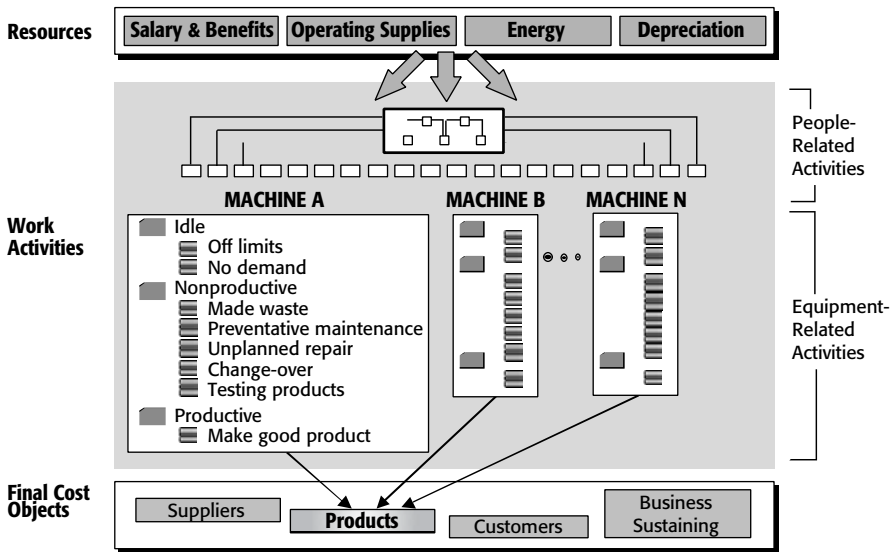


FIGURE 6.5 Equipment Time Status Mode

Subdividing the worker or machine into its time-status mode creates substantial opportunities to segment costs based on the variation of cost object plus cause-and-effect relationships.

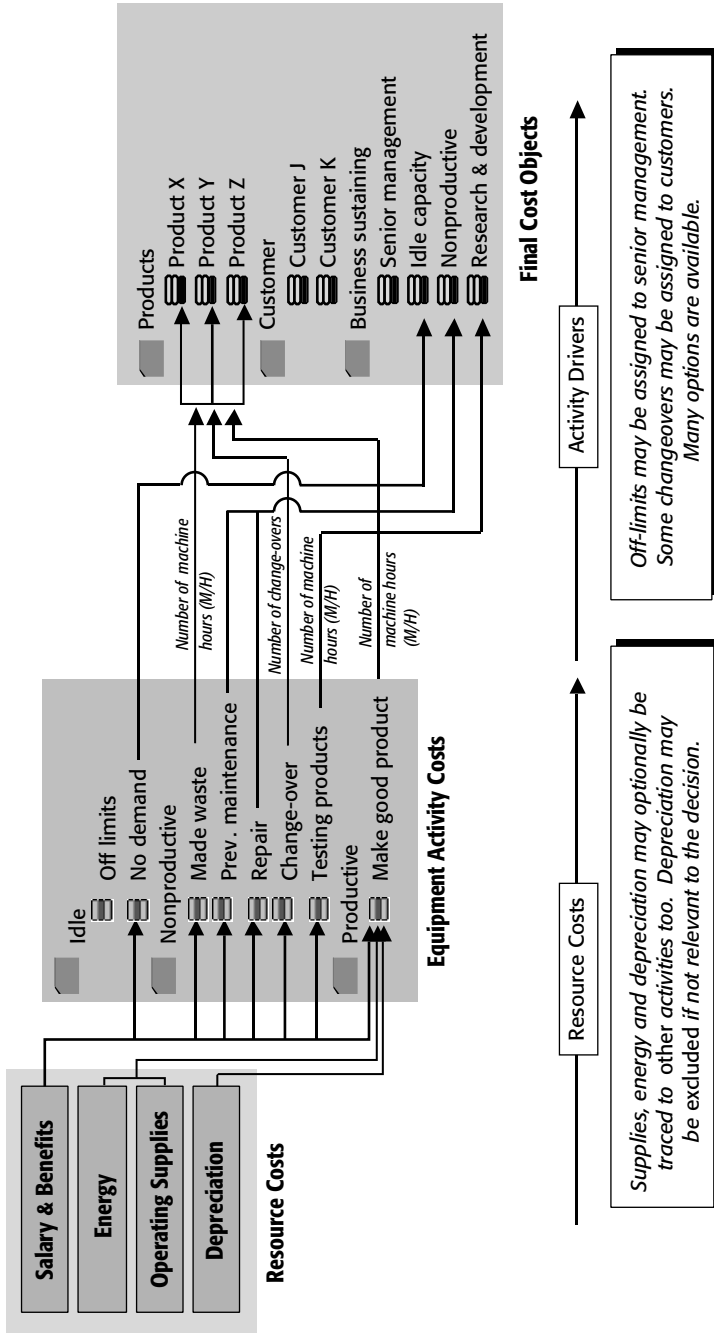


FIGURE 6.6 Increased Driver Assignment Options

costs are traced. However, all these new and available options create higher-level needs for organizations to understand how the assumptions they have available about tracing costs affect the calculated answers. Costs are situational!

These additional levels of detail (i.e., equipment work activities) allow for further tracing of each piece of equipment's direct costs to its time-based status mode and tracing subsequent cost reassignments of each time-status mode to its specific recipients using a unique activity driver and driver distribution. Examples of driver assignments are:

- *Maintenance costs*, which might be traced to only the products that use that equipment but are also deemed more responsible for causing the maintenance work.
- *Change-over costs*, which are independent of a product's volume or run time and can be charged to products based on the number of the equipment's changeovers (i.e., a batch-based driver) for each product, or charged to specific customers if they caused an unplanned schedule break-in.
- *Testing costs*, which might be charged to only the unique products being tested or to the R&D or maintenance function activities.
- *Waste costs*, which may be charged to the products that fail inspection and are off-spec or to senior management.

The point here is not which practice to follow but that more choices for assigning costs become available depending on what behavior the organization wishes to influence.

Evils of Misassigning Unused Capacity to Products

Deciding how to allocate idle capacity to product costs provokes endless debate among cost accountants. ABC/M helps end the debate by enabling both the measurement and the assignment of idle costs. It is illogical to blame the products for these costs. Although it is convenient to "bake" the unused capacity costs into product costs, the actual making of the product does not consume and is not responsible for the unused capacity costs.

Overstating a product's costs understates the true profit margin of that product. This is relevant for strategic planning purposes when determining which products or businesses to focus the organization's scarce resources on. If these extra costs are subsequently forced into the product's price to meet a minimally accepted product profit level, the organization risks lost sales to competitors who better understand their true costs and may charge a slightly lower price.

It is important to isolate the costs of unused and nonproductive capacity, make them visible, and assign them to where they can be intelligently dealt with. ABC/M data can focus attention on opportunities to manage idle capacity. ABC/M can enable more effective accountability for the *responsibility* of capacity costs. But a key question must be answered: Who *owns* capacity?

Disarming Competing Organizational Measures

The appeal of an expanded structure that partitions capacity costs is that it solves the traditional tension in most organizations between the sales and operations functions. The interests of these two organizational functions are usually at odds with each other, and traditional performance measures for each function only exacerbate this tension.

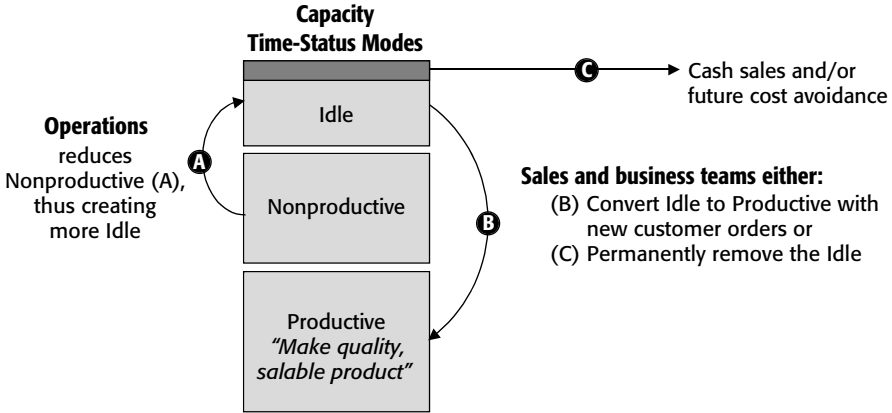
The sales function would love a perfect world in which it could immediately fulfill any customer's order at any time to meet the soonest delivery date. In contrast, the operations function would love to minimize its operating expenses by only making the products and the quantities that it wants to make without caring about specific customer order quantities or delivery due dates. The two functions inadvertently compete with each other. The sales function wants infinite operating resources to instantly make (or have already made) products or instantly deliver services. This would satisfy *any* sales order, so that the sales function could constantly increase volume sales and look like heroes. Meanwhile, the operations function wants to minimize costs and maximize efficiencies so that its report card will look great. How can you achieve a "win-win" outcome?

Measuring the tri-partitioned capacity time-status modes resolves this conflict by focusing both functions on their common enemy: *the* nonproductive costs. The first issue comes down to answering the question: Who is responsible for the idle capacity? The next issue involves providing incentives to both functions to do what they each do best without forcing them to compete.

The solution to these problems involves giving sales and operations complementary and noncompeting goals and measures. The operations function should be given responsibility to focus on reducing the nonproductive capacity and the sales and business teams should be given responsibility for focusing on managing the idle capacity. The logic is simple: The level of productive capacity is predetermined by the amount of customer orders (both booked and very firmly expected in the near-term), so productive capacity remains predictable and unaffected. That leaves only the two other time-status mode levels to manage:

- The operations function should be tasked to reduce the nonproductive capacity. They can accomplish this by better flow scheduling (balancing flow or flexibly moving resources), reducing waste, increasing equipment uptime, shortening changeover times, or using less testing time. Any reduction in nonproductive capacity (as well as productive capacity) automatically increases idle capacity. This should be considered a good act by the operations function. Increased idle capacity is the reward and evidence of improved productivity and efficiencies.
- The sales and business team should be tasked to reduce the idle capacity by either filling it with new customer orders (hence converting it into productive capacity, to make or deliver good product/service) or permanently remove the idle and excess capacity.

The operations and sales/business teams should be responsible for complementary and noncompeting goals and measures.



*When the measures are concurrently improved,
the organization receives mutual benefits.*

FIGURE 6.7 Disarming Competing Operational Measures

The answer to who owns the idle capacity, in my opinion, is that the sales function owns it. The sales function must fill the idle capacity with new orders and learn to not too optimistically forecast future levels of customer demand. If the idle capacity is not fillable, then the sales function must pay the one-time cost to remove the unused capacity, particularly if the idle capacity is costly on an ongoing basis and not required to meet future needs.

Figure 6.7 summarizes this discussion. The operations team is tasked to reduce the nonproductive capacity, thus creating idle capacity. The sales and business team is tasked to use (i.e., revenues) or remove the idle capacity (i.e., future cost avoidance). The use of the principles represented in Figure 6.7 communicates the effects of capacity-related decisions.

Issues with Assumptions about Time-Status Modes

Creating increased resource segmentability via the equipment’s multiple activities (i.e., its time-status modes) raises a new problem: Which activities should the resource expenses, particularly depreciation, be assigned to? An extreme focus only on product costing means that *all* of an equipment’s operating and depreciation expenses would be exclusively traced to only the productive capacity’s “make good product” equipment activity. Regardless of whether the capacity times are measured for the *other* time-status modes or not, the consequence of this assumption is that from the other nonproductive and idle equipment activities (e.g., changeovers, tests) for that particular equipment, no costs would be re-assigned to any other cost objects.

To resolve this problem, one could begin tracing energy, fuel, and operating supplies used by the equipment in proportion to their time (or usage) when the equipment's status is in those *other* nonproductive and idle time status-modes. Those equipment activities will cost more and the "make good products" will then cost less.

Issues with Assumptions about Depreciation

Similarly, the equipment-related workers' time can be traced to the multiple activities of an individual piece of equipment, and therefore not all costs will be completely loaded into the productive activity "make good product." When all labor costs are traced *only* to productive activities, despite sometimes being nonproductive or idle, that overstates the product's cost and understates its unique profit margin.

The treatment of depreciation expenses introduces a different set of assumption problems. The major problem originates with the fact that the cash outlay for purchased capital items has *already occurred*. Therefore, assuming that the residual resale value for equipment is zero or nominal, the approval decision to acquire the item is virtually equivalent to a long-term commitment to the equipment's 365-day and 24 hour-per-day capacity. The depreciation is a *sunk* cost, without any variable cost consumption effect. Regardless of whether the equipment is used a little or a lot, the full commitment to the expenditure is at any point in time a historical event.

The cost is not merely a fixed cost. It is *permanently* fixed. That is why I believe whenever capital equipment is purchased, the individual's name and signature at the bottom of the purchase approval document should be bronzed on a plate and permanently welded to the equipment at the time of purchase and equipment installation. There is very little organizational memory about who committed to such significant spending and little chance of reversing the effect of that commitment. With my tongue-in-cheek proposal, everyone would remember who was responsible.

Other problems with depreciation fall into the following categories:

- **Which equipment activities to assign the depreciation to:** Similar to the options faced with wage-related and other operating expenses, should the depreciation only be restricted to the productive activity, "make good product?" The same understating and overstating issues exist with product costs.
- **Releveling costs to reflect replacement value rather than historical cost:** If one older piece of equipment is fully depreciated (or near fully depreciated with an inflation unadjusted cost), but another newer piece of equipment is not, what are the relative costs of the same product run through both pieces of equipment? They are very different. The product cost when produced on the old machine is calculated as much less; there is no depreciation element. But what then happens to that product's cost the day after that old machine

breaks down and is replaced with a *new* machine? The product cost would spike up with a punctuated quantum leap! Did the product cause more or less consumption? Neither. Did the cost to make the product dramatically increase? Hardly.

One solution to this paradox is to renormalize *all* of the equipment depreciation expenses according to their collective full replacement cost (as if purchased new today, which is frequently computed for insurance purposes). On this new basis, the factory-wide accounting (i.e., net book asset value) depreciation expense can be traced to products based on that replacement cost profile. The depreciation expense costs will exactly reconcile with the profit and loss statement. (To fine tune this method, some adjustments can be made for the expected higher costs of maintenance incurred by the older equipment to have a more consistent and fair apples-to-apples costs. Similar adjustments might be identified for the higher productivity level of the newer machine. But this cost assignment basis is still much better than the traditional, misleading approach.)

Using replacement costs solves other problems as well. It eliminates the need for arbitrary choices such as the following:

- To select among various depreciation methods (e.g., straight line, double-declining balance, sum-of-the-years' digits, etc.).
 - To forecast the useful life of the asset.
 - To estimate the salvage value at the end of the asset's life.
- **Inclusion or exclusion:** For certain kinds of decisions, it is inappropriate to include depreciation because there will be no cash flow impact to the cost forecast. These are usually shorter-term planning horizon decisions that involve incremental volumes of inputs and outputs. For example, if a piece of equipment is only half-utilized, and one of many products is expected to increase in volume 10 percent (where ample unused capacity would still remain), should the depreciation cost for that equipment be included in the cost projections? No. This is because the depreciation cost does not change; unused capacity is replaced by productive use of that capacity. Total costs are unaffected. Costs are situational!

You would include full costs for long-term decisions (e.g., long-term pricing, new product introduction). This is because the investment in equipment should ideally be recovered with an acceptable payback. However, for short-term decisions (e.g., opportunistic market penetration at an abnormally low price), you may consider including only marginal costs.

Revisit Figure 6.6 and mentally trace how the cost assignment paths might flow *into* the various equipment activities and how subsequently the next set of cost assignment paths might flow out of the equipment activities and “pile up” into the final cost objects. The options are many. Any configuration of paths is conditional to the business problem being solved, and the path architecture requires tying the appropriate assumptions to the problem. In other words, the as-

sumptions about cost behavior (e.g., fixed, step-fixed, variable, etc.) are always decision-dependent.

What to Do with the Business Sustaining Costs

In any organization there will always be a portion of the cost structure that is not caused by the cost objects that reflect the primary purposes of the cost structure such as products, service lines, or customers. These are referred to as sustaining activities. Examples of sustaining activities are maintaining the buildings and grounds, the accounting function of closing the books, the annual employee picnic, and the annual budgeting process.

The classification and assignment of these kinds of costs are obviously debatable. Optional or discretionary expenses like the annual employee picnic can arguably be alternatively traced to employees as a form of fringe benefit that will ultimately flow as costs into the primary cost objects. But the financial month-end close activity is unarguably a cost of doing business for which there is no fair way to assign costs to a product or customer without introducing an undeserved penalty or subsidy. There simply is no cause-and-effect relationship between a business sustaining cost object and the other final cost objects.

Examples of final cost objects that include business sustaining cost objects are senior management (at individual levels, such as corporate, division and local) or government regulatory agencies (such as environmental, occupational safety, or tax authorities). In effect, these organizations, via their policies and compliance requirements or via their informal desires such as briefings or forecasts, place demands on work activities not caused by or generally attributable to specific products or customers.

As previously mentioned, the need to fully absorb business sustaining costs into other final cost objects depends on the decision being made. If the decision involves pricing, overtime products and service lines must recover these costs. If the decision involves trade-off analysis, such as determining if a distribution center warehouse space should be expanded or more products should be direct shipped, “marginal costing,” which excludes business sustaining, can be employed.

The only fair and equitable way to trace business sustaining costs into the final cost objects is to prorate them based on the proportion of direct-traced costs to the other final cost objects. This method in effect equally inflates all the product and/or customer related costs without introducing distortion.

In advanced strategies, some organizations will treat the business sustaining costs as a portfolio for full recovery but not necessarily equally from all products or customers. Loyal customers or products with dominant brand name recognition and market share may be priced at a high enough level to be thought of as (but not causally) responsible for recovering the business sustaining costs. This allows potential pricing at prices that appear very low (yet may still be above the variable cost) to take a desired customer away from a competitor or to quickly increase volume of a new product or service line to gain market share. However,

over time as these new entries mature into the baseline business they may need to have price increases to pay for a share of the business sustaining costs.

Static versus Dynamic View of Capacity Management

The time-status mode used to assign and trace costs clearly covers time intervals of reasonable duration such as a month or week and in some cases daily or hourly. But at any moment in time, an employee or equipment resource may be swamped with a high wave of demand and workload, or in contrast be starved from performing any work based on a dependency from an upstream worker or worker center. In these cases, idle and productive capacity can wildly fluctuate hour to hour or minute to minute. At the shorter intervals in time, dynamic scheduling takes over. Activity-based costing as described previously in this book covers static costing. To address more dynamic capacity management or capacity planning where there are fluctuating yet likely events in the flow of work, activity-based costing should be integrated with other software tools:

- **Dynamic execution:** Increasingly organizations are implementing enterprise resource planning (ERP) software. These information systems tell an organization what it has. When ERP systems are further equipped with short-term execution planning software systems (e.g., I2 Technologies, Manugistics, SynQuest), organizations can see what can be done with what they have. Execution software can help plan what goes out the door, not just track what is coming in and where it is. But these tools do not provide insights into costs. Activity-based costing will provide that complement.
- **Discrete-event process simulation:** When inbound customer demands and other influences fluctuate, statistical analysis of the historical fluctuations can be applied to what is known or projected about future demands. These events can also be planned by software (e.g., Optima, IDS Scheer, Witness, ProModel). However, these tools do not provide insights into costs. Activity-based costing will provide that support. In some cases, there will be bidirectional exchange of the cost rate data between these tools to improve the utility of the simulations.
- **Theory of Constraints (TOC):** This form of planning, which is sensitive to the effects that capacity constraints can have upstream and downstream from the constraint, has evolved into a broader management methodology. Some of its advocates believe that absorption costing data (including activity-based cost data) are misleading. Their position assumes that operating expenses are highly fixed relative to changes in volume and mix. The debate will likely involve assumptions about the agility of organizations to respond to changes, particular uses of cost data for decision support, and the restrictive conditions in which conventional extrapolation of cost rates provides acceptable answers. At some point activity-based cost data will work in harmony with TOC thinking. One common intersection will likely be TOC's need to calculate the

change in operating expenses (i.e., “delta OE” or dOE) applied in case-by-case decisions.

(Chapter 8 addresses at great length the issues related to predictive costing. It covers the ongoing debate among TOC advocates and their dislike for absorption costing, including ABC/M.)

In summary, organizations have begun to experiment with the financial measures, such as shareholder value analysis. With time, the managers being evaluated with these types of measures will realize that what they are really managing is capability and capacity to make and deliver goods and services. This will place greater attention on capacity management. Predictably, this raises questions about unused capacity. A good start will be to have fact-based measures to handle these questions.

PROJECT AND WORK ORDER ACCOUNTING VERSUS ABC/M: CHOICE OR BLEND?

There are strong forces pressuring organizations toward more project-oriented work. Concurrently, there is an increasing appetite to measure results and their costs. In rising numbers, organizations are questioning the adequacy of their cost measurement systems. This does not mean just the data integrity and accuracy of their costs, but in a broader sense the entire approach to and effort involved in how they assign and accumulate their costs.

Some public sector organizations have for years been using project accounting and work order management accounting systems. Direct costing of highly direct labor and material costs is not a foreign concept to them. But what has been surprising is the increasing shift and magnitude from direct to indirect costs. Indirect and support overhead costs are much trickier to trace and assign than direct costs.

Some organizations put great effort into their project accounting and work order systems and wonder if the heavy administrative cost exceeds the benefits. Others who have adopted ABC/M may realize that a portion of their reporting requirements can be better satisfied with a project accounting (e.g., job and work order costing) system. Must organizations choose one over the other? Or can ABC/M and project/job order costing be combined? All these cost assignment methods involve a form of direct costing that applies calculated costs from expenditures into outputs. How can multiple cost assignment approaches be blended?

Costs Versus Benefits of the Effort

The broader question is, under what conditions does an organization elect to measure its costs using project accounting or standard costing or actual costing? How does an organization know? And once the choice is made, how well does it serve its managers and employee teams? Such questions will proliferate as employees devote a greater portion of their workday to projects or to specific work orders, such as maintaining or repairing a specific building. Companies, institutions, and

government agencies can no longer enjoy the status quo and expect to survive. They now depend on innovation, new services, and revised processes as their way of increasing their value to the customers, service recipients, and constituents that they serve. Change is a given. Projects produce the change.

At the same time that organizations are continuously reforming themselves, their margin-for-error is becoming slimmer. They cannot afford to make too many errors or to tolerate some of the excesses they escaped with in the past. They cannot afford to inefficiently waste limited resources. Consequently, managers are increasingly monitoring and measuring. Terms like *balanced scorecard performance measures* and SVA are becoming more prominent in the enterprise vocabulary. There is increasing interest in knowing and understanding costs, including the costs of processes, outputs, and even the output of individual elements of *work*. (“What is the unit cost per invoice processed?”) There is also interest in the total costs of each project for all projects or all work orders totaled for a specific building, asset, or service recipient.

Organizations do have options and choices when it comes to measuring and reporting their costs. The method and approach they choose depends on a variety of factors. One fact is apparent: In today’s more competitive and scarce-resource environments, there is much greater scrutiny of how costs are allocated between and among organizational units and their products and services. The cost allocation food-fights have become emotionally charged as various managers and teams are held more accountable, with consequences for their actions and results.

In regulated environments, such as for a contractor to a government agency, the law defines the cost recovery methods. However, there can still be wiggle room as to how costs are charged back to the customers. Substantial energy can be consumed by both the buyer and seller, or by the provider and user, in scrutinizing how project-related costs were allocated.

Today’s managers and employee teams are no longer tolerating unfair cost allocations or undeserved expense charges where they feel some other department, workgroup, product, or service line caused the original expense to occur. Likewise, contracting companies and government agencies are investigating how and what their contractor charged them for. These entities no longer care to subsidize others. How then does one design a cost measurement and assignment system that is fair and equitable?

Varying Cost Assignment Approaches

Figure 6.8 diagrams some alternative ways in which costs can reflect the diversity, variation, and differences of the cost objects (e.g., products, services, outputs, projects, work orders, service recipients, or customers) that consume costs. Following is a short primer on how to charge-out costs. Any cost distribution or reassignment, popularly called a *cost allocation*, will involve three elements: the origin, the transfer mechanism, and the destination (i.e., cost objects). In costing

Ideally, all costs should be *directly* charged, but as variety, complexity, and technology increases, more costs are *indirect*.

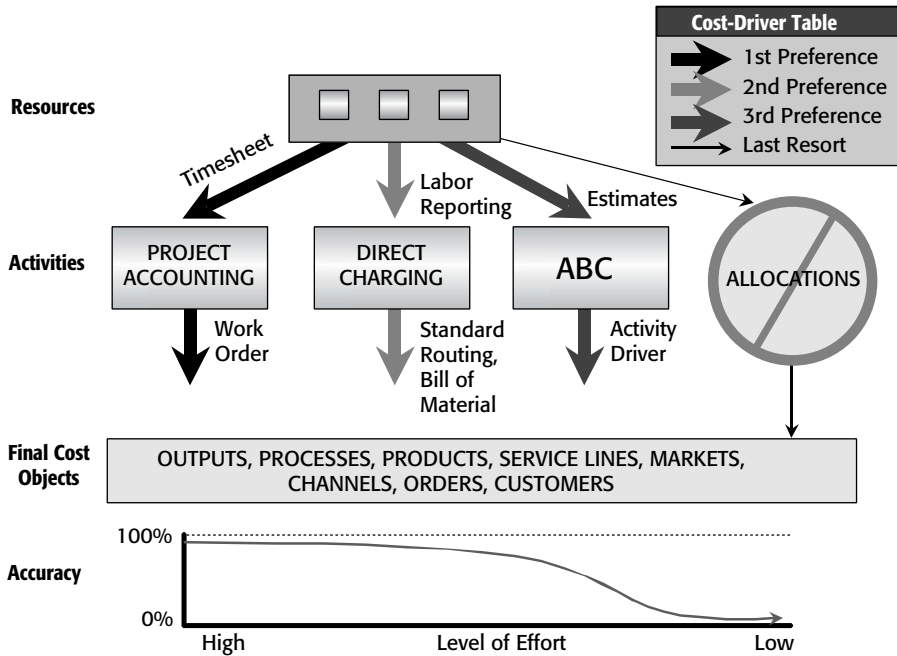


FIGURE 6.8 Improved Accuracy via Greater Direct Costing

lingo, the resources “supply” costs to work activities, whereas the products, service lines, projects, or customers/beneficiaries “consume” the work activity costs.

As previously described, resource costs can be thought of as payroll, employee benefits, materials, operating supplies, or energy utilities. These represent the available capacities and capabilities that can be supplied to the work activities that produce outputs. Resource expenses are initially captured in the general ledger accounting or fund accounting system, a method of accumulating transactions into the ledger’s expense balances.

Figure 6.8 shows the range of differences among cost assignment approaches. These include a less-discriminating “allocation” approach, an activity-based costing assignment based on causality, and the two popular direct costing methods, project (job order or work order) accounting and standard costing.

The applicability of the direct costing method ranks, left to right, from the most to least-preferred method. Note that cost allocations, located at the far-right, are discouraged. There is no great mystery here. If the work activity was not consumed by or has no consuming relationship with a cost destination, no meaningful assignment path can exist. There is no cause and effect. In practice, the basis or factors for many cost allocations are often at best directional (e.g.,

allocated by head count or square foot) and at worst arbitrary, possessing no correlation. That is why cost allocations in Figure 6.8 are labeled in the cost driver table as a “last resort.”

Cost assignment approaches are conditional and situational. The same expenses can be assigned in two different ways to support two different questions. The most appropriate assignment approach depends on the end-users’ needs. I next address how each of the direct costing approaches is similar yet different.

Project Accounting and Work Orders

Project accounting, or its equivalent, *job order costing*, is the highest form of direct costing with regard to accuracy. This assignment method captures the intersection of the resource’s time-usage duration with the project plan’s workstep or with its recipient, such as the job/service work order or the product. That is, both the work activity *and* its recipient are coupled at the cost intersection. This form of costing is more applicable in law, consulting, or auditing firms as well as in contractor environments. In manufacturing, work order costing is popular in job shops where, at the extreme, the organization is building a one-of-a-kind. Project accounting is also prevalent and often regulated in compliance with laws stipulated by government agencies such as the Department of Defense or the Department of Energy.

In this form of direct costing, the life of the cost object (e.g., a project) has a beginning and an end, a complete life cycle to itself. Expenses are continuously charged while the work is in progress, and costing concludes by “closing out” when the project or job is complete. A drawback to project and work order accounting is the high administrative effort to collect, validate, and report the project or job costs.

When looking at a project hierarchy we tend to find the legal entity receiving at the top; the next level is the stand-alone projects (say constructing a dam), and so forth, until we reach a point that is deemed the lowest level to attach costs for purposes of project management. The lowest level project is usually called a work order. Work is usually only captured at the lowest level (the leaf of a tree concept). There may be phases within each work order, such as electrical and plumbing.

At a lower level within the work orders (below phases) we find tasks. Tasks are elements of work that employees perform and are traditionally recorded on timecards. Sometimes there will be a tie-in to the fleet/equipment rental system so equipment-related activities can also be entered, via employee timecards or equipment usage record cards, if the usage is not tied to an employee, such as an electrical generator at a dam. Both people and equipment perform work activities.

In project and work order accounting, usually what is lacking are the work activities provided by vendors because the financial accounts payable systems typically don’t record the work activity information from the vendor (e.g., if you contract out engineering services and are billed for 1,000 hours, why shouldn’t the system record the activity? You would if it was performed by employee

labor!). Ideally you could aggregate the activity across the work orders to generate an activity cost consumption report. You could then drill-through and drill-down to account for, compare, benchmark, and understand project costs and performance. Revenues and billings could be matched to projects to determine profits (a priori) or measure profits/losses after the fact.

Beyond the mechanics of recording transactions, you have to look at the purposes of a project or work order accounting system. Work orders are typically used to capture:

- Construction costs for additions to fixed assets (“continuing property records” in utility nomenclature);
- Maintenance work orders for capturing costs for performance analysis and historical expense comparison (e.g., how much did water main repairs cost this year versus last?);
- Costs for billing purposes; sometimes the billings are cost/cost-plus overhead charges to external customers (e.g., the cost to hook Mr. Jones’s home to the power pole is a customer charge, and he may be billed at cost for labor and material plus 15 percent overhead) or work order benchmarks are used to monitor how the fixed fee-for-service compares with the ongoing prices of private industry for providing that same service; and
- Costs of providing shared services to be allocated using a cost allocation plan, whereby the services benefit numerous other departments (shared service and operating departments) and it is impractical to use timecards to charge these services out.

Regardless of its purpose, work order costing requires a lot of effort.

Standard Cost Accounting

Standard costing is the next highest form of direct costing. Here the actual time-effort of the work is still measured, but the reassignments of the work activity cost to its cost object are based on predetermined rates. The predetermined rates are often called *standards*, hence the name of this cost allocation approach.

Standard costing is more regularly applied when the products, services, or outputs are routinely and repetitively made or delivered. Whether or not the rates are determined based on historical averages or desired targets, the regularity and repeatability of the output is what matters. The actual input effort is still measured, and the cost accounting generates a whole host of variance-to-standard cost measures (e.g., efficiency, volume, price) used to reconcile the actual against planned costs. Even in standard costing, the standard cost plus cost variances must always equal the actual cost.

Standard costing addresses a key drawback of job costing in that it lessens the administrative effort. Standard costing assumes standard input or output rates, rather than each time measuring actual rates, for the work and the work’s outputs. Standard costing does not require measuring at the cost-intersection where actual

work matches to the same and actual output. For that level of specificity, choose job order costing.

It should be apparent that ranking of preference for the cost assignment method to be selected incorporates the administrative effort as well as the desired accuracy of the costed cost object.

Activity-Based Costing: The New Kid on the Block

The third cost assignment method, activity-based costing, achieves substantial accuracy at a fraction of the effort. Activity-based costing has become popular because it is an economical direct costing method.

As previously described, with greater support overhead costs relying on a basis for cost allocations tied to unrelated volumes (e.g., direct labor hours), the traditional cost allocation methods had become invalid relative to how the products and services consumed costs. Therefore, the unfavorable impact of the costing errors from invalid cost allocations were becoming much more intense.

Many managers understood intuitively that their accounting system was distorting their product costs, so they sometimes made *informal* adjustments to compensate. Activity-based costing is a much more logical cost assignment method that compensates for what in effect were misallocated costs from traditional costing methods.

In addition to the distortion of true costs reported from traditional accounting systems, the rise in activity-based costing has resulted from external factors. The level of competition or risk of replacement from privatization that most organizations face has increased dramatically. In the past, organizations were reasonably profitable or adequately funded. They could make mistakes and their profitability or reliable funding would mask the impact of their wrong or poor decisions. They could carry unprofitable products and customers because the winners would more than offset the losers. In the public sector, the sanctioning body might have tolerated inefficiencies in the past or it may now have discovered that limited funding is creating a spending squeeze. In short, organizations can no longer expect to easily survive with misleading cost allocations and without visibility of their costs of business processes.

Relative to project accounting, activity-based costing does not tolerate incurring the significant administrative effort to directly code every source-to-destination relationship for every transaction event at the cost-intersection. Instead, activity-based costing allows the costs for common activities to be reasonably estimated, regardless of who performs them. Then a distribution of all the events, referred to as activity drivers, is used as the basis to assign the source work activity costs (traditionally called “cost pools” by accountants) to the final cost objects. However, in activity-based costing the cost assignments are restricted to *only* the products or service lines (or projects or work orders) actually consuming the activities, and the driver quantities are the totals for the period regardless of whether they occurred earlier or later in the time period. In this way, activity-based

costing spares an organization from the tremendously greater effort to cost-link all the work activities at the individual transaction level. With activity-based costing the assignment path itself serves to ensure that there will be no charge to an undeserving (i.e., nonconsuming) cost object. Hence, reasonable accuracy with minimal effort is attained, as presented in the graph at the bottom of Figure 6.8.

Impact of the Repeatability of Work

Some accounting practices begin by classifying people and equipment as being either *direct* or *indirect* (i.e., overhead). But as organizations flatten and de-layer, individuals tend to behave in both ways. The distinctions between direct versus indirect costs are not detected by the person or machine but rather by the type of work being performed.

Although an objective of the cost assignment approach is to achieve reasonably high accuracy of the cost objects, the selection of the most appropriate cost assignment approach is strongly governed by the repeatability of the work being performed. For example, a cashier at a government licensing bureau bank teller tends to perform similar activities each work day, but a computer programmer in the same license bureau bank may be strictly project-oriented. Should the cashier bank teller fill out a project timesheet daily? Should the programmer not fill out a project timesheet? Figure 6.9 indicates when more administrative-intensive and costly data collection may or may not be applicable.

In highly nonrepeatable project work, project accounting is appropriate but may only apply to a subset of workers. ABC increases in utility as an organization's continued outputs change slowly.

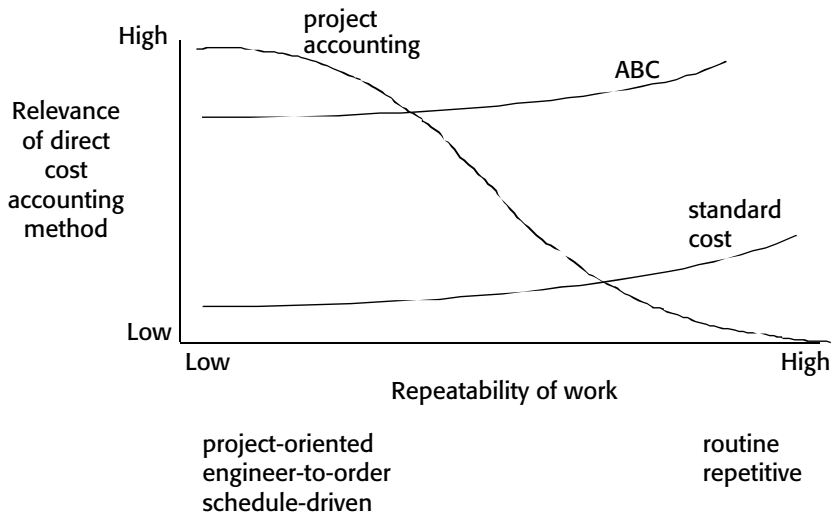


FIGURE 6.9 ABC versus Project Accounting

When work activities are nonrecurring, such as a law firm's client-billing or construction of a skyscraper or Earth-orbiting satellite, a more exacting form of direct costing may be needed for higher accuracy. This is where project accounting, work order costing, or job costing is more appropriate. This approach to costing requires that all activity charges be made simultaneously and directly to the ultimate customer account or to a workstep in a project plan.

In Figure 6.9 the horizontal axis represents the repeatability of work, ranging left to right from nonrecurring to recurring. The curve for project accounting, job costing, and work order accounting and job costing descends in applicability as the type of work becomes less nonrecurring, that is, more repeatable. With projects, the time schedule, including unplanned delays, can severely govern the total costs. Project accounting serves well when the conditions of nonrecurring work are present. However, where the conditions are that work activities are recurring and repetitive, such as with the bank teller, project accounting is less applicable.

Because there is broad diversity and variation in services and outputs, even for a bank teller, organizations are keenly interested in the unit costs of the output of work ("What is the cost per deposit of a retail versus a commercial customer?"). This is where activity-based costing provides an economical solution. In Figure 6.9, the curve for activity-based costing ascends in applicability as work activities become more recurring, although varying in time duration, even though the work produces or serves a broad variety of diverse products, services, and customers.

What If Recurring and Nonrecurring Work Coexist?

When a project-oriented organization has employees (or a substantial number of work activities) that are not directly consumed by the projects, how should the costs of those employees be traced to the projects? To simply satisfy management's need or legal compliance for full cost recovery, these costs will likely be "absorbed" based on some form of cost allocation. A popular way to accomplish this is to absorb these overhead-like support costs based on the project's direct labor hours (or dollars) or based on each project's expenses. But there are situations in which this method may unfairly overcharge a particular project or does not represent a true cause-and-effect relation. What if one project requires a significant amount of technical overhead support while another one does not?

One solution is to require the support staff personnel to have their timesheets completed (by that worker or by a department representative) and reported in the way that the project-assigned people report their time. But there will still be cases in which it is not clear *which* projects or jobs to assign some of these costs to.

One solution is to combine or blend activity-based costing with the project accounting or job and work order costing system. Figure 6.10 places project accounting and activity-based costing under one roof. Figure 6.10 depicts how the indirect costs, captured in the activity-based costing system, can be streamed into the project accounting system or directly to the customers. The figure shows

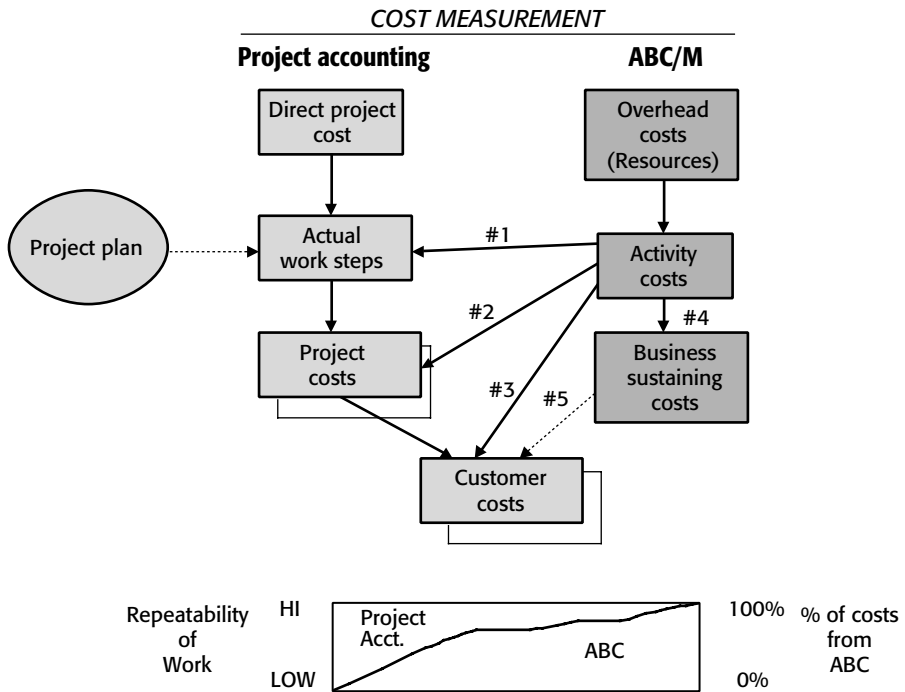


FIGURE 6.10 Combined ABC and Project Accounting

the four broad cost assignment “avenues” from the ABC/M Cost Assignment Network:

- Work activity-to-project/job work activity (1)
- Work activity-to-project (2)
- Work activity-to-customer (3)
- Work activity-to-business sustaining (4)

In activity-based costing, the administrative effort is very low. In all four of the assignment cases, the resource costs can still be estimated prior to their being reassigned from the work activities. From each of the work activities, the activity costs can either be:

- directly traced to worksteps (1) in the project or jobs using an activity driver (e.g., the number of purchase orders for a procurement department’s work) as a “local burden rate” or
- Directly traced to the outputs of the project or job or work order or directly traced to a separate cost object, such as the project (2), a customer (3), or a business sustaining (4) cost object. By tracing those activity costs directly caused by customers in assignment path no. 3, activity-based costing segments how the “costs-to-serve” among varying customers reflect the substantial differences in how individual customers create unique work apart from the

projects, jobs, or work orders themselves. Customers can be angels or devils independent of what they have ordered.

An appealing capability of activity-based costing is that even after certain activities are traced to business sustaining cost objects, one still has the option of stopping there with costs that are not fully absorbed into projects or customers or further reassigning those costs (assignment no. 5) to customers or to projects. Activity-based costing is in effect a reassignment network that can always be extended.

Case Study: International Truck and Engine

The Fort Wayne, Indiana, engineering operations of the large truck manufacturer International Truck and Engine (formerly Navistar) applied activity-based costing to its full limit by using it as a stand-alone project accounting system. Their logic in doing so was straightforward. They recognized that their organization's business was to develop product designs rather than to build products; the factory operations build the product. This means the engineering operations are more dependent on people and their skills than on materials.

The truck engineering operations mentally mirrored the parallels of their work and accounting for costs. Whereas their manufacturing facilities built truck products for customers, the engineers' outputs were projects, not products. Each project has start and end points with milestones in between.

The truck engineering organization itself had substantial support overhead relative to the mainstream product design-related activity costs. Consequently, much of the support activity costs were directly assigned to various and specific design activities (assignment no. 1) in proportion to their use. Activity driver measures, such as the number of tests or number of inspections, were used to trace these support costs.

Because the project costs are internally tracked to the product lines, the organization can better understand its product costs. To project-oriented organizations, the project costs are usually externally tracked and billed to customers. Regardless of the destination, understanding activity consumption in terms of both projects and products offers multiple benefits:

- Identifying and tracking of process improvements.
- Gauging the cost impact of changes.
- Benchmarking the internal cost rates of work elements on different projects.
- Identifying the cause-and-effect relationships between projects and work activities.
- Scoring or grading the level of strategic importance, level of performance of each activity, or costs of poor quality (COPQ) (using the attributing capability of activity-based costing).
- Computing more accurate project costs as most non-customer-related costs are driven logically to projects.

Equipped with the activity-based costing-generated project accounting data, the truck engineering people discovered the true premium cost differentials between a standard and custom design—and ranges in between. The comparative cost data continue to promote ideas and suggestions about how to reduce the costs of special custom designs toward the costs of standard ones.

Although the initial data collection effort was lengthy and effort-intensive, Navistar International has automated data collection through the use of an electronic timecard and integration with existing operating software systems to automatically import driver quantities for tracing costs to projects and customers.

ABC/M Does Not Tell the Whole Story That Project Systems Tell

ABC/M is in actuality a “poor man’s” project accounting or work order system. ABC/M data do not show the degree of completion of individual projects or make cost overruns as visible as a project accounting system does. In a sense, because ABC/M is computing more as an “actual” costing system, it is not highlighting performance variances measured from a predetermined plan. ABC/M may trace costs into defined worksteps for a project plan, but project accounting systems are designed to also compare planned costs against actual costs to determine both schedule and spending cost variances.

One could conclude that project accounting has a larger breadth of purpose than ABC/M. It does a good job of answering “what happened.” Where ABC/M seems to shine is in the performance analysis, such as attaching attributes to resources and activities, breaking out idle capacity and costs associated with it, and answering other “why” questions.

Even though project accounting may have the larger breadth of purpose, it may not be complete in scope, accounting for all the organization’s costs. One could make the case that work order costing and project accounting typically include only labor, materials, and equipment costs that touch the work that ends up in the products and service lines being delivered and sold, and omit all non-product costs that could and should be traced to customers, channels, and business sustaining. Therefore, a project accounting system includes only a subset of the cost objects that would be found in an ABC/M system.

Combined Project Accounting and ABC/M Hybrid System

In the end, the level of detail and accuracy in measuring and reporting costs will depend on how the data are used for decisions and control. As multiskilled employees in organizations spend increasingly more time multitasking in various business processes, projects, and work orders, the traditional general ledger and fund accounting system will be recognized as structurally deficient to produce the information that managers and teams need. Fortunately they have options for designing their cost measurement approach to balance their level of administrative

effort to collect and report the data with accuracy of the output information and with the needs of the end-users of that information.

ABC/M MEASURES TOTAL QUALITY MANAGEMENT'S COST-OF-QUALITY

Was the Total Quality Management Movement a Fad?

In the 1980s the total quality management (TQM) movement, a vast collection of philosophies, concepts, methods, and tools, grew increasingly popular. It received substantial business media attention and was intellectually appealing. At an operational level, TQM was effective at identifying waste and accelerating problem solving for tactical issues. However, at a more strategic level, it was felt by many that TQM was not the magic pill that the senior executives always seem to be searching for.

Total quality management usually did not double or triple an organization's profits. In many cases, implementation of TQM probably prevented greater financial losses from customer defections caused by quality problems or from waste and inefficiencies. Unfortunately, the avoidance of reduced profits is not measured or reported by the financial accounting system. No one could easily assess TQM's benefits. As a result, in the 1990s TQM was regarded by senior management of some organizations as another check-in-the-box improvement program that they needed to have in place, along with other programs. But TQM was not viewed as foundational.

What led to the initial interest in TQM? By the 1980s it had become evident to senior executives and the federal government that Japan was winning market share with better quality. What began as a competitive nuisance quickly became feared as a serious threat. Japan's economy had miraculously transitioned from a low- to high-quality reputation. In hindsight, we now realize it was not miraculous but a result of plain common sense business practices. What had occurred was that consumers began to recognize Japanese products as either superior or a bargain. Consumers realized they did not need to resign themselves to accepting shoddy workmanship.

North American executives countered this threat and began to realize that quality management initiatives improve productivity while concurrently defending their market share position—a win-win. Executives were learning that there is no trade-off of extra cost for greater market share.

In the 1980s TQM got its opportunity to shine as a leading change initiative. Popular TQM consultants raised awareness and educated businesses. Joseph M. Juran, W. Edwards Deming, Philip Crosby, and others became leading experts and guides for organizations struggling with how to turn themselves around. Total quality management programs became prevalent and often institutionalized via accepted standards such as the ISO 9000 Quality System Standard. In 1987

the U.S. Congress passed a law establishing the Malcolm Baldrige National Quality Award. In 1988 the European Foundation for Quality Management (EFQM) was founded and in 1992 it introduced the European Quality Award. It appeared as if industry was solving its "quality crisis."

In the early 1990s skepticism about TQM began to take the bloom off the TQM rose. A disappointing pattern from past TQM projects had emerged. Results from TQM were below possibly inflated expectations. Regardless of the explanation, after initial improvements from TQM, executives began to question if there were enough results. In October 1991 *Business Week* ran a "Return on Quality" cover article questioning the payback from TQM. In short, there was an ominous disconnection between quality and the bottom line, as increasingly more companies adopted quality programs yet few could validate much favorable impact on profitability.

At about this same time, other change initiatives, such as just-in-time production management and business process reengineering (BPR), began capturing management's attention. Total quality management settled in as a necessary-but-not-sufficient backseat program.

Renewed Emphasis on Total Quality Management

A historical perspective on the role of quality in business and commerce may be helpful. During the Industrial Revolution, many of the technological advances, such as the development of the steam engine, were made possible through developments in metrology and the standardization of engineering components such as screw threads.

The advent of mass production during the twentieth century increased the demands for control of product quality. During the 1940s and 1950s the techniques of quality control became an increasingly important element of business management as organizations sought to gain competitive advantages. The success of Japanese manufacturers during the 1960s and 1970s changed the emphasis from a quality *control* approach to a quality *assurance* approach that involved more of an organization's functions.

Organizations worldwide began recognizing that TQM need not operate in isolation from other change initiative programs. Managements admitted to themselves that there had been drawbacks that had harmed TQM's reputation, such as non-verifiable measures, claimed but unrealized cost savings, and small projects that were too local and tactical. However, these same executives realized that with corrections, TQM could be repositioned.

In the face of increasing pressures, organizations have often launched massive, but usually uncoordinated, change initiatives that may or may not achieve their goals. Each effort in isolation may have shown results, but collectively the initiatives can fall well short of their potential. Despite the temptation for management to continue this search for that special improvement program, system, or

change initiative to cure their ills, pragmatic executives realized that there is no *single* program. Multiple concurrent change initiatives are needed, and they require integration.

A variety of programs and management systems began to emerge. Balanced scorecards became accepted as a solution to aligning organizational execution with strategy. Information systems such as ERP and advanced planning and scheduling (APS) improved execution, compressed lead times, and reduced unused capacity. Customer relationship management (CRM) systems connected the sales force to customer needs, value, and satisfaction. ABC/M systems improved the visibility and understanding for management to infer things, understand and believe their profit margins, draw conclusions, and make better decisions.

The rate of change began to accelerate. The strong force of recognizing customer satisfaction as being essential moved organizations from hierarchical structures toward process-based thinking. The reengineering message was to worry about the outputs, not the functions: Do not get entangled in the politics of the hierarchical organization chart. Power was shifting from sellers to buyers, and organizations had to shift their orientation.

Total quality management qualified as one of the essentials in the new suite of management tools and methodologies. Corporate role models emerged. Six Sigma programs with “black belt” quality training at General Electric and Motorola were heralded as keys to their successful performance. To validate an organization’s claim to total quality, quality assessment mechanisms have been developed. The Malcolm Baldrige Award, established in 1987, has become coveted as a sign of excellence in the United States. Europe honors its winners of the European Quality Award (EQA), and Japan has honored winners of the Deming Application Prize.

There have been and will continue to be endless debates about which management techniques matter and are effective—and which don’t matter. There is an increasingly prevailing consensus that strategy and mission are essential; after strategy and mission are defined by senior management, the core business processes take over to execute the strategy. The core business processes are now accepted as the mechanism to deliver the value (both customer and stockholder value) defined by the strategy. Time, flexibility, quality, service, and cost are all derivatives of the business process. They are inextricably braided together and should not be addressed in isolation from each other. (Programs such as “core competencies,” “organizational learning,” and cycle time compression are considered to be important enablers.)

At the same time that management tools and methodologies were being blended, new thinking about how to achieve competitive advantage began displacing old thinking. Quality management has a golden opportunity to be part of this new managerial thinking. As an example, at some companies the Michael Porter “competitive advantage” strategy model is being abandoned. Companies can no longer compete by concentrating on “low price versus high product or ser-

vice-line differentiation.” This is because companies that are successfully sustaining their competitiveness have achieved competencies in new product development. Those “first-to-market” suppliers are quickly met by competitors with rapid “me-too” capabilities—and with lean cost structures. There is no place left to stake out a competitive edge. The only option that competitors have is to adopt aggressive, confrontational management styles.

This is a major challenge for executives, and it involves increasing value. *Value*, as I discuss in “The Confusing Pursuit of Value Entitlement” in Chapter 4, is an ambiguous term and can be highly subjective. A primary responsibility for executives is to create value for the customer while increasing economic wealth for employees and shareholders—all at the same time! The capability of producing value is a prerequisite to growth, and pressure is mounting to increase the rate of value creation.

A simple equation for value is $\text{Value} = \text{Performance}/\text{Cost}$, where Performance loosely refers to the right type of results aligned with the organization's strategy. With this math, Value increases if the numerator goes up or the denominator goes down.

In some ways, executives feel boxed-in given that pricing is market-driven. They are realizing that profit margin management will require visibility and relentless management of costs. Total quality management will be essential for managing costs.

Productivity Paradox

To complicate matters, some companies that have been “reengineered” may have become leaner and smaller from downsizing, but not necessarily fitter. It may have helped them to survive, but they may still not have a distinct competitive or quality advantage. In many cases, you cannot simply remove bodies if you do not also reduce the work; otherwise service levels erode and deteriorate. In addition, the old methods and old systems usually remain in place. Management may have met some short-term objectives, but the surviving workforce is hopefully operating with the long term in mind.

As a result of these types of changes, so-called improvements in productivity do not always translate into a more profitable business. This has been referred to as the productivity paradox.

Some organizations have invested in improving processes that were not critical to their strategic success. Such processes may have been improved, sometimes dramatically, but they did not turn out to be sufficiently relevant to the organization's long-term performance and success. Process performance improvement, cost reduction, and the like are managerial terms, but they are not necessarily indicative of value added. Value is an economic concept. However, with an advanced managerial accounting system, increases or decreases to shareholder wealth can be traced to the changes in features, functions, and processes aimed at altering customer satisfaction.

In addition, simply being lean and agile will no longer be sufficient for success. Companies' success will depend on all the trading partners in their supply chains behaving similarly. Waste and redundancy created by interorganizational mistrust must be removed via collaboration. Ideally quality management can be a shared experience among trading partners and a basis for communications.

Why Is Traditional Accounting Failing Total Quality Management?

One of the obstacles affecting TQM initiatives, and other initiatives as well, has been the shortcomings of the financial accounting field. Part of the problem is the traditional emphasis of accounting on external reporting.

A significant reason why traditional accounting fails quality managers is that the initial way in which the financial data are captured is not in a format that lends itself to decision making. It is always risky to invest in improving processes for which the true cost is not well established, because management lacks a valid cost base against which to compare the expected benefits of improving or reengineering the process. Gabe Pall, in *The Process-Centered Enterprise*, states:

Historically, process management has always suffered from the lack of an obvious and reliable method of measurement that consistently indicates the level of *resource consumption* (expenses) by the business processes at any given time—an indicator which always interests executive management and is easily understood. The bottom line is that most businesses have no clue about the costs of their processes nor their processes various outputs.⁴

Another part of the problem involves attitudes. For some quality professionals, using quality to connect with the bottom line or with executive thinking may seem irrelevant or, worse yet, destructive. These quality professionals fear the danger of managers who myopically focus on short-term results.

In short, understanding the economic contribution toward increasing shareholder wealth from individual business processes is a significant concern for management. When the costs of processes and their outputs can be adequately measured financially, two things can happen:

1. The data can gain management's attention and confidence that they can depend on these managerial accounting data as reliable business indicators.
2. Management can more reliably assess the different worth of processes and how they contribute to the overall performance of the business.

Finally, another part of the problem is accountants and deficiencies with their financial accounting system. The accountants' traditional general ledger is a wonderful instrument for what it is designed to do: post and bucketize (i.e., categorize) transactions into their specific account balances. But the cost data in this format (e.g., salaries, supplies, depreciation) are structurally deficient for decision support, including measuring cost-of-quality (COQ). The accounting community has been slow to understand and accept this problem.

The quality professional's focus should be on the quality of cost as well as the cost-of-quality. That is, it is just as important to ensure that any money spent on the business produces its equivalent in value for the customer, and for the supplier's employees and shareholders, as it is to measure how cost is caused by poor quality. This is a before-investment view in contrast to an after-the-fact view.

The next section discusses the issues related to measuring the financial dimensions of quality.

Bring Facts, Not Hunches

To some people, it is obvious that better management of quality ultimately leads to goodness that in turn should lead to improved financial health of an organization. Perhaps some of these same people have difficulty imagining a bridge of linkages that can equate quality improvements with exactly measured costs or profits. However, for them this does not matter very much. These types of people operate under the belief that if you simply improve quality, good things, such as happier customers and higher profits, will automatically fall into place.

Other types of people prefer having fact-based data and reasonable estimates with which to evaluate decisions and prioritize spending. These types of people do believe in quality programs, but in complex organizations with scarce idle resources, they prefer to be more certain they know where it is best to spend the organization's discretionary money.

Some quality managers have become skeptical about measuring the COQ. They have seen increasing regulations and standards, such as the ISO 9000 series, where installing any form of COQ measurement was perceived as more of a compliance exercise to satisfy documentation requirements to become "registered" rather than a benefit to improve performance. A popular joke is: "What is the difference between a quality methodologist and a terrorist? Answer: You can negotiate with a terrorist."

Some perceive quality and cost as an investment choice, implying that there is a trade-off decision. This thinking assumes that achieving better quality somehow costs more and requires more effort. This is not necessarily true. If quality programs are properly installed, productivity can be improved while also raising customer satisfaction. These two combined eventually lead to increased sales, market penetration, and higher profits and returns.

Managers in the quality field have seen a number of quality programs and tools come along. Some have fallen short of their initial promise. The ISO 9000 series is the popular international standard. It addresses not only products and service lines but also the processes and policies of an organization. The benefits of the ISO 9000 accreditation included relieving buyers of redundant supplier assessments, expansion of assessments to the suppliers' suppliers, protection against product liability litigation, and a firm foundation upon which organizations could potentially further develop their quality development. However, a disadvantage of ISO 9000 is that it represents only a minimum standard, perhaps

insufficient to induce competitive-advantage behavior. Also, due to its being written in general terms, with a manufacturing origin, it is open to interpretation with ambiguities for service sector organizations. Some complain that ISO 9000 serves as a documentation tool with little extension to apply as a managerial tool.

Now Six Sigma is vying to exhibit staying power as a TQM program. Will it succeed, or is there an inherent flaw? Six Sigma is viewed as a paradigm shift in the quality arena. Veterans of quality management believe that quality just for quality's sake—meaning conformance to standard—is not good. This sounds paradoxical. Quality is obviously needed to capture and retain customers, but quality must also be applied to the business itself. Six Sigma ensures that there is emphasis on the conversion and the paperwork-related transaction processes as well. But Six Sigma goes much farther and also suggests consideration of the business' financial health.

A popular definition of quality preferred by Six Sigma advocates is: “Quality is a state in which *value* entitlement is realized for the customer and the supplier (i.e., employees and shareholders) in every aspect of the relationship.”⁵

It is predictable that there will be debates about trade-offs among shareholders, customers, employees, taxpayers, and the environment. The methods of COQ measurement will be useful to convert debates into agreements.

This new perspective acknowledges that investing additional capital intended to reduce defect rates will not be sustained unless shareholders and lenders feel assured of high-quality financial returns to them. In Six Sigma, financial figures to support manager proposals for projects are absolutely required. So, just like customers who demand utility-value, owners, investors, and lenders have a rightful expectation of profit-value and wealth creation.

This broader notion of quality is well beyond classic TQM. For producers, it is no longer enough to just make and deliver quality goods and services. A quality business must exist as well. The intent of Six Sigma is to refocus on business economics as the driver of quality improvements.

What Is Quality?

Before discussing the various costs of quality and how to measure them, one should have a definition of quality itself. To some *quality* might mean durability or richness in a product or a pleasurable experience. This is a “fitness for use” definition that relates to a customer's needs. In the 1980s a predominant supplier-oriented view defined quality as being a high conformance to the buyer's requirements or specifications, usually measured at the time of final product test. One of the risks of limiting the definition of quality to a supplier “doing things right” is that it can miss the customers' *real* needs and preferences.

More recently, quality has been considered from a customer satisfaction orientation to meet or exceed customer requirements and expectations. This shifts the view from the sell side to the buy side. There has been substantial research about customer preferences, both stated and subconscious, with elaborate survey ques-

tionnaires, diagnostics, and conjoint statistical analysis. For example, “food” may be a customer’s stated need, but “nourishment or a pleasant taste” are the real primary needs. A customer’s ultimate perception of quality involves many factors. In short, the universally accepted goals of TQM are lower costs, higher revenues, delighted customers, and empowered employees.

Impact of Poor Quality

Almost every organization now realizes that not having the highest quality is not even an option. High quality is simply an entry ticket for the opportunity to compete. Attaining high quality is now a must. Anything less than high quality will lead to an organization’s terminal collapse. In short, high quality is now a prerequisite for an organization to continue to exist. The stakes are much higher.

The quality techniques that have been applied in the past, however, are still relevant. One of leaders in the quality movement, Joseph M. Juran, has described managing for quality by using three managerial steps, called the “Juran Trilogy”:

1. **Quality planning:** translating customer needs into characteristics of products and service lines (e.g., quality function deployment analysis).
2. **Quality control:** measuring quality levels and comparing them against desired levels (i.e., removing *sporadic* deficiencies).
3. **Quality improvement:** implementing incremental improvements to attain better levels of control (i.e., removing *chronic* deficiencies).⁶

Figure 6.11 shows that each step leads to a result used in the next step.

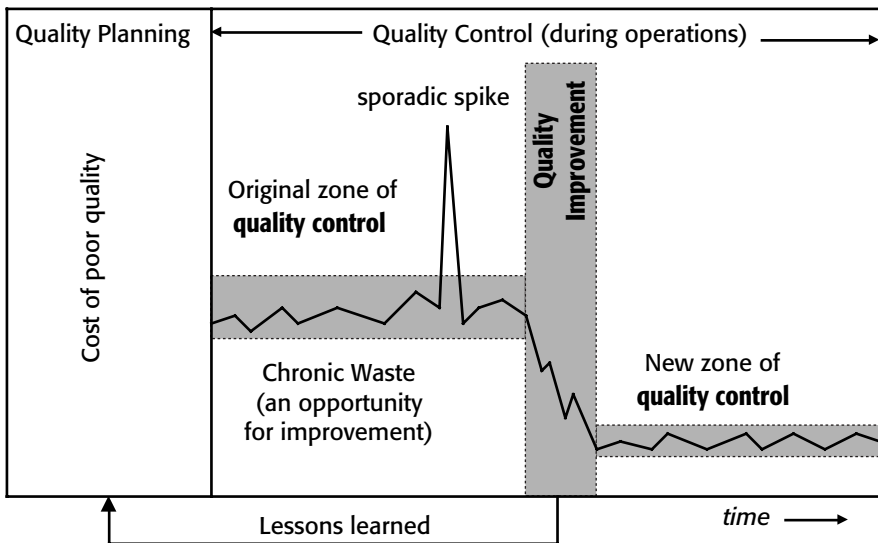


FIGURE 6.11 Juran Trilogy

Source: Juran's *Quality Handbook*, 1999, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

In the figure, *sporadic problems* are those that periodically occur and are dealt with shortly after they happen. In effect, the problem is quickly corrected until the process or off-spec output is returned to an acceptable level. Sporadic problems will likely continue to recur because the solution is usually more a bandage than a real cure.

Chronic problems, in contrast, have usually existed for an extended period of time and may be accepted or tolerated by the organization as known but unresolvable. Examples include poor communications or inadequate tools for workers. Employees are often resigned to the existence of chronic problems. They are undesirable but expected to persist because they have been subconsciously designed and planned into the processes and procedures.

Organizations tend to concentrate on sporadic problems because when they occur there is usually an adverse consequence, such as a customer complaint or a missed delivery date. But the fix may not necessarily be lasting. In contrast, the elimination of chronic problems requires greater effort. The solution may be the result of forming a project team that produces an innovative solution. The problem analysis will likely be more intent on truly understanding the root cause. When root causes of chronic problems are removed, improvements in performance and costs can be substantial.

In Figure 6.11, “Juran Trilogy,” sporadic problems can spike from an unplanned event, such as a power failure. Immediately following these events, teams troubleshoot and “put out the fire,” which restores the error level back to the status quo—the planned chronic level. The figure also reveals that after a quality improvement initiative addresses the process, the level of error is driven downward.

Another leader in the quality movement, W. Edwards Deming, advocated a similar and now well-accepted set of steps with his “Plan-Do-Check-Act” (PDCA) cycle, an iterative approach to achieving preventive and corrective solutions.⁷ Some now have reduced PDCA to a more simple “Do-and-Reflect.” Regardless of the quality techniques applied, financial measures will be increasingly relevant as organizations move from decisions based on instinct and intuition toward fact-based decisions.

Categorizing Quality Costs

To some people quality costs are very visible and obvious. To others, quality costs are understated; and they believe that much of the quality-related costs are hidden and go unreported.

There are several levels of non-error-free quality costs, as illustrated in Figure 6.12. In this book, I restrict my discussion of scope to the inner concentric circles, although there are additional quality costs.

Figure 6.12 begins to reveal that there are other hidden financial costs and lost income opportunities beyond those associated with traditional obvious quality costs. Examples of obvious quality-related costs are rework costs, excess scrap material costs, warranty costs, and field repair expenses. These typically re-

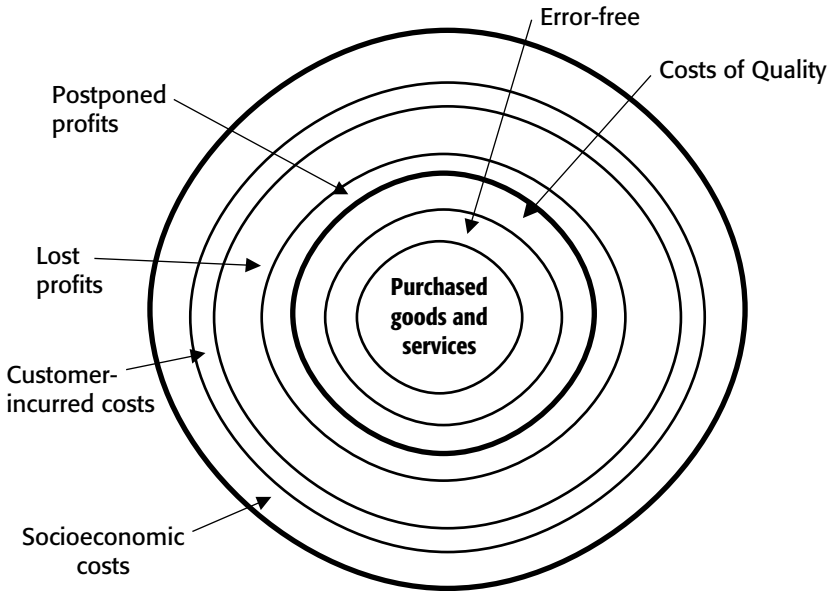


FIGURE 6.12 Levels and Scope of Quality Costs

sult from errors. Error-related costs are easily measured directly from the financial system. Spending amounts are recorded in the accountant's general ledger system using the "chart-of-accounts." Sometimes the quality-related costs include the expenses of an entire department, such as an inspection department that arguably exists solely as being quality-related. However, as organizations flatten and de-layer and employees multitask more, it is rare that an entire department will focus exclusively on quality.

The hidden poor quality costs, represented in the figure's outer circle, are less obvious and are more difficult to measure. For example, a hidden cost would be those hours of a few employees' time sorting through paperwork resulting from a billing error. Although these employees do not work in a quality department that is dedicated to quality-related activities, such as inspection or rework, that portion of their workday was definitely quality-related. These costs are not reflected in the chart-of-accounts of the accounting system. That is why they are referred to as *hidden costs*.

Providing employee teams with visibility of both obvious and hidden quality-related costs can be valuable for performance improvement. Using the data, employees can gain insights into causes of problems. The hidden and traditional costs can be broadly categorized as

- **Error-free costs:** costs unrelated to planning of, controlling of, correcting of, or improving of quality. These are the did-it-right-the-first-time (nicknamed "dirtfoot") costs.

- **COQ:** costs that could disappear if all processes were error-free and if all products and services were defect-free. COQ can be subcategorized as:
 - *Costs of conformance:* the costs related to prevention and predictive appraisal to meet requirements.
 - *Costs of nonconformance:* the costs related to internal or external failure, including detective appraisal work, from not meeting requirements. The distinction between internal versus external is that internal failure costs are detected prior to the shipment or receipt of service by the customer. In contrast, external failure costs result usually from discovery by a customer.

An oversimplified definition of COQ is the costs associated with avoiding, finding, making, and repairing defects and errors (assuming that all defects and errors are detected). Cost-of-quality represents the difference between the actual costs and what the reduced cost would be if there were no substandard service levels, failures, or defects.

Simple examples of these categories for a magazine or book publisher might be as follows:

<i>Error-free</i>	“first time through” work without a flaw
<i>Prevention</i>	training courses for the proofreaders; preventive maintenance on the printing presses
<i>Appraisal</i>	proofreading
<i>Internal failure</i>	unplanned printing press downtime; correction of typographical errors
<i>External failure</i>	rework resulting from a customer complaint

There are other quality-related costs depicted in the outer levels that are somewhat more difficult to measure but may be relevant in decision analysis. These additional concentric rings of costs are supply chain-related:

- **Postponed profits (current):** profits that could not be formally recognized during a specific financial accounting period because the goods and services did not satisfy all of the customer’s requirements. The impact is deferred cash inflow.
- **Lost profits (permanent):** the sales and profit opportunity permanently lost when a customer elects to switch to a competitor or substitute or no longer purchases due to a bad experience.
- **Customer incurred costs:** all of a customer’s COQ (plus postponed and lost profits from the customer’s customers) caused by the supplier’s nonconformance. Examples include the customer’s own rework, its equipment repair, or its tarnished name due to reduced service levels.

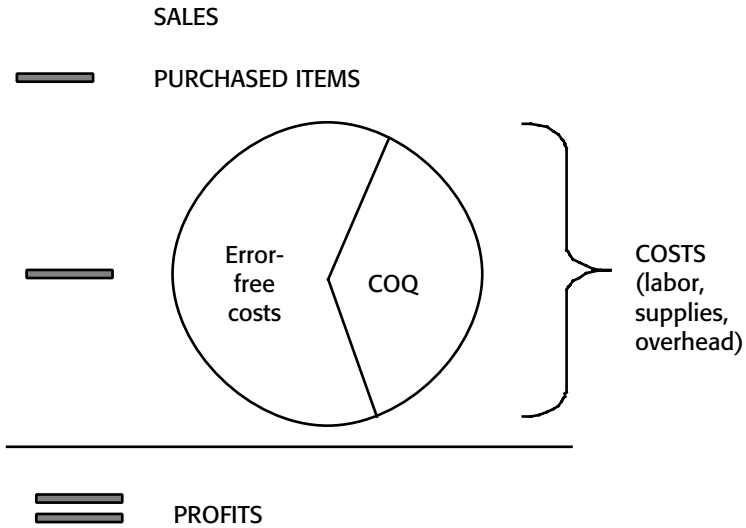


FIGURE 6.13 Sales, Costs, and Profits

Some people may argue that an additional level of socioeconomic costs exists where the public and community are affected, such as when an oil spill or pollution occur. This is represented in Figure 6.12 as the most outside concentric ring of costs.

Figure 6.13 uses a pie chart to portray, in financial terms, how an organization's sales, profits, purchased materials, and COQ expenses might exist in an organization. In principle, as the COQ expenses are reduced, they can be converted into higher bottom line profits.

Revisit Figure 2.26 (page 89). It illustrates how "attributes" can be tagged or scored into increasingly finer segments of the error-free and COQ subcategories. Attributes are tagged to individual activities for which the activities will already have been costed using ABC/M. Hence, the subcategory costs can be reported with an audit trail back to which resources they came from. Each of the subattributes can be further subdivided with deeper "indented" classifications.

Because 100 percent of the resource costs can be assigned to activities, 100 percent of the activities can be tagged with one of the COQ attributes since the activities have already been costed by ABC/M. The attribute groupings and summary roll-ups are automatically costed as well.

Life would be nice in an error-free world, and an organization's overall costs would be substantially lower relative to where they are today. But all organizations will always make some mistakes. They will always experience some level of errors. However, the goal is to manage mistakes and their impact. Cost-quality serves to communicate fact-based data—in terms of money—to enable focusing and prioritizing to manage mistakes.

As previously mentioned, unless an entire department's existence is fully dedicated to one of the COQ subcategories, or an isolated chart-of-account expense account fully applies to a COQ category, most of the COQ spending is hidden. That is, the financial system cannot report those costs.

A danger exists if only a fraction of the quality-related costs are measured and their amount is represented as the total quality costs—this is a significant understating of the actual costs. Unfortunately, there are as many ways of hiding quality costs as there are people with imagination. Organizations that hide their complete COQ from themselves continue to risk deceiving themselves with an illusion that they have effective management. ABC/M is an obvious approach to making visible the missing COQ amount of spending.

Benefits from Including Total Expenditures When Measuring Quality

Starting the measurement by assuming a 100 percent inclusion of the total expenditures, then subsequently segmenting those expenses between the error-free costs and the COQ:

- **Reduces debate:** With traditional COQ measures, people can endlessly debate whether a borderline activity is a true COQ, such as scrap produced during product development that may arguably be expected. Including such a cost as COQ may inflate a measure that is of high interest. By excluding it, that expense melts away without any visibility into all the other total expenditures of the organization. It can be tempting for controversial costs to be excluded as a quality-related cost category. By starting with the 100 percent expenditure pool, *every* cost will fall into *some* category and always be visible. Each type of cost can always be reclassified later on, as people better understand how to use the data.
- **Increases employee focus:** By developing classifications into which all costs can be slotted, organizations will hopefully focus much less on their methods of measurement and focus much more on their organization's problems and how to overcome them.
- **Integrates with the same data used in the boardroom:** When traditional and obvious COQ information is used, only portions of the total expenditures are selected for inclusion. This invites debate about arbitrariness or ambiguity. However, when 100 percent of expenditures are included, the COQ plus error-free costs exactly reconcile with the same data used by executive management and the board of directors. There is no longer any suspicion that some COQ has been left out or that the COQ data are not anchored in reality. By starting with 100 percent expenditures, the only debate can be about misclassification, not omission.

The capture of COQ can be further refined if it is worthwhile for the organization.

When making decisions, the universally popular costs-versus-benefits test can be applied with COQ data. If either subcategory of COQ is excessive, it draws down profits for commercial companies or draws down resources in government agencies that could have been better deployed on higher-value-added activities elsewhere.

Goals and Uses for the Cost-of-Quality Information

If an organization makes the effort to collect data, validate the information, and report it, it might as well *use* the information. In fact, to state the obvious, the amount of use of and utility in the information will be proportional to the length of life of the COQ measurement system. In short, the uses of a COQ measurement system can range from favorably influencing employee attitudes toward quality management by quantifying the financial impact of changes to assisting in prioritizing improvement opportunities.

The rationale for implementing COQ is based on the following logic:

- For any failure, there is a root cause.
- Causes for failure are preventable.
- Prevention is cheaper than fixing problems after they occur.

If you accept the logic that it is always less expensive to do the job right the first time than to do it over, the rationale and goal for quality management and using COQ to provide a quality program with concrete and fact-based data should be apparent.

Implementation involves the following steps:

- Directly attack failure costs with the goal to drive them to zero.
- Invest in the appropriate prevention activities, not fads, to effect improvements.
- Reduce appraisal costs according to results that are achieved.
- Continuously evaluate and redirect prevention efforts to gain further improvement.

Figure 6.14 illustrates the direction in which quality-related costs can ideally be managed. Ideally all four COQ cost categories should be reduced, but one may initially need to prudently increase the cost of prevention to dramatically decrease the costs of and reduced penalties paid for nonconformance. This makes COQ more than just an accounting scheme; it becomes a financial investment justification tool.

A general corrective operating principle is that as failures are revealed, for example via customer complaints, the root causes should be eliminated with corrective actions. A general rule-of-thumb is that the nearer the failure is to it being used by the customer, the more expensive it is to correct. The flip side is

ABC/M supports quality initiatives by allowing “ownership” of the process a level below departments—with work activities.

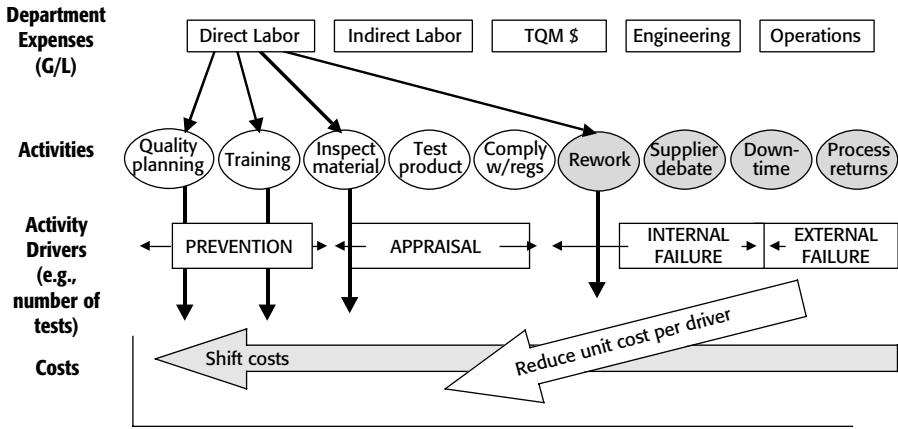


FIGURE 6.14 Driving COQ Downward

that it is less expensive—overall—to fix problems earlier in the business process. As failure costs are reduced, appraisal efforts can also be reduced in a rationale manner.

Quantifying the Magnitude of the Costs of Quality

The formal COQ measurement system provides continuous results. In contrast to a one-time assessment, it requires involvement by employees who participate in the business processes. More important, these employees must be motivated to spend the energy and time, apart from their regular responsibilities, to submit and use the data.

Commercial ABC/M software products were designed for frequent repeated updating. For such a COQ system to be sustained longer-term, the system requires senior management’s support and interest as well as genuinely perceived utility by users of the data to solve problems.

Regardless of the collection system selected, it is imperative to focus analytical and corrective time and energy on the area of failure costs. As Dr. Joseph Juran discussed in his highly popular article, “Gold in the Mine,” there is still much “mining” that can be performed.⁸ This mining should be considered a long-term investment, because failure costs, when starting a TQM program, usually constitute 65–70 percent of a corporation’s quality costs. Appraisal costs are normally 20–25 percent and prevention costs are 5 percent.

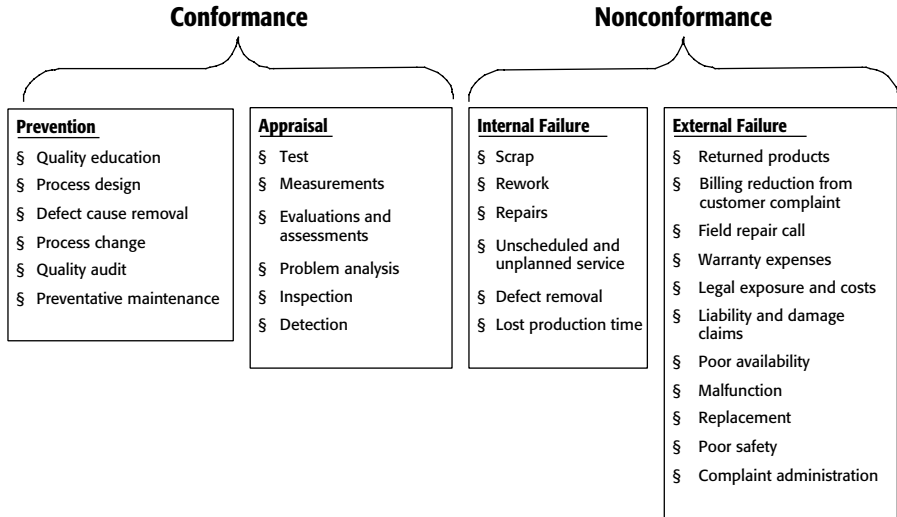


FIGURE 6.15 Typical Examples of Cost of Quality Components

Decomposing Cost-of-Quality Categories

In effect, the technique to calculate a reasonably accurate COQ is to apply ABC/M and ABC/M’s attribute capability. Figure 6.15 shows categories for work activities that are one additional level below the four major categories of COQ. This figure reveals how each of these subcategories can be tagged against the ABC/M costs. This provides far greater and reliable visibility of COQ without the great effort required by traditional cost accounting methods.

NOTES

1. *Pensées Philosophiques*, Book XXI (1746).
2. *Adopting and Implementing Shared Services*, 1999. In *Management Accounting Guideline* series, The Society of Management Accountants of Canada.
3. See White Paper, “ABC/M and Unused Capacity Management,” Library, www.abctech.com.
4. Gabe Pall, *The Process-Centered Enterprise* (New York: St. Lucie Press, 2000), p. 40.
5. Mickel J. Harry, “A New Definition Aims to Connect Quality with Financial Performance,” *Quality Progress* (January 2000), p. 65.

6. Joseph M. Juran, *Juran's Quality Handbook*, Fifth Edition (New York: McGraw-Hill, 1999).
7. Juran, *Quality Handbook*, pp. 41.3–41.5.
8. Juran, *Quality Handbook*, pp. 8.1–8.11.

ABC/M Integrates with Other Software Tools

“Type the field name Name in the Field Name field.”

—*Instruction in a software manual
awarded the worst-of-the-month*¹

INTRODUCTION

There are a perplexing number of software tools designed to assist managers, teams, and analysts. Some of these software tools became popular during the 1980s when business process reengineering (BPR) began to evolve. Business software tools fall into the following broad categories:

Transaction planning and processing—order management

Project management—project budget and schedule control

Economic analysis—financial projections

Product planning and design—from idea to launch to production

Process and profit improvement—organizational performance management

Figure 2.13 (page 62) shows three levels of software. ABC/M software resides in “analytical applications.” These tools are fed information from the transaction-intensive production systems. Many business production systems have a short-term planning component imbedded in them. For example, in manufacturing there is an advanced planning system (APS) that assists in short-term material ordering, production sequencing, and dispatching. ABC/M can provide some useful data for those modules, including order pricing for quotations. Although I find categorize ABC/M as an analytical software application, I recognize that the output of the ABC/M calculation engine is often the input to many other types of systems.

In “Project and Work Order Accounting versus ABC/M” in Chapter 6, I described how ABC/M supports and integrates with project planning systems. ABC/M supports financial projections and investment justification analysis to the

extent that cost rates are used. (Predictive costing is covered extensively in Chapter 8.) Financial institutions, including banks and insurance companies, rely on a multitude of financial projection tools to refine their products.

Regarding product development tools, ABC/M supports target costing, value engineering, and life cycle costing. In this book I focus mainly on how ABC/M supports strategic profit management and operational control and learning systems. I lump both of these into the broad category “process and profit improvement.”

Business Process and Profit Improvement Software Tools

Process and profit improvement software tools are designed to address process definition, modeling, analysis, evaluation, and improvement. Figure 7.1 is a framework that categorizes these different types of tools exclusive to process management. I thank Gordon Sellers, an excellent consultant with a big picture view, for helping me understand this landscape.

I do not defend this framework as being complete because information technology is not my area of expertise. However, the framework helps me to understand how tools support the cycle of change. That is, as transformation initiatives take place, there is a logical progression:

- **Diagramming:** In many cases, teams map their existing processes and assumptions
- **Analysis:** The next step is analysis of results, capacity, work, policies, forecasts, assumptions, strategy, and all the other elements involved with under-

Software allows representing and ultimately controlling.

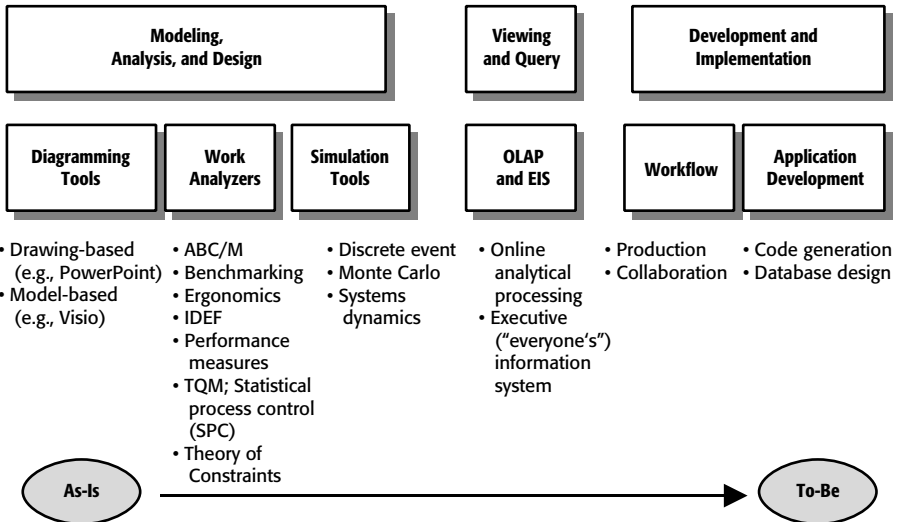


FIGURE 7.1 Taxonomy of Reengineering Software Tools

standing where you are and where you want to go. ABC/M software resides here. Software tools for economic analysis are also included here (although I also view them as a separate category of tool).

- **Simulation:** In some cases, interdependencies are so complex that simulation tools are used to experiment using a computer rather than the real world.
- **Viewing:** The output of analytical tools can be overwhelming. Online analytical processing (OLAP) applications allow for looking at data from multiple dimensions.
- **Workflow:** The back room administrative functions, such as customer order entry, are now viewed as an “information factory” that processes and moves data similar to the way in which physical factories manufacture and assemble parts. Software tools support workflow and document flow.
- **Application Development:** The programming of software continues to evolve as object-oriented thinking introduces previously unimagined methods of structure and conservation, allowing for more efficient systems building and re-use of old code. From this stage, automated systems are deployed.

In short, some improvements begin when managers simply view charts and graphs that reveal a divergence in where they are and where they are expected to be. The use of graphics, such as pie charts and histograms, is now routine for quickly communicating information. The diagramming tools lead to the work analyzer tools because work activities are the focus of reengineering projects. Outside of process reengineering, analytical tools, there are other analyzers, such as customer demographics, that play a role in strategic profit improvement. Simulation tools are beginning to gain acceptance. The output of these tools often is exported into the viewing tools (e.g., OLAP).

After modeling and analysis, the software development and implementation software tools kick in to operationalize the new scheme. Some of these include workflow and documentation systems. Of course, the output of the production software systems ultimately is fed back into the modeling tools to monitor performance and increase people’s understanding.

Multidimensionality: Product/Customer/Channel/Location Costing

The advent of sophisticated ABC/M calculation engines has enabled organizations to look at their activities from a variety of dimensions. Multidimensional analysis has been enabled by technical advances in OLAP tools.

Dimensions are collections of activities and business processes that relate to different cost objects. The obvious common cost objects are product costs, service line, costs, customer costs, costs through different distribution channels, location costs, and business process costs. In government agencies or military forces cost objects can include services, service recipients, geographic locations, and programs. Although when it originated in the 1980s ABC/M emphasized product costing, as is now apparent, the emphasis has expanded to other dimensions.

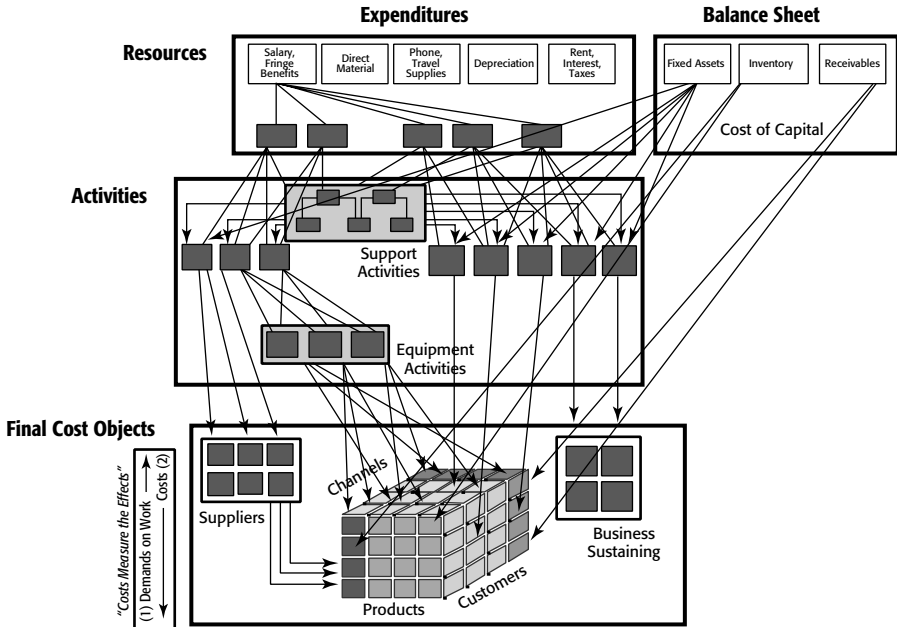


FIGURE 7.2 ABC/M and Multidimensional Views

How can we analyze these diverse data? Figure 7.2 shows how advanced software tools can combine data to allow multiple combinations and summaries of the same information. The figure recasts the ABC/M Cost Assignment Network; in place of the “predator food chain” that reflects sequential cost object consumption, multidimensionality allows simultaneous views.

Many ABC/M advocates believe that it is easier to obtain top management’s interest in ABC/M by asking them if they are interested in knowing answers to questions they worry about:

- For government officials: Where are we with respect to meeting our mission relative to our resources?
- For private sector executives: Which customers were profitable, and which were not? For example, in the health care industry, patients come from a variety of sources. These sources include physician referrals, retirement homes, HMOs, PPOs, and indigents. The cost of providing service to patients from these different sources can vary greatly. Unless the provider understands those different costs, it could bid incorrectly for additional business.

As organizations experiment with the Internet and multiple approaches to marketing (e.g., direct sales, distributors, wholesalers, representatives, telemarketing, direct mail, and joint ventures), it becomes increasingly important to understand the costs of marketing through those different distribution channels.

Geography may make a difference. Service industries and manufacturing can have very different costs for providing services and products in different states. Competition, pricing, environmental laws, state regulations, workforce compensation and productivity, and taxes can vary greatly. Unless organizations understand those costs, they can make incorrect location and marketing decisions. For example, manufacturers often outsource products that have a small amount of direct labor cost to foreign countries with lower wages. They often ignore the activities required to support international operations, such as customs and tariff processing, that in turn can negate any savings from a lower wage rate. Multidimensionality makes it easier to view and understand the cost structure. It adds another tool to the analytical suite.

Unleashing Productivity Growth

The improvements in managerial accounting methods and its shift toward decision from being an accounting police tool are good, but they alone will not be sufficient to have a major impact on improving the organization's performance. However, there is a considerable advantage to combining the ABC/M accounting data with the computer horsepower to calculate both profit margins, if applicable, and costs, to produce information for needy end-users and decision makers.

Recent debates about low rates of productivity growth include prognostications that the global economy is about to witness an economic surge. *Prosperity: The Coming 20-Year Boom and What It Means to You*,² two *Wall Street Journal* correspondents argue that so-called failed promises from software automation will be vindicated. They argue that during the next 20 years, computerization will finally deliver its long-awaited productivity payoff.

In one sense, computers and the information technology revolution are where electricity was at the beginning of the twentieth century: a nifty new technology, but not used well enough to affect productivity. It was not until the 1920s that electricity produced sizable productivity gains. For example, shaft-and-belt systems (yesterday's mainframes) were slowly yielding to individual electric motors (desktop PCs today), and Thomas Edison was marketing new products that were not really ready for widespread use. But slowly electricity became a part of daily life instead of a novelty. Soon manufacturers were churning out affordable washing machines and automobiles for the masses.

In sum, it takes decades for technology to produce productivity and eventually prosperity. Today's business information systems are nearing the end of their choppy start-and-stop relation with tangible benefits. And ABC/M will serve as one of the key lubricants that generate the results.

ABC/M provides immeasurable value when it reveals true costs of past time periods. Managers and employees infer things from its insights. Decisions are made. However, for some decisions an analysis requires estimates of the *future* costs, not those that happened in the past. All decisions take place in the future. The next chapter discusses cost forecasting methods, including activity-based

planning and budgeting (ABP/B). In Chapter 8 I tackle the great opportunity for ABC/M to shine, not as an analyzer of history but as a predictor of future expenses and costs.

NOTES

1. Winner chosen by Corecomm, a Houston, Texas-based technical writing company, April 1996.
2. Bob Davis and Tom Wessel, *Prosperity: The Coming 20-Year Boom and What It Means to You* (New York: Times Books, 1999).

Predictive Costing, Predictive Accounting

“There are in fact four very significant stumbling-blocks in the way of grasping the truth, which hinder every man however learned, and scarcely allow anyone to win a clear title to wisdom; namely, the example of weak and unworthy authority, longstanding custom, the feeling of the ignorant crowd, and the hiding of our ignorance while making a display of our apparent knowledge.”

—Roger Bacon, *English philosopher*¹

INTRODUCTION

Internet Forces the Need for Better Cost Forecasting

Electronic commerce (e-commerce) and business-to-business (B2B) are shifting power to the buyer from the seller. With the emergence of “exchanges and portals” and e-bidding and spot-purchasing, suppliers are discovering that they must dynamically quote prices, ideally knowing the profit margin impact. Buyers will not wait days or hours for a quote. It must be at Internet speed. This is bringing pressure to bear on suppliers to have a rule-based predictive cost estimating engine and modeling to test various assumptions.

Information technology computing power has now made it possible for business analysts and planners to apply advanced methods to estimate the costs for alternative decisions. These methods provide more accurate answers than traditional cost estimating methods that often simply extrapolate historical cost rates. However, these advanced cost estimating methods come with a price: They require a greater administrative effort.

People who have been exposed to the new methods are asking:

- At what point would I switch to the more advanced method?
- How much of a difference in results is there between methods?
- How much error will I incur if I do not switch?

In anticipation of debate, which will be fueled by software vendors who are adding stronger predictive functionality, more research is now needed that will:

- Describe, compare, and contrast the various cost estimating methods;
- Define when each is applicable (as well as not justified); and
- Describe the conditions and circumstances under which one would switch to a higher-cost, higher-accuracy cost estimating method.

The three cost estimating methods that are now possible, due to computing power, are activity-based budgeting and planning (ABB/P), process simulation-based predictive costing, and Theory of Constraints (TOC) throughput accounting.

In this chapter I first address the shortcomings of traditional budgeting. One of the popular solutions advocated to fix traditional budgeting is activity-based budgeting (ABB). However, as you dig deeper into understanding budgeting and planning, you will discover that you have actually entered into a much broader world of forecasting. Forecasting includes cost estimating, presumably linked with projections of demand. Therefore, after I discuss the problems with traditional budgeting, rather than immediately describing ABB as the only solution, I backstep to tack a broader view. I describe the background of the TOC and how it is applied to projections and decisions. Activity-based budgeting and its companion, activity-based planning (ABP), which are now popularly combined as ABB/P, are addressed in the discussion of TOC.

Traditional Budgeting: An Unreliable Compass

Activity-based budgeting and planning is a better approach to forecasting the location and level of resources and budgeted expenditures than traditional budgeting. It recognizes that the need for resources originates with a demand-pull triggered by customers or end-users of the organization's services and capabilities. In contrast, today's traditional basis for budgeting tends to extrapolate the level of resource spending from the past. Figure 8.1 presents a farcical view of "spreadsheet budgeting" that is not too far from the truth for some organizations.

A problem with spreadsheet budgeting is that the past is not a reliable indicator of the future. This approach simply takes last year's expenses plus a small amount for inflation. This method implies that the budget process starts with the current level of expenses; however, today many managers believe that the budget should flow backwards from the outputs. Activity-based budgeting in effect does flow backwards. It logically assists in determining what levels of resources are truly required to meet the future demands placed on an organization.

Activity-Based Costing as a Foundation for Activity-Based Budgeting and Planning

As activity-based costing moved into the early 1990s, some companies began leveraging the activity cost data for more operational purposes to change and

	a	b	c
1		Current Year	Budget Year
2	Wages	\$ 400,000.00	Formula = Column B * 1.05
3	Supplies	\$ 50,000.00	
4	Rent	\$ 20,000.00	Copy down
5	Computer	\$ 40,000.00	
6	Travel	\$ 30,000.00	
7	Phone	\$ 20,000.00	
8	Total	\$ 560,000.00	

FIGURE 8.1 Spreadsheet Budgeting

Source: John Antos, The Value Creation Group. Used with permission.

manage the same activity-based costing-calculated activity costs that were accumulating in their product and service line costs. People referred to this use of the data as activity-based management, or ABM. As is typical with new management techniques, early trials with activity-based costing and ABM sometimes fell short of expected results or even failed altogether. Some industry leaders in accounting even proclaimed that activity-based costing was an inappropriate method and tool.

But organizations and companies that passionately believed in the activity-based costing data forged ahead because they saw little hope from perpetuating their decision making using their existing traditional data. They discovered that their personal computer-based activity-based costing models were useful for modeling their cost behavior.

In the late 1990s the more mature and advanced activity-based costing users increasingly began using their activity costs and the activity-based costing-calculated unit cost rates for intermediate work outputs and for products and services, as a basis for estimating costs. Popular uses of the activity-based costing data for cost-estimating have been calculating customer order quotations and doing make versus buy analysis. The activity-based costing data were being recognized as a predictive planning tool. It is now apparent that the data have a tremendous amount of utility for both examining the “as-is” current condition of the organization and achieving a desired “to-be” state.

Budgeting: User Discontent and Rebellion

Why is there increasing interest in ABB? In part the interest is due to increasing problems with the annual budget process, and not just because individuals are not getting the approval for funding they want. They are disturbed by the budgeting

process altogether. There is great cynicism about budgeting. The other reason for discontent is that people sense that a better way to budget exists.

Often when there is a substantial change in a management technique, it stems from a combination of dissatisfaction with the current methods and a vision of what a replacement method looks like. With ABB/P we have both conditions present.

Why are managers and employees cynical about the annual budgeting process? They find the process is too long, too detailed, and excessively burdensome. In addition, they view budgeting as a political game that still usually results in some departments being over-funded while others continue laboring as have-nots. This latter group of workers toils without relief. With organizational downsizing senior management has often removed the bodies, but they have not taken out the work. Across-the-board percentage cuts in manpower, some of the slash-and-burn variety, are likely to cut into the muscle in some places while still leaving excess capacity in others. Figure 8.2 contains some sarcasm about traditional budgeting in the form of a check-the-box survey.

Fortunately there is a vision of what a better way of budgeting looks like. But a better way for what purpose, and for whom? Fundamentally we need to understand what purpose a budget serves. The typical impression most people have is that the budget is a set of predetermined spending limits defined in such a way that if everyone roughly spends what was allotted to the department, the estimated total spending for the organization will be reasonably achieved. The purpose of that kind of budget thinking is as a control tool, not an analytical and allocation tool. Don't exceed your spending limit or you'll get your hand slapped by the accounting police. "You took two more airline flights than planned. Explain why."

The broader purpose for a budget should be to predetermine the level of resources that will be required, such as people, material, supplies, and equipment, to achieve an expected or desired amount of demand for employee services—meaning demands for their work. Activity-based budgeting advocates are interested in the notion of "resource requirements" as being the result, not the starting point. They want to be able to first estimate oncoming customer and management demands, then estimate the "supply" of resources, in terms of cost, that will be needed to match that supply with the work demands. In short, ABB advocates want to reverse the traditional budget equation and start with the expected outcomes, not with the existing situation.

Weary Annual Budget Parade

There are many criticisms about the use and development of budgets. Some organizations are saying they want cost management, not budget management. In fact, they believe their organization will never budget manage its way to cost management. Why do organizations bother to budget? What are the origins of budgeting? The simple answer is that business owners and senior managers have always desired some form of control to responsibly match actual spending with planned funding for expenditures.

Our budgeting exercise . . .

- is a death march ... with few benefits.
- takes 14 months from start to end.
- requires two or more executive "tweaks" at the end.
- is obsolete in two months due to reorganizations or competitor moves.
- starves truly needed spending with excess funding elsewhere.
- caves in to the "loudest voice" and "political muscle."
- rewards veteran sandbaggers who are experts at padding.
- is over-stated from the prior year's "use-it-or-lose-it" spends.
- incorporates last year's inefficiencies into this year's budget.
- provides lifetime security for our budget analysts to perform variance analysis with all the subsequent forecast updates.
- focuses much less on "what should we be doing?" and much more on "how much are we doing what we did?"
- demotivates managers when targets are too easy or too tough.
- could get better results if managers signed fewer POs.
- is a trap for the young and naïve who have yet to learn how to negotiate to pad and "sandbag" for the unexpected.

FIGURE 8.2 A Quiz: Check the Boxes

Historically, the most convenient way to restrict managers from improper spending and to prevent excesses or abuses was to start with the official financial reporting mechanism and structure, the fund accounting system for the public sector or the general ledger for commercial companies. The fund accounting and general ledger systems track spending (and report the profit-and-loss picture for commercial companies). These ledger systems disaggregate the organization's spending accounts into their constituent parts, called *natural cost elements*. These ledger systems are also conveniently structured by the organization's departments, which in turn are usually further hierarchically disaggregated again and again into cost centers. When these two are combined, the accounts and the cost centers are hardened into a coding scheme called the account/cost center. By assigning spending targets using the same classifications as the actual financial

reporting, namely the ledger chart-of-accounts, the budget effectively mirrors total organization-wide financial spending and funding.

With hindsight, we now realize that the fund accounting and general ledger system, as well as their derivative budget, are a mirror of the organization chart, not of business processes. Yet the processes are what actually deliver value to service recipients and customers. Worse yet, the budget has no visibility to the “content of work.” The budget also has no provisions to logically determine how external or internal cost drivers govern the natural levels of spending caused by demands on work from those cost drivers. Traditional budgeting is done more by push than by pull.

Following are additional observations about traditional budgeting, some of which appeared in the survey quiz:

- Low cost is a dependent variable; low costs are the result of doing other things well. You cannot budget your way into low-cost operations. Budget management and cost management are not synonymous.
- Budgets are useful for organizations that are stable and in which senior management does not trust the organization to intelligently spend money. Both of those conditions are invalid today.
- The budget should reflect strategies. Strategies should be formulated at two levels. First, the diversification strategy level answers, “What should we be doing?” Second, the operational strategy level asks, “How should we do it?” Unfortunately, most of the effort is spent on the latter question, and companies become preoccupied with simply finishing the budget, which by that time may be disconnected from the strategy.

In response to rising awareness, leaders will be moving away from silo planning to process-based thinking and enterprise demand planning. A typical organization spends about three months developing its operational budget every year! Public sector organizations are probably similar. The irony is that the budget is typically wrong the day it is “frozen.” A better way to budget will consolidate what is today an extremely fragmented and disjointed exercise.

ABC/M as a Solution for Activity-Based Budgeting and Planning

Although many organizations recognize the problems with traditional budgeting and acknowledge their dissatisfaction, there has been little action taken to mend matters. But ABC/M provides hope.

Activity-based costing mechanics effectively model the resource consumption rates and patterns of an enterprise on a cross-functional basis that focuses on work activities. Therefore, ABC/M-type budgets can be regenerated at periodic intervals based on estimates of the quantities of activity drivers in combination with the precomputed historical cost rates for the activity drivers.

The attraction of using ABC/M data to generate ABB/P is a natural. Managers want to plan their resources by examining what future forces are coming at

them, which in turn will require calculable levels of people and supplies. These forces come in the form of volumes and quantities of activity drivers that cause work. It is true that activity drivers have their own cost drivers of a higher order. ABC/M relies on the lower order activity drivers that are the measurable outputs of the work activities. Managers will need to determine how the root cause and higher order drivers influence the volumetric driver quantities used in their ABB/P projections. But regardless of how they translate the future forces into the level of work and supplies required to match demand, managers want to solve for a valid level of resource expenses using logic, not politics.

In the 1980s financial planners, particularly in the U.S. federal government, experimented with a precursor to ABB/P, zero-based budgeting (ZBB). Managers' instincts then were similar to what they are today. They suspected it might be better to imagine a budgeting process in which each department begins its budget thinking with a clean slate, as if it were just starting up new and staffing the department from scratch. What resources would the department need next year if it had no idea what it had last year?

However, as with most new programs, timing is everything when it comes to making major changes in management techniques, and the timing was not right in the 1980s for successful ZBB. Cost pressures were not as significant then as they are today. In addition, the software modeling tools and good ready-to-use measured activity driver cost rate data were hard to come by. Those conditions have now changed for the better. Many organizations have had their ABC/M systems implemented and routinely recalculated for several years. The more advanced and mature ABC/M users have already constructed reasonably good activity-based costing models. These models represent their cost structure and cost behavior. The timing and conditions are now suitable for change.

Activity-Based Cost Estimating

The advanced and mature ABC/M companies are interested in predictive planning and cost estimating for reasons other than just better budgeting. Managers are faced with numerous trade-off decisions. Should I add more warehouse space or ship direct? As previously discussed, the traditional chart-of-accounts costing view makes it difficult to compute how expenses and costs vary with changes in external and internal demands. Costs vary at the level of work activities, not at the department level.

Advanced and mature ABC/M users are now interested in using ABC/M as a superior basis for estimating costs. Cost estimating is the large umbrella under which ABB/P lies along with other reasons to project future costs, such as quoting customer orders, determining to make versus buy, or capital investment justifications. The major factors in categorizing these various predictive uses of activity-based costing data for cost estimating are the planning time horizon and the scope of the enterprise that is affected by decisions resulting from the data. Figure 8.3 shows how these various types of predictive uses of forecast input data

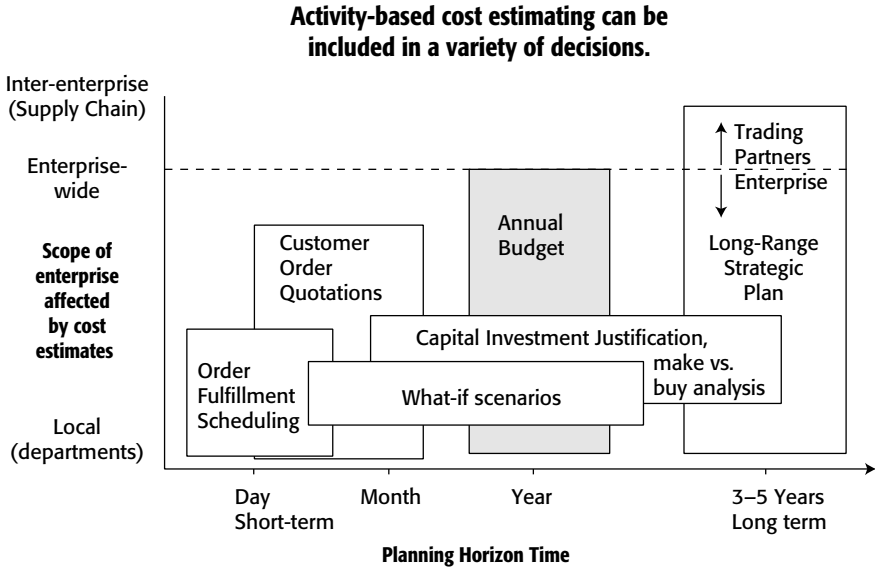


FIGURE 8.3 Predictive Uses of ABC/M Data

relate to horizon time and scope. Activity-based budgeting is the shaded portion of the figure that covers the 12-month fiscal period and is enterprise-wide.

Cost estimating is often referred to as what-if scenarios. Regardless of what one calls the process, we are talking about the fact that decisions are being made about the future, and managers want to gauge the consequences of those decisions. In these situations, the future is basically coming at us and in some way the quantity and mix of activity drivers will be placing demands on the work that we as an organization will need to do. The resources required to do the work are the expenses. Assumptions are made about the outputs that are expected. Assumptions should also be made about the intermediate outputs and the labyrinth of interorganizational relationships that will be called upon to generate the expected final outcomes.

Activity-Based Budgeting and Planning Solution

ABC/M directly relates the consumption costs of work to customer-driven demands. The traditional budgeting method relies on managers to mystically translate all of this into the required number of people needed and their associated materials and equipment needs. That method has no link for how future demands translate into the needed resources. Figure 8.4, “The Need for ABC and ABB,” expands on Figure 1.1 (page 5). Planners for direct and recurring resource expenses almost always begin with estimates of future demand. Then, by relying on standards and averages (such as routings and bills-of-material in manufacturing), the planners calculate the future levels of manpower and resources.

A key to understanding both ABC and ABB is to understand how cost behavior truly varies in relation to other factors.

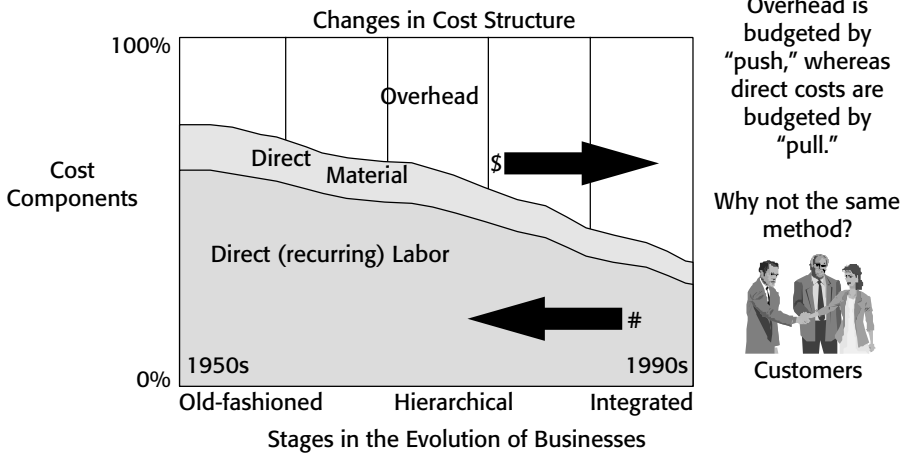


FIGURE 8.4 The Need for ABC and ABB

All that ABB/P is suggesting is that the same approach for projecting direct labor and direct material should be applied to the indirect and overhead areas as well or to business processes where the organization prior to ABC/M had the misimpression that it had no outputs.

Early Views of Activity-Based Budgeting and Planning Were Too Simplistic

Initial thoughts about ABB/P were fairly simplistic. Analysts appreciated the fact that given an ABC/M model, they were now provided with the truly variable costs in a format and structure that were liberated from the structural deficiencies of the general ledger. Analysts not only had the activity costs cleanly isolated (i.e., translated) from the organization chart, they also now knew the activity driver cost rates, those ratios that related the cost of a work effort to a single unit of output.

Unfortunately, early attempts by the commercial ABC/M software vendors in the late 1990s led to their embarrassment. They released versions of their ABC/M software that basically calculated ABC/M backwards. That is, they simply accepted estimates for quantities of the activity drivers and multiplied them by the activity driver cost rates that had been calibrated from the past representative periods of time. This form of extrapolation can work when the volume and mix of the driver quantities of the future are very similar to those of the past. It can also work when what is being estimated will only have a relatively small impact on the total enterprise’s costs, such as a quotation for a new customer order.

A single customer order in a sea of thousands of orders may be imperceptible, yet each and every order would hopefully be profitable. In Figure 8.3 the cost estimating used for price quotations can fall into a planning horizon from a few days to a year.

However, when the volume and mix of future driver quantities significantly differ from the past, the organization will begin to drift toward not having enough skill sets and resources for what it needs and concurrently having too much of what it does not need. Usually, an organization will add the new needed resources (or suffer serious degradation in its service levels) and not remove (e.g., lay off employees) the excess resources it does not need. The net effect is that the “rates” that were calibrated from the past, if applied to the future, will underestimate the true cost. But by how much?

As a result of this recognition that there may be conditions in which ABB/P can be better than traditional budgeting but provide a less-than-perfect answer, we need to broaden the discussion to include general cost estimating, of which budgeting is only a subset.

THROUGHPUT ACCOUNTING VERSUS ACTIVITY-BASED PLANNING

Theory of Constraints Causes New Thinking

Businesses, not-for-profit organizations, and governments are increasingly scrutinizing how they make managerial decisions. The margin for error continues to narrow. New questions and challenges are surfacing about how financial accounting systems provide a basis for making better managerial decisions.

Most managers and teams rely on internally generated managerial accounting data to support their decision making. They have questions and concerns regarding the accuracy and relevance of various internal accounting data and the usefulness of the data for decisions. Often the managers and teams adjust the accounting data to remove distortions and compensate for the deficiencies in the method being used to calculate the costs. ABC/M resolves most of the accuracy and distortion problems.

Theory of Constraints introduces additional ways to think about resources, expenses, costs, and profits. The concepts and principles of TOC stimulate alternative ways to think about evaluating decisions. These alternatives may result in different conclusions than when applying traditional managerial accounting techniques, such as absorption costing (including ABC/M) or product costing. Theory of Constraint uses a method called *throughput accounting*. In this section I discuss in detail cost forecasting and the implications that TOC has for traditional managerial accounting.

This section begins with an overview of TOC. Then it briefly compares and contrasts TOC thinking with the ways in which popular managerial accounting methods are used to support managerial decisions, mainly ABP. The intent here is not to create controversy but to reveal two perspectives that represent the be-

havior of what basically is a single entity: an organization, its outputs, its spending, and its funding or revenues. The chapter concludes with a brief description of how ABC/M can integrate with process simulation software tools.

What Is Theory of Constraints?

Theory of Constraints is a holistic approach to management thinking. It constructs and communicates common-sense solutions. It is based on the fact that there are systemic interdependencies in organizations and that very few factors (perhaps only one) determine the performance of the entire organization operating as a whole system. Theory of Constraints addresses a nagging concern of organizations—the inability to know the true impact of a change or an improvement from an overall system perspective. That is, when a decision is acted upon, how does anyone know with confidence whether the organization will in fact receive net positive benefits?

Theory of Constraints also concerns itself with global operational measures. It holds that to avoid sub-optimization, any measurement of the impact of a “local” or “subsystem” decision should also be measured against the global goal attainment.

The heart of an overarching controversy is that TOC recognizes that any system has dependencies. Managerial accounting substantially relaxes consideration for dependencies, and at an extreme ignores them altogether. From a historical perspective of an organization’s spending, managerial accounting applies absorption costing that serves to assign the expenses to components, parts, and products served by the system.

Theory of Constraint’s focus is on the future, not the past. Its emphasis is on the whole system, not its parts. By ignoring system dependencies, TOC advocates claim that traditional accounting can lead to inferior decisions compared to TOC. This includes decisions that might inadvertently reduce profits, not increase them. As a result, TOC discredits traditional accounting as unreliable for decision making.

Supporters of managerial accounting defend their assignment of historical costs. Their reasoning is that regardless of all the complex interdependencies, once a time period has ended, the interdependencies that did exist have all been permanently baked into the outcomes, often stated as products or services for customers. The accountants see part of their role as measuring the costs of the outcomes. By analyzing the past, changes can be made for a better future.

Management accountants are uncomfortable with TOC’s total rejection of product costing. They ask the following questions:

- If TOC does provide an answer superior to absorption costing, how significant is the difference?
- What then are the conditions or restrictions under which traditional accounting’s validity begins to erode?

- Has my traditional managerial accounting *always* been invalid for measuring past costs and for decision making?

Advocates of TOC are troubled by accountants' cost allocation practice of applying overhead expenses to outputs. They have three main concerns:

- 1. Product and service-line costing:** TOC advocates believe that the direct costing of labor expenses and the allocation of indirect plus overhead expenses is inappropriate and not applicable to drawing conclusions about performance or for making future decisions.
- 2. Utilization and efficiency reporting:** TOC advocates report evidence that measuring the productivity of a local work center without regard to its impact on the total system inadvertently motivates undesirable behavior. In short, managers and workers are motivated to make excess output ahead of its scheduled need. This "local efficiency syndrome" behavior, although appearing to be capable of improving productivity, can be counterproductive. As mentioned, TOC holds that any measures of improvement in productivity levels should only be measured on a global basis, not at a level of a department, function, or process.

Advocates of Theory of Constraint believe that efficiency reporting of resources is contrary to just-in-time (JIT) and demand-pull replenishment-style managerial thinking. It can fill up a facility with unneeded congestion. According to TOC, absorption costing leads to "local" sub-optimal rather than global improvements. Advocates claim that, "Cost accounting is enemy number one of productivity!"

- 3. Introducing interactive constraints:** The role of excess and available spare capacity is critical to TOC. It serves somewhat like a lubricant, but it also keeps any near-constraints at a safe distance from threatening to replace the acknowledged constraint. Near-constraints are those resources that could potentially replace the existing system physical constraints due to a change in conditions (e.g., a surge or spike in a demand for a product). An unexpected and unplanned switch to another physical constraint is bad news, even for well-run TOC environments. Non-TOC organizations lose stability, and often control, of their operations because of what TOC terms interactive constraints. This occurs if a number of physical resources are loaded too close to their maximum capacity at the same time, or if the market demand cannot be satisfied. Advocates of TOC believe that absorption costing data introduce the risk of decisions that produce interactive constraints.

This condition often occurs when managers attempt to "balance the load" and remove the protective capacity of the nonconstrained resources; that protection is designed to serve the subordination process for the constraint. In TOC thinking, when managers attempt to balance workloads and trim unused capacity they are potentially doing more harm than good. The nonconstrained resources lose their ability to handle fluctuating demand and therefore cannot properly subordinate to the constraint. When a resource

cannot (or will not) subordinate, it then also becomes a constraint, and consequently it interacts with the existing constraint. The drum-buffer-robe (DBR) scheduling rhythm that was in place then loses its steady drumbeat.

Interactive constraints limit the system's global performance to well below its potential capacity. Even if the problem of interactive constraints is recognized very soon after they occur, the shock waves are difficult, time consuming, and very expensive to deal with, often resulting in a situation that tends to progressively deteriorate before it improves again.

Understanding the issues that exist at the common intersection of TOC and managerial accounting data—and resolving them amicably—reduces the conflict that results from having two separate financial measurement systems. The presence of two separate accounting systems will adversely affect an organization's internal communication and cooperation, particularly between financial and operational employees.

In my opinion, the TOC community continues to use financial accounting, and ABC/M in particular, as an innocent victim to demonstrate TOC's needed paradigm shift to gain managers' attention. They should figure out an alternative way to build their case. Theory of Constraints can stand on its own merits, and attacking accountants is not the most professional way of paving the way for one's ideas.

Objective of Theory of Constraints

The objective of TOC is to maximize a goal, which is frequently described as realizing higher profits. The fundamental message of TOC is that constraints establish the limits of performance for any system. (Most of the time, the constraint is external to the organization, specifically, market demand being less than the organization's productive capacity.) Theory of Constraint focuses its attention on first managing and then removing this limitation. When constraints are removed, the organization moves to a higher level of goal attainment. An example of the impact of removing a constraint is that the amount of product or service sold can be increased. Therefore, more revenue can be generated, usually with only nominal extra expense and there will be a higher profit.

Theory of Constraint is appealing because it simplifies managing by concentrating on only the vital few aspects that matter. It demonstrates that it is not always necessary to break the constraint(s) but merely to manage constraints well. By relentlessly focusing on identifying and exploiting the system's constraint, TOC serves as an ongoing improvement process.

One of TOC's guiding principles is to, "Manage the flow, not just the capacity level." By using better scheduling of piecework production, a system can potentially produce relatively more total output when compared with the traditional approach of always adding overtime or buying extra equipment or workers. The TOC method of scheduling protects a physical bottleneck, if present,

from any downtime due to temporary starvation from lack of or late upstream materials.

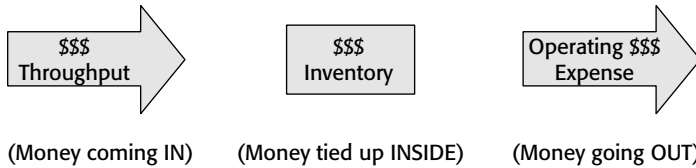
Scheduling in TOC is called “buffer management.” It acts as a shock absorber to allow for uncertainties resulting from delays and unplanned events and to accommodate variability in the system. Theory of Constraint provides scheduling rules using a DBR analogy to assist in understanding how to perform buffer management. An oversimplified description of DBR is that the constraint is viewed as a drumbeat, and the entire facility (i.e., the system, products, and services) “marches according to the drum beat.” The “rope” is a communications line signaling when new raw material or purchased components should be input into the system.

Theory of Constraint Financial Logic

As well as explaining what is wrong with traditional cost accounting, TOC also provides a vision of what a better alternative financial and managerial accounting system would look like. This is throughput accounting, and it is based on the following logic:

- Start with the basic assumption that the goal of any profit-making business is to make more money, now and in the future. (A broader definition is that the goal of an organization is the one thing that the organization desires to increase or improve. The objective of any organization should be the maximization of its goal.)
- In this context of attaining a goal, a constraint is defined as anything that significantly limits the performance of the organization in achieving its goal. Because a constraint is a factor that limits the total system, one must manage the constraint to get more “goal-units.”
- The replacement accounting approach, throughput accounting, falls neatly into place by focusing on the three possible dimensions of money:
 - **Throughput (T):** the rate at which the system (i.e., the business) generates money through sales.
 - **Inventory and investment (I):** all the money the system invests in purchasing the assets and materials that it intends to sell (i.e., direct and associated indirect materials) or will use to make products.
 - **Operating expense (OE):** all the money the system spends in converting inventory into throughput (e.g., wages, fringe benefits, depreciation, capital charges, subcontracted labor, and support expenses).

Theory of Constraint does not follow traditional accrual accounting. The TOC financial definitions are stated in Figure 8.5. Given these definitions, TOC’s primary objective is to maximize throughput (T). Preferably this is accomplished by maintaining as constant or, better yet, reducing and minimizing the amount of money used for inventory/investment (I) and operating expense (OE). This is il-



THROUGHPUT: The rate at which the entire system generates *money* through sales.

INVENTORY (INVESTMENT): All the *money* the system invests in things it intends to sell.

OPERATING EXPENSE: All the *money* the system spends turning inventory into throughput.

Every organization has a GOAL, and it is often “to make more money.”

FIGURE 8.5 Theory of Constraints—Financial Definitions

Source: H. William Dettmer, *Goldratt’s Theory of Constraints* (Quality Press, 1997). Reprinted with permission of ASQ Quality Press.

illustrated in Figure 8.6. The TOC approach to maximizing throughput (T) is accomplished by continuously exploiting and then eliminating bottlenecks and also by scheduling workflow via buffer management aimed at keeping the bottleneck resource in constant use as much as possible.

Using the language of managerial accounting, the TOC financial logic applies the most extreme form of marginal costing, sometimes called incremental costing, in which TOC applies partial but not full absorption costing. In effect, TOC assumes that an organization’s only variable costs are primarily the purchased materials contained in the outputs sold to customers. Consequently TOC presumes that all other expenses, including direct and indirect labor, generally behave as fixed costs relative to changes in the volume and mix of the organization’s final outputs. On the short-term horizon, there is merit to these assumptions, because organizations rarely add or reduce employee staff levels to match daily workload requirements. Changes in actual spending will always lag behind changes in the resource usage level (and for management accountants, in the consumption of product or service-line costs).

Theory of Constraint thinking is excellent for production mix optimization planning because it prioritizes the selection of which customer orders to fulfill based on the highest “throughput-per-constraint-minute” for those orders that will use the bottleneck resource. This ensures that the maximum total system profit will be continuously attained for the imminent time period.

Decisions Other Than Product Mix Optimization

Ultimately the end-user of managerial accounting data will need to determine the best approach to evaluating a decision. He or she must ask and then answer the following question:

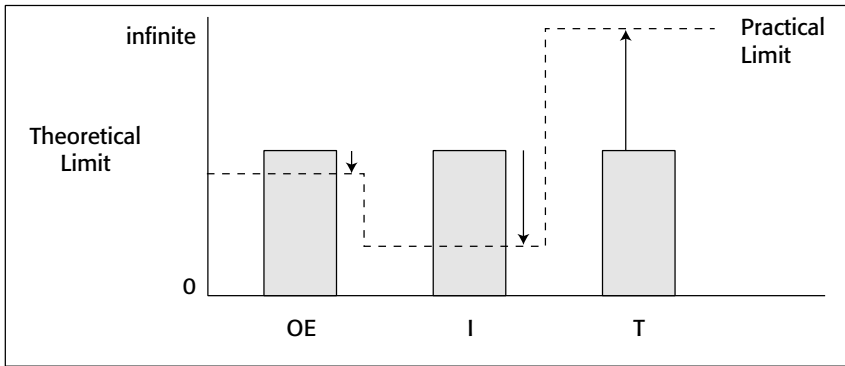
Under what type of conditions for a specific type of decision should I apply a specific method to compute managerial accounting information with its associated assumptions?

The litmus test in TOC is that a profit-friendly decision can only result when:

$$\text{Changes in } T - \text{Changes in } OE > 0$$

That is, the total incremental change that results from a good decision should have a positive effect on profits. Otherwise it is likely to be a poor decision. Changes in global throughput must consider the capacity consumption effect on an organization's constraint and near-constraints. This equation is referred to in this chapter as TOC's differential profitability formula. This is a powerful equation. Managerial accountants will recognize the differential profitability formula as accounting's "relevant revenues minus relevant costs" test, which has been universally applied in the field of economic analysis. This is the first glimpse of an opportunity to reconcile ABC/M with throughput accounting. ABC/M's absorption costing data can assist TOC in calculating delta OE for evaluating decisions.

Key questions that divide throughput accounting from absorption costing are, "What are the product costs?" and "What are categories of expense that are



T increases with decreases in I and OE until the practical lower limits of I and OE are reached. Then T decreases, too.

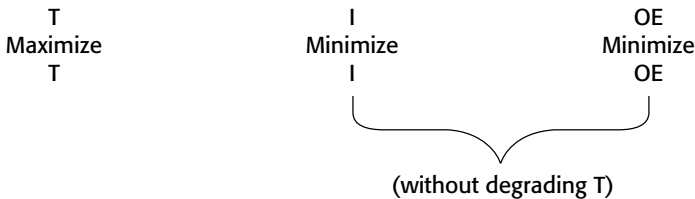


FIGURE 8.6 Managing Throughput, Inventory, and Operating Expense Priorities
 Source: H. William Dettmer, *Goldratt's Theory of Constraints* (Quality Press, 1997). Reprinted with permission of ASQ Quality Press.

not part of product costs?” Theory of Constraint views an organization’s profits as being derived by the following equation:

$$\begin{array}{l} \text{Net Profit (NP)} = \text{Sum of All Products} \\ (\text{Sales} - \text{Raw Material Costs}) - \text{Categories of Expense} \\ \text{no. 1} \qquad \qquad \text{no. 2} \qquad \qquad \text{no. 3} \end{array}$$

Advocates of TOC view the first two elements as product-related but the last element as not product-related. They assume that the element belongs to the system, not the outputs it makes or delivers. The first two elements equate to TOC’s throughput. In contrast, absorption costing proponents look backward in time and observe that different types of products (as well as sales channels, distribution channels, and customers) placed varying demands on the time and usage of the resources. Therefore, they see many of the categories of Expense no. 3) as being product-related. They can distinguish widely varying levels of use by the cost objects. Therefore, as they do for past spending, they trace and assign OE into products and all other final cost objects.

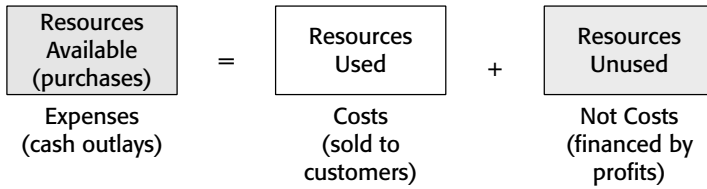
In short, to managerial accountants, product cost is a logical consequence of the actions of the organization. Product costing is not an artifact of managerial accounting. One role of product costing is to measure the expenses of the resources consumed in the product’s construction. This information is an element to indicate how a specific product is contributing toward the organization’s objectives. Traditional accountants understand that much more information is needed than just product cost, but they are disturbed that TOC proposes to restrict this information and deny it to managers, such as product line managers or salespeople, by claiming that calculated costs are irrelevant. This means that TOC would deny the “fishing pole profitability” graphs that were described in Chapter 3.

Major Clue: Capacity Only Exists as a Resource

As most organizations plan their for their next month, quarter, or year, the level of resources supplied is routinely replanned to roughly match the firm customer orders and expected future order demands. In reality, and this is crucial to TOC, the level of planned resources must always exceed customer demand to allow for some protective, surge, and sprint capacity. This also helps improve customer on-time shipping service performance levels.

However, management accountants will be constantly disturbed if they cannot answer the question, “How much unused and spare capacity do I have?” because in their minds this excess capacity equates to non-value-added costs. Figure 8.7 illustrates how traditional management accountants view resources, expenses, and capacity.

To TOC advocates, idle capacity allows TOC’s buffer management to act as the shock absorber of time for uncertainty and volatility to maximize the constraint’s up-time and stabilize overall system reliability, which in turn maximizes the throughput. Maximizing throughput maximizes profit.



Cost is a measure of *use*, whereas *expense* is a measure of *spending*.

They are usually never the same.

Resource expenses equate to system Capacity. Capacity does not exist at the Activity level. It exists only as a Resource. *Resources supply capacity* for productive use by work, whether people or equipment.

Absorption costing measures the first term of the equation, the Resource costs of workload performed. Absorption costing assigns these costs to products, services, channels, and customers.

FIGURE 8.7 Absorption Costing Recognizes the Importance of Capacity

This broad topic of unused and idle capacity will likely be one of the thorniest common intersections of TOC and absorption costing because the management accountants will be constantly improving their ability to segment and isolate the unused capacity (and the nature of its cost) by individual resource. (ABC/M and unused capacity are discussed in Chapter 6 in “Linkage of Activity-Based Costing to Unused Capacity Management.”) Managerial accountants will be increasingly able to measure unused capacity either empirically or by deductive logic based on projected standard cost rates. Furthermore, accountants will be able to segment and assign this unused capacity expense to various processes, owners, or the sales function or senior management. This will eliminate overcharging (and over-stating) product costs resulting from including unused capacity costs that the product did not cause.

Usefulness of Historical Financial Data

Absorption costing is basically a segmentation calculation related to historical spending. As described at the beginning of this book, from a historical view the real problem is that expenses reported in a chart-of-account as resources are not only structurally deficient, they also encourage fortress politics as some silo managers hoard resources regardless of demand. But the organization’s resources are ultimately what are being managed. Figure 8.8 illustrates this point. It shows that organizations try hard to manage their level and types of resources in the context of present and future demands. But the key is to make better decisions—for the future. Absorption accounting creates visibility about the use of resources.

Figure 8.9 illustrates how ABC/M, a refined form of absorption accounting, provides an activity as well as an output view. These are the calculated costs that

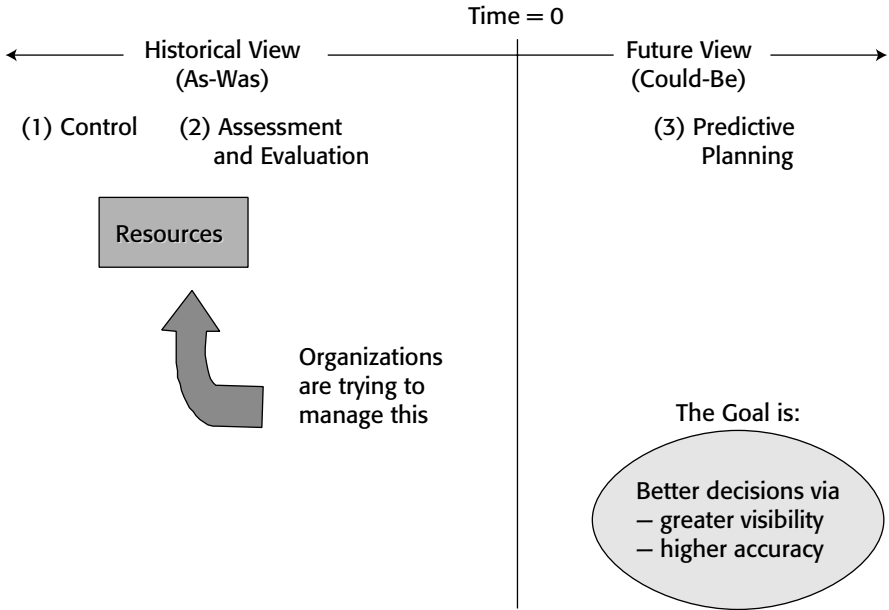


FIGURE 8.8 Resources Are to Be Managed

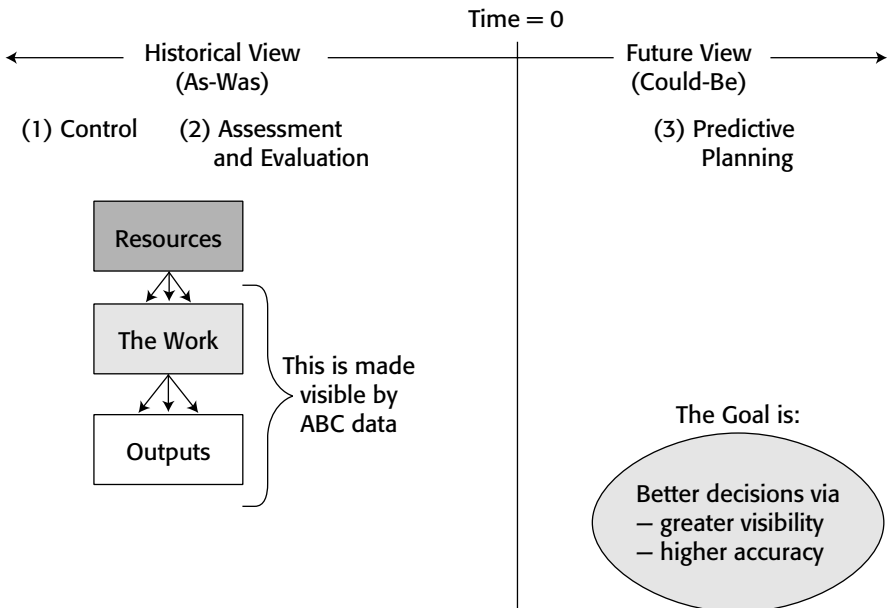


FIGURE 8.9 Activity and Output Views

TOC users fear. ABC/M substantially improves on simplistic and broad-averaging cost allocations to reflect true consumption patterns. In the historical view, absorption costing has added visibility to both “the work” and the “outputs” of the work. (Note that in this view “the work” costs also belong to the processes, which is a time-based view. Process simulation software tools are already taking advantage of this link to absorption costing tools.)

Figure 8.10 completes the series of graphics by pointing out when activity costs are translated into outputs. ABC/M data provides employees and management teams with insights and inferences. Now comes a critical point: This figure illustrates that when historical information is applied to the future, it may not be sufficient for that information to only suggest what actions to take; the information must also be accurate. That is, it must reasonably reveal the impact of those changes on outcomes.

In other words, based on inferences as well as cost estimates that may use the ABC/M activity driver rates and estimates of driver volumes, “extrapolated costs” may require further validation to ensure that the predicted resources are realizable. Under some conditions, the use of TOC and simulation technology will improve an ABC/M-derived cost estimate by providing greater accuracy. The key question is, what are those conditions?

Figure 8.11 illustrates that the effort level to adjust capacity becomes easier farther out in time. It takes a while to convert in-case resources into as-needed ones. However, committed expenses (in-case) today can be more easily con-

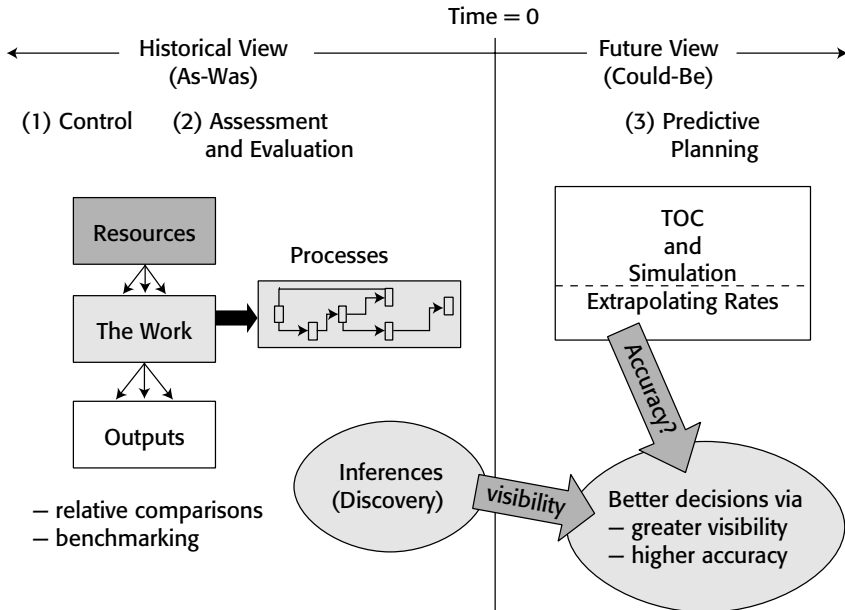


FIGURE 8.10 Validating the Inferences

In the very short term, you would not fire employees on Tuesday due to low workload, but hire them back on Wednesday. But in the future, you may replace full-time employees with contractors, or lease assets you might have purchased. In this way, so-called fixed costs behave variably.

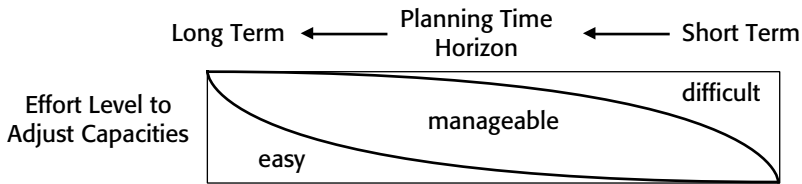


FIGURE 8.11 Capacity Only Exists as Resources

verted into contractual (as-needed) arrangements in a shorter time period than was possible 10 years ago. Fixed expenses can become variable expenses. The rapid growth in the temporary staffing industry is evidence. Organizations are replacing full-time employees who are paid regardless of the demand level with contractors who are staffed and paid at the demand level, which may be measured in hours.

Understanding the cost of the resource workload used to produce a product or deliver a service is relevant to making these resource reallocation decisions. In the eyes of absorption costing advocates, ignoring changes in OE when making decisions can eventually lead to a cost structure that may become inefficient and ineffective for the organization. Although TOC allows the organization to maximize profit subject to its existing capacity, the absorption cost advocates express concerns that TOC does not sufficiently emphasize the need to adjust the capacity: raise or lower the OE.

Where Does Activity-Based Budgeting and Planning Fit in?

Costs can be considered from both a descriptive, historical view and a predictive view. There is a difference in time perspective between assigning and tracing costs to products and services in the past, and estimating how future resource expenditures (cash outflows) will vary as the volumes and mix of products and service lines, as well as varying service levels to different types of customers, fluctuate. In the descriptive view the resource expenditures are precisely known and one solves for the unknown product costs. The reverse is true in the predictive cost estimating view. In forecasting, the demand volume and mix of the outputs are estimated, and one then solves for the unknown level of expenditures that will be required to produce and deliver the volume and mix. One is basically determining the capacity requirements of the resources.

The second difference, estimating future levels of resource expense cash outflows, becomes complex because resources come in discontinuous clumps. That is, resource expenses do not immediately vary with each incremental increase or decrease in end-unit volume. Traditional accountants address this with what they refer to as a “step-fixed” category of expenses. Absorption accounting handles this historical versus prospective view of time by applying “demand-pull” absorption costing. This is where ABC/M becomes ABB/P.

“Demand-pull” absorption costing is ABB/P, which is all about predictive costing—the estimated expenses and costs for a future time-period. This method involves extrapolations that use baseline physical and cost consumption rates from prior period ABC/M calculations. Managerial accountants relate ABB/P to a form of flexible budgeting (which is normally applied annually to a 12-month time-span). In contrast to “push” absorption costing, ABB/P recognizes that changes in end-unit volume and product mix can have nonvariable impacts on the usage and expense of the system’s various resources. It recognizes only the changes in resource expenditures that will result from a plan or a decision. Demand pull absorption costing and ABB/P are used interchangeably in this book.

Assignments in ABB/P are designed to reflect a fair measure of the usage of used resource expenses. The unused expenses represent idle and unused capacity. These unused expenses are usually assigned to management as a business sustaining cost (i.e., they are the cost of doing business in an ongoing concern).

Activity-based budgeting and planning measures the impact of changes in the mix and volume of outputs originating *from* customers and their order-requests for varying quantities of specific products and services. Hence the reference to a pull created by the “demands” on the organization’s work and resources.

Activity-Based Budgeting and Planning Solution

Traditional planning and budgeting methods carry many unpleasant connotations due to somewhat dysfunctional practices. Plans and budgets may be highly detailed, but they have low user confidence. The detail may imply accuracy and precision, but the assumptions are questionable. There are often too many iterations based on organizational politics that still arrive at unrealistic projections of expenses.

The use of ABB/P became increasingly popular mainly due to cynicism about traditional budgeting. Traditional budgeting tends to assume that the existing level of resources is already justified. As part of the game, managers then lobby for even more resources. Activity-based budgeting and planning computes the level of resources by applying a reverse calculation. This technique is not restricted to a 12-month planning horizon. As a result, this cost estimating technique can be applied to any planning horizon. Activity-based budgeting and planning and activity-based budgeting (ABP) are often combined as a single term, but ABP is likely to become the popular application because it provides for

“what-if” analysis, something that managers increasingly want answers for in financial terms.

Activity-based budgeting and planning leverages ABC/M’s calculated data. ABC/M directly relates the consumption costs of work to customer-driven demands. That is, it translates how customer demand consumes resources. The traditional budgeting and planning methods rely on managers to mystically translate all this into the required number of people needed and their associated materials and equipment needs. The traditional budgeting and planning methods have few valid links for how future demands translate into the needed resources.

Figure 8.12 illustrates how capacity planning is the key to the solution. Planners and budgeters initially focus on the direct and recurring resource expenses, not the indirect and overhead support expenses. They almost always begin with estimates of future demand in terms of volumes and mix. Then, by relying on standards and averages (such as the product routings and bills-of-material used in manufacturing systems), planners and budgeters calculate the future required levels of manpower and resources. The ABB/P method suggests that this same approach can be applied to the indirect and overhead areas as well or to processes where the organization often has a wrong impression that they have no tangible outputs.

The commercial ABC/M software vendors successfully resolved their original problem with simplistic ABB/P, just calculating their ABC/M model in reverse. They recognized that ABB/P begins with the cost objects, such as products. Demand volume drives activity and resource requirements. ABB/P is forward-focused, but it uses actual historical performance data to develop baseline consumption rates.

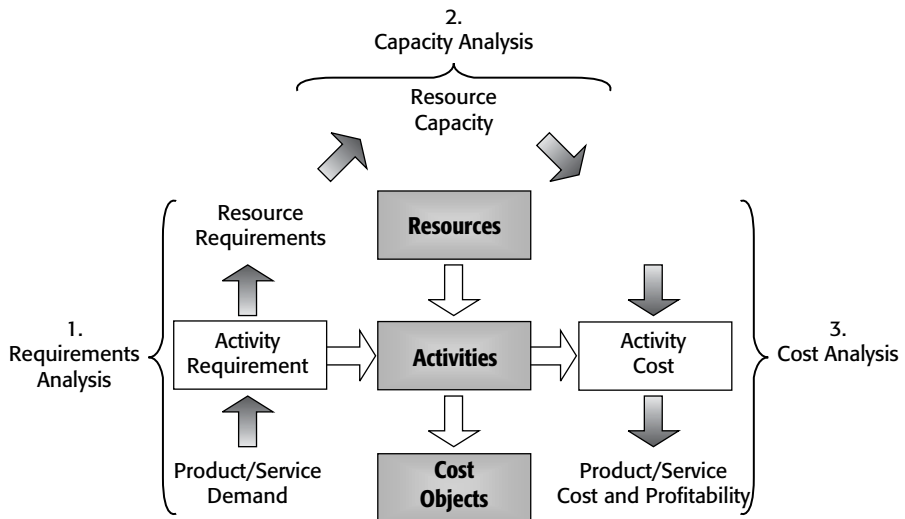


FIGURE 8.12 ABB/P Information Flow

Activity-based budgeting and planning assesses the quantities of workload demands that are ultimately placed on resources. In step 1 in Figure 8.12, ABB/P first asks, “How much activity workload is required for *each* output of cost object?” These are the activity requirements. Then ABB/P asks, “How much resources are needed to meet that activity workload?” In other words, a workload can be measured as the number of units of an activity required to produce a quantity of cost objects.

The determination of expense does not occur until after the activity volume has been translated into resource capacity using the physical resource driver rates from the ABC/M model. These rates are regularly expressed in hours, full-time-equivalents (FTEs), square feet, pounds, gallons, and so forth.

As a result of step 1 there will be a difference between the existing resources available and the resources that will be required to satisfy the plan—the resource requirements. That is, at this stage organizations usually discover they may have too much of what they do not need and not enough of what they do need to meet the customers’ expected service levels (e.g., to deliver on time). The consequence of having too much implies a cost of unused capacity. The consequence of having too little is a limiting constraint that if not addressed implies an erosion in customer service levels.

In step 2 a reasonable balance must be achieved between the operational and financial measures. Now capacity must be analyzed. One option is for the budgeters, planners, or management accountants to evaluate how much to adjust the shortage and excess of actual resources to respond to the future demand load. Senior management may or may not allow the changes. There is a maximum expense impact that near-term financial targets (and executive compensation plan bonuses) will tolerate. These capacity adjustments represent real resources with real changes in cash outlay expenses if they were to be enacted.

Assume that management agrees to the new level of resources without further analysis or debate. In step 3 of the flow in Figure 8.12, the new level of resource expenditures can be determined and then translated into the costs of the work centers and eventually into the costs of the products, service lines, channels, and customers. Step 3 is classic ABC/M—but for a future period. Some call this a pro forma ABC/M calculation. The quantities of the projected drivers are applied, and new budgeted or planned costs can be calculated for products, service lines, outputs, customers, and service recipients. At this point, however, the financial impact may not be acceptable. It may show too small a financial return.

When the financial result is unacceptable, management has options other than to continue to keep readjusting resource capacity levels. These other options may not have much impact on expenses. Figure 8.13 reveals five types of adjustments that planners and budgeters can consider to align their expected demand with resource expenditures to achieve desired financial results. This approach has been called a “closed loop activity-based planning” framework.

Each of the five numbered options is intended to improve results; however, the relative impact of each adjustment will be unique to each organization and its

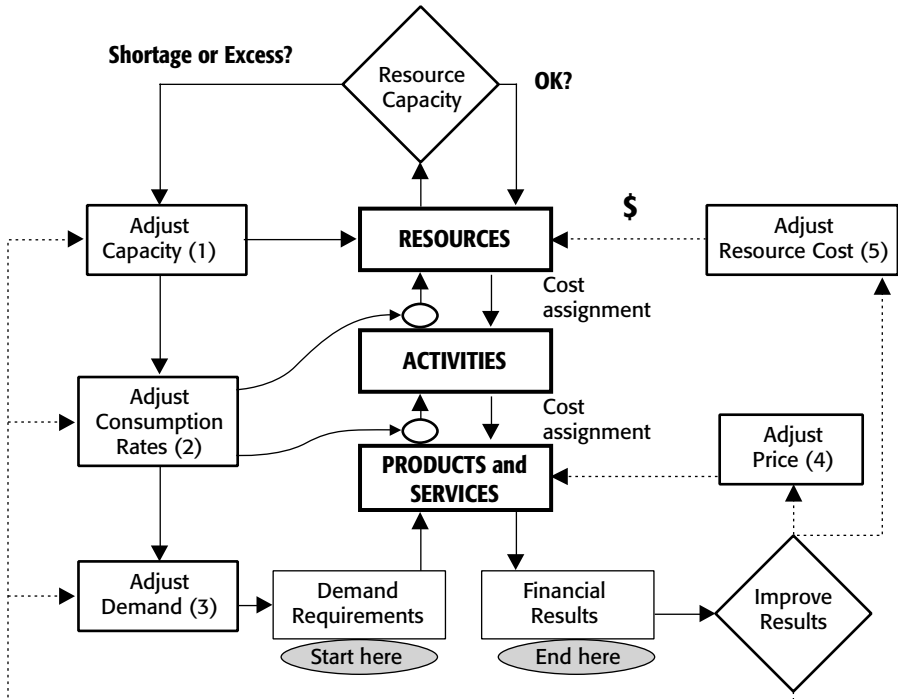


FIGURE 8.13 ABB and ABP Require Making Adjustments

situation. As previously described, the ABB/P model uses as its source input the estimated demand quantities to determine the degree of imbalance there may be between the required and actual resources.

Assuming that the result will be shortages and excesses of capacity, management can *physically*:

1. **Adjust capacity:** Additional manpower, supplies, overtime, equipment, and the like can be purchased for shortages. There can be scale-backs and removals of people and machines for excesses.
2. **Adjust consumption rates:** If possible, the speed and efficiency of the existing resources can be cranked up or down. If, for example, the increase in manpower makes a decision uneconomical, fewer people can be hired, with an assumed productivity rate increase assumed.
3. **Adjust demand:** If resources remain constrained, demand can be governed or rationed.

The last two options are operational but also affect the level of resource expenses required. After this cycle of adjustments balances capacity of supply with demand, if the financial results are still unsatisfactory, management can make incremental financial changes:

1. **Adjust pricing:** In commercial for-profit enterprises or full cost recovery operations, pricing can be raised or lowered. This directly affects the “top line” revenues. Of course, care is required because the price elasticity could cause changes in volume that more than offset the price changes.
2. **Adjust resource cost:** If possible, wage levels or purchase prices of materials can be renegotiated.

For a more in-depth discussion of ABB/P, see *An ABB Manager’s Primer* by Alan J. Stratton and William S. McKinney.²

Unfortunately in the area of budgeting there is one last step that is in its infancy: to integrate the results from the ABB/P system into the traditional and formal budget statement format. Recall that budget reporting format is a mirror image of the general ledger cost center reporting that aligns with the hierarchical organization chart and lists expenses according to the chart-of-accounts. Figure 8.14 illustrates how ABB/P must be combined with other inputs from the traditional process. The issue is that although ABB/P produces the comprehensive measures of expenses, it does not yet easily track these expenses by the cost centers and their expense account codes. In short, a budget will not appear to managers as complete until it looks very much like what they typically receive as their standard reports and reflects the organizational structure they relate to.

The pioneers in ABB/P are undaunted. They recognize the logic and power of the ABB/P method even though its reported format is one step removed from the formal budget format. My opinion is that the issues involved in this final con-

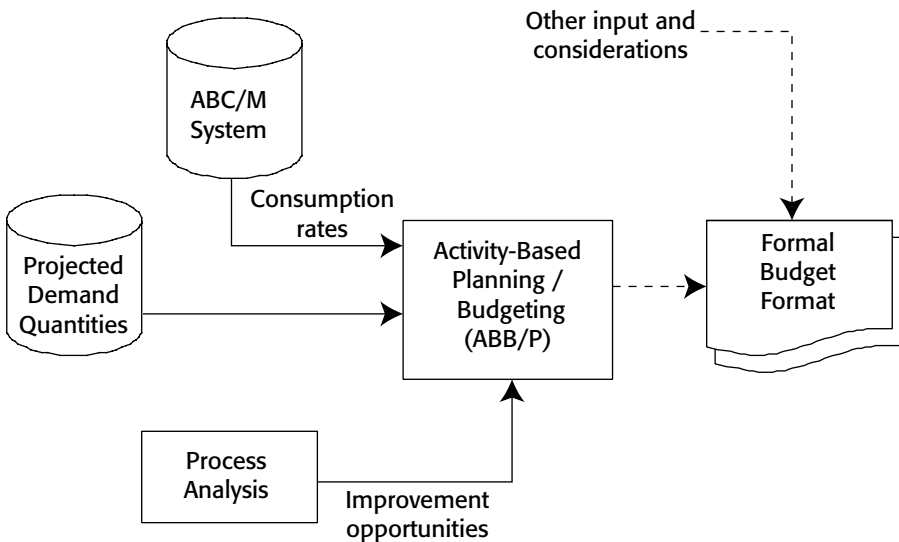


FIGURE 8.14 Combining ABB/P with the Formal Budget Format

Source: Alan Stratton, CAM-I ABB&P Interest Group Presentation, January 12, 2001. Used with permission.

Need for Skill Set Optimization

Reformatting ABB/P into the formal budget format involves translating the budgeted work activities back into the existing organization: its employees and contractors and their needs for supplies. In ABB/P the budget planners must ultimately seek funding approval for the people, equipment, and operating materials needed to perform and be consumed by the projected work activities.

There are obstacles to overcome when ABB/P's activity costs are translated back into the general ledger's cost centers and chart-of-accounts format. For example, what happens if the mix of planned outputs significantly varies from the outputs that were used to calibrate the cost driver rates from the historical ABC/M model? This can mean that the worker skills required for the budget (or plan) can vary significantly from the existing workforce mix. How should ABB/P restate and report those resource costs? Activity-based budgeting and planning computes resource requirements for people in terms of hours and FTEs but not by skills. How should managers adjust? Should they dismiss some workers while hiring new ones?

In effect, the "who and what" being consumed is affected by ABB/P's resource capacity requirements. If the ABC/M baseline model reflects an organization that has been recently flattened, de-layered, and cross-trained, so that various workers contributed to common work activities in the ABC/M baseline rates, there is a challenge. What assumptions should one make when ABB/P converts the budgeted activity requirements into the staffing levels that should reside in the projected resource expenses?

These questions collectively test the appealing logic to simply and proportionately "prorate" backwards to determine the budgeted expenses by tracing along the same cost assignment paths that generated the historical ABC/M model, except with different driver quantities. But expenses must eventually be converted into real people with names, and therein lies the rub. Although the level of needed resource expenses to be consumed may be a correct amount of money, the tasks, skill sets, and possibly individual workers may no longer match the new requirements. What is a manager to do?

The greater the mismatch, the more difficult the situation. The dimensions of the "balancing needs to supply" are how flexible the workers are to do other tasks and what organizational hierarchy level the budget is constructed at. At the extremes, if the hierarchy level is low or employees are not flexible or widely cross-trained, managers will be balkanized in their behavior and not balance people and their skills with the forecast demand.

A solution to this may be "joint-budgeting," in which multiple managers are provided with "output-generated" budgeted funding levels. Collectively, the managers would then be expected to collaborate to reach agreements about specifically who and what skills are needed, and so forth.

version will be healthy for advancing management methods on the human resources side, which involves the fourth perspective of the weighted scorecard performance measurement. It involves treating people as important assets.

Activity-based budgeting and planning acknowledges that there is a substantial amount of expenses that do not vary with a unit volume of output. These are not totally variable cost (TVC) as classified by TOC. As mentioned, resources often come in discontinuous amounts. Economists refer to these as step-fixed costs. An organization cannot purchase one-third of a machine or hire half of an employee. Activity-based budgeting and planning recognizes the step-fixed costs in step 2 where resource capacity is adjusted. It recognizes that as external unit volumes fluctuate, then

- Some workload costs do eventually vary based on a batch-size of output or on some other discretionary factor and
- Some resources expenditures will be acquired or retired as a whole and indivisible resource, thus creating “step-fixed” expenses (i.e., adding or removing used and unused capacity expenses).

On the short-term horizon, there is merit to the assumptions of both TOC Throughput accounting and ABB/P. An organization would not add or reduce employee manpower levels to match daily workload requirements, so there is a step-fixed cost function. But, for example, how severely does the assumption that OE will not change when it would actually need to affect the answer to a specific question? The effect of varying conditions on the accuracy of cost estimating methods needs more research.

In summary, absorption costing is descriptive; however, its data may be used for predictive purposes. The data provide inferences. Throughput accounting and ABB/P have some things in common: They both strive to monitor the impact of decisions or plans in terms of the external cash funds flow of an organization.

Risk Conditions for Forecasting Expenses and Calculated Costs

When it comes to looking to the future either to use insights gained from historical cost reporting or to forecast costs, how inapplicable might the historically absorbed cost data be? How much from the descriptive patterns of the past can be extrapolated to predict and measure the impact of changes in the future?

If one assumed that TOC throughput accounting yields a superior answer to ABB/P, how significant will the difference be? The answer is, “It depends on the conditions.” In addition, if the assumption is that throughput accounting does yield a superior answer, what are the relative levels of effort to collect the essential data and analyze the decision?

As previously illustrated in Figure 8.10, some methodology and assumptions are needed to provide accuracy and a sense of confidence for decision makers that the outcomes of their decisions will likely be favorable. Hunches and intuition are not sufficient; a validation may be required. The important message

here is that TOC can be used to evaluate the decisions that are de facto routinely being made with extrapolated absorption costing rate data. Extrapolation is the default method for estimating costs.

Both absorption costing and TOC throughput accounting, with its profitability formula, provide ways of testing the merits of a decision. Are they rival methods? Or is TOC's profitability formula a refinement of extrapolated cost rates? A question was previously asked how significant the differences would really be, assuming that throughput accounting yields a superior answer to absorption costing? What influences the answer to this question?

Another way of asking this question is, "What are the conditions that exist when projected cost estimates from ABB/P inadvertently lead to a poor decision?" That is, what are the outside limits of assumptions, such as for planned volumes, and where are there risks from using "extrapolated" costs? How broad is the so-called relevant range in which changes in expenses vary nonlinearly with changes in volume? What are the conditions that exist when an apparently good decision results in a poor one? For example, when might one think that a decision will lead to higher profits but in reality it may actually produce lower profits? The conditions that can change include:

- **Significant mix changes:** The cost rates in absorption costing are calibrated based on recent history reflecting recent output mix. These are commonly referred to as *actual* costs. If the new scenarios contain a substantially different mix of products and services, then the past rates will be less valid. That is, the new scenarios will likely have too much idle and unneeded capacity and not enough of the needed type of capacity. The true pro forma cost rates would rise or fall in the future scenarios due to step-fixed and semi-variable cost functions on resource expenses.
- **Significant volume changes:** When the future scenarios apply substantial changes in volume, the calibrated rates are less applicable because the new volumes are outside the "relevant range": again, step-fixed and not variable costs.
- **Constraint and near-constraint impact:** When some resources are near full utilization and/or the entire system resources' capacities are nearly balanced (i.e., the risk of interactive constraints or of shifting constraints), a slight change in demand load could affect the global throughput. The constraint would shift to a new location and possibly delay sales and erode on-time shipping performance. Interdependencies affect the outcome. This is a key element of the TOC principles.
- **Uncertainty and volatility:** Unplanned events and variation in performance disrupt and can invalidate any assumptions about resource usage, throughput, and the recovery efforts to achieve customer-promised due dates. The impact of uncertainty, volatility, and variation of inputs and performance is usually unrecognized (except for a sloppy "fudge" factor) under conventional cost forecasting. These factors are "baked-into" the historical cost rates as part of the "averages." Delays may cause greater than planned idle

capacity, but most of the OE cash outlay expenses may not change. In contrast, TOC allows for uncertainty and volatility.

- **Degree of heterogeneity of products and service:** When an organization's outputs are not diverse or varied, extrapolating cost rates based on the past may be directionally reasonable. But when diversity of outputs increases (which is the more normal situation for most organizations), additional complexity results. Consequently, forecasting the cost impact of a decision becomes trickier. Simple extrapolations based on the descriptive past may not produce reasonable expense and cost estimates.
- **Degree of resource dedication/inflexibility:** When equipment or people are only capable of performing specific tasks, substantial changes in customers' demands significantly shift the entire workload. A result can be not having enough of what is needed and too much of what is not needed—a capacity imbalance. Forecasting the impact on changes to the resource mix is tricky.

These six restrictive conditions can be concurrent, which further increases the possibility of an invalid cost forecast.

The unmet challenge for calculating estimates of future expenses will be to know how far-reaching the conditions are under which traditional cost projections may or may not be valid. How intense must the changes in these conditions be to generate major significant differences between cost projections from absorption costing and from throughput accounting?

Extrapolations and ABB/P cost estimating are acceptable as long as the conditions just described are not severely compromised. That is, when the future conditions are not too restrictive, then future costs can be extrapolated or reverse-calculated based on recent historical physical and cost rates.

Many management accountants accept extrapolations as being very reasonable. They know that the cost rates that were derived from a recent and representative time frame also reflect the capacities of that same period. The cost rates already contain and reflect the variation and uncertainties experienced during that same period. Therefore, the accountants conclude that unless the future period has substantially greater variation and interdependent congestion than the past period did, the cost rates they are using are acceptable to apply for the future. They reflect real experience. The extra costs caused by the variations are already baked into the cost rates. The question is how different the next few weeks will be compared to the past weeks in these same categories. The use of extrapolated cost rates assumes that there is organizational "inertia" and that there will be no volatile and punctuated spike, up or down, in the pace at which employees and equipment work.

Framework to Compare and Contrast Expense Estimating Methods

Figure 8.15 presents a framework that describes various methods of predictive cost estimating. This entire framework represents the box that appeared in the

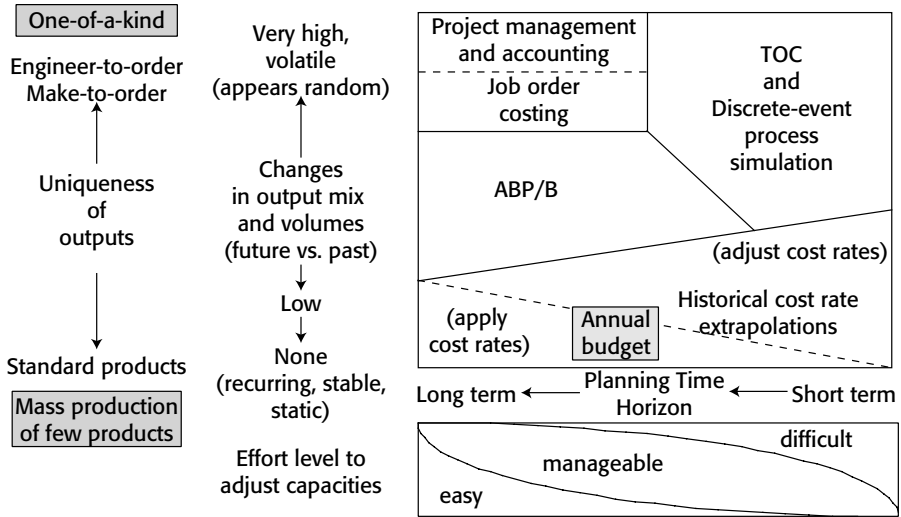


FIGURE 8.15 Methods of Forecasting Results

upper-right corner of Figure 8.10 as “TOC, simulation, and extrapolating rates.” The horizontal axis is the planning horizon, short-term to long-term, right to left. The vertical axis could represent any of the six restrictive conditions, but the label that was selected is a hybrid of the six, implying the types and magnitudes of change in demands of the future relative to the recent past.

Examine the lower part of Figure 8.15, which illustrates the level of effort to adjust capacity across the planning horizon. This is Figure 8.11, imbedded in this figure. It describes expenses as becoming more variable and less committed as the planning horizon lengthens. Historical cost rates can be more easily applied for longer time frame decisions; there are fewer step-fixed expense issues.

There are no definitions for the boundary lines between the various zones, and there is overlap as one estimating method gives way to another as being superior. But how much do the various conditions need to change before additional decision support is needed to validate the feasibility or completely evaluate a decision? That is a good question. I am investigating the question of just where the zones begin to overlap. So far, it appears that ABB/P has substantial applicability across a wide set of conditions. (Also, now I know why one of my industrial engineering college professors at Cornell University warned us to only use simulation as a last resort. It requires a lot of administration to configure and maintain.)

Figure 8.15 illustrates in the upper-right corner that as the time period to adjust capacity shortens and simultaneously the number of changes in conditions from the past substantially increase, it becomes risky to rely exclusively

on extrapolation methods for cost forecasting. Theory of Constraint thinking should provide superior and more reliable answers in this zone relative to the other methods. It can evaluate and validate decisions in any zone, but in particular the upper-right corner of Figure 8.15. (Discrete-event process simulation software tools are also a potential solution. Process simulation and cost measurement are discussed at the end of this chapter.)

Caution is required when applying extrapolated costs because they are not sensitive to capacity limits, for a shift in the system constraint to another constraint, or for the impact of changes in uncertainty in the form of delays and schedule slippage. There are decisions for which extrapolations using “cost rate averages” derived from absorption costing will simply not be useful. ABB/P is a next-best alternative; it is a capacity-aware method. But when the conditions are such that ABB/P might calculate excessive error, an option is to estimate the workloads, delay times, and magnitude of resources required using discrete-event process simulation software. This class of “analytical application” software contains rule-based logic that acknowledges capacity limits, time, constraints, and dependencies.

Discrete-event process simulation software calculates multiple feasible solutions, from which comparisons can be made to select the most preferred. But none of these feasible solutions is necessarily an optimal solution. Discrete-event process simulation software has the ability to run hundreds to thousands of iterations for a single scenario to show the “on-average” effect of collective variability. (In this approach, variability can occur in multiple locations and produce interactive effects amongst constraints and nonconstraints.) The relevant expenses are derived using “net change” comparison logic because full scenarios are generated that can be netted against the existing baseline. Unlike Theory of Constraint, there is no methodology to manage and time buffers. With discrete-event process simulation, there is substantial trial and error to search for a “best” solution.

Finally, Figure 8.16 provides a sense of the administrative effort versus the benefits of selecting the expense forecasting method. It is a tedious task to configure the data and the rule-based relationships for discrete-event process simulation. But under certain conditions, it is applicable. When it comes to cost forecasting, apply the test, “Is the climb worth the view?”

Some TOC advocates as well as traditional accountants believe that a good source for the OE data used in the profitability formula is absorption costing data. More specifically, some TOC advocates appreciate that absorption costing information can provide the activity analysis to predict the changes in the amount of resource operating expenses (OE). Hence, measuring changes in OE is one of the major common intersections for TOC Throughput accounting and absorption costing. For TOC decisions, increases or decreases in OE are to be determined on a case-by-case basis. If absorption costing data serve the purpose of calculating the changes in OE, this is a significant common intersection between absorption costing and TOC.

What is the level of administrative effort to achieve highly accurate estimates of projected costs and resource expenditures?

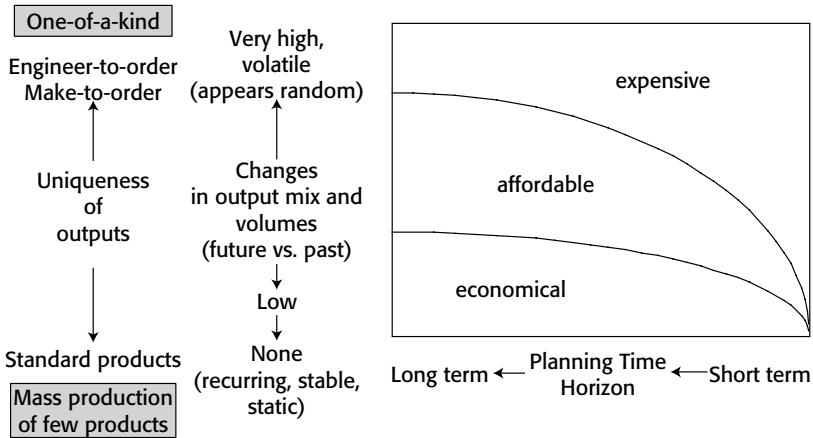


FIGURE 8.16 Costs versus Benefits

Two Views of the Same Expenses

To summarize the TOC versus activity-based costing discussion, Figure 8.17 shows the differences and similarities between TOC and absorption costing in the form of equations. The dashed-line box around TOC’s operating expenses (OE) denotes that these expenses are usually excluded for product mix production planning when using the T/CU ratio prioritization rankings. When a single bottleneck exists with relatively simple material flows, then the throughput (T) measure is relevant only for the bottleneck resource (and for near-term or emerging potential bottlenecks), not for all resources.

Although TOC advocates acknowledging that external market demand is the long-term system constraint in 95 percent of environments, the absorption cost advocates observe that most TOC discussions usually assume that a physical constraint is a short-term constraint. It is usually assumed that in the short run most organizations can sell more than they can produce. In effect, in the short run TOC posits that there is a physical or policy constraint that restricts production. In the longer term the market becomes the constraint.

What does this imply for absorption cost advocates? They have been taught that an organization will adjust its production capacity to the point where the marginal revenue from the last unit of capacity added equals its marginal cost. This requires an analysis of the products and services that create the demand for capacity. Therefore, the accountants see a need for a cost measurement system to determine the marginal cost and incremental revenue of individual products and services as capacity is expanded. In the long run, the marginal cost is the same as the product cost. Consequently, absorption cost advocates have been taught that long-run production related decisions require a product costing system. Repeating a point made

TOC Throughput accounting is a form of contribution *margin* costing. ABC/M is an extreme form of *absorption* costing.

TOC:	Profit =	Throughput** -	Operating Expense*
		$(\text{Sales} - \text{Material [I or any TVC]})$	$(\text{Labor} + \text{Overhead})$
Traditional Absorption Costing:	Profit =	Sales - Material - Labor - Overhead	[ALLOCATED]
ABC/M :	Profit =	Sales - Material - Labor - Overhead	[TRACED]

- * Expenses *excluded* from determining profit-maximizing product mix
- ** Product mix plan based on Throughput \$/minute (or per-constraint unit) at constraint

FIGURE 8.17 Partial versus Full Absorption Costing

previously, this may be one of the major intersections of TOC throughput accounting and absorption costing.

The TOC advocates regularly state that it focuses on the global system, whereas absorption costing does not. As previously noted, in the literature TOC often addresses product mix production scheduling decisions using T/CU. These decisions are constraint-sensitive and related to their impact on the global system.

But to absorption costing advocates, in the long run there are no bottlenecks or internal constraints; therefore, to them the incremental production cost *equals* the product cost. To them, a comparison of a product’s price and its absorption-based calculated cost is also measuring the impact of the decision on the system.

Most accountants agree that any decision should be based on its impact on the system. To accountants, TOC is well suited for making short-run decisions, whereas absorption costing is not. Theory of Constraints advocates routinely point to this in their writings. The absorption costing advocates, however, are unclear about how and why TOC is presumably superior to absorption costing for longer-term decisions. Some absorption cost advocates feel that TOC leads to a series of short-run oriented decisions that may be inferior relative to an initial decision made from a long-term perspective.

Reconciling Theory of Constraint Thinking with Absorption and Responsibility Accounting

It should be clear that these various approaches are not in conflict with but can complement each other. Management information systems can be configured that combine their strengths. The application of cycle-time, resource availability,

and resource expense is based on restrictive conditions and dependent on only the following characteristics:

- *Theory of Constraints (TOC) information* can be used for improving utilization of capacity constrained resources via reducing cycle times, scheduling with buffer management, or adding resources; selecting which “high octane mix” of products to make and sell to optimize short-term profits; developing demand-pull production plans; and supporting TOC’s differential profitability formula to test decisions of all types.
- *Absorption costing (including ABC/M) and responsibility accounting information* can provide a cost flow assignment network in which the information can be used for learning and drawing insights. This information can be used for profitability analysis (assuming a longer-term orientation) and process improvement. Caution is needed when using this information for estimating costs because some conditions can be restrictive. However, ABB/P appears to provide very reasonable projections of expense.

The debate over absorption costing or TOC need not be an “all or none” proposition. Absorption costing and TOC principles can be combined for synergy. All methods and tools like these provide only partial solutions. Combining them creates the synergy to lead to a more total solution. Understanding how TOC and absorption costing can be integrated will help lessen the existing communication and credibility gaps among marketing, sales, operations, and accounting functions.

As a postscript, one of the TOC leaders humorously communicates to others that “you could do better gutting a farm animal and reading its entrails than making decisions with activity-based costing.” To some this is not humorous but offensive. The TOC community may wish to consider better understanding the nuances of accounting and economic decision making. This may ensure better integration of TOC with more mainstream performance initiatives.

Simulation Tools: A Convergence or a Collision with Theory of Constraints?

There are some advocates of a software toolset called discrete-event process simulation who believe that their solution is superior to TOC. Figure 8.18 reveals that although lower levels of managers, teams, and employees mainly deal with nonfinancial processes and metrics, there is increasing pressure to recast their performance and plans in terms of money.

Operational managers and financial managers, regardless of their level of power in their organization, rely on their own sets of metrics. However, they are now being forced to speak in a unified tongue—with a language of money. Operations and financial managers are also now benefiting from powerful computer-based analytical software tools. ABC/M and process simulation are key tools for them. There are excellent opportunities to integrate these tools across the artificial boundaries of an organization’s hierarchical organization chart.

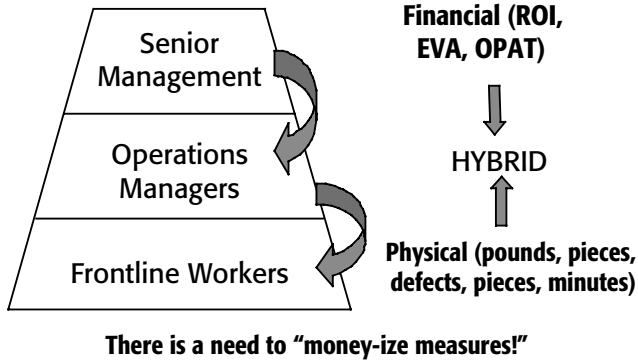


FIGURE 8.18 Information Requirements by Level of Management

Financial and economic analysts use their tools and assumptions to estimate financial numbers. As described for the upper-right corner of Figure 19, there are conditions in which there can be flawed calculated results from using cost rates and extrapolations because the analysts’ assumptions:

- Do not allow for system interdependencies and resource contention, and
- Ignore conditions where capacity limits are exceeded.

Operational managers now have access to elegant simulation planning tools. These tools include rule-based relationships that prevent predictions of infeasible solutions (e.g., a machine required to run 28 hours per day, seven days per week). Simulation replaces gut-feel with more realistic predictions of how a system will perform. This mitigates the risk of a poor decision because a constraining system interdependency was neglected. In short, simulation avoids physical experimentation with computerized planning.

These planning tools also allow for dynamic simulation, which, although it requires more effort, can provide better results than static simulation. What are the differences?

Static simulation	Dynamic simulation
Describes a process	Executes a process
Gives insights	Animates the system’s behavior
Assumes averages	Models random (i.e., stochastic) events
Has less complexity, but neglects variability	Is more complex to model

The goal of these tools is not optimization but rather to repeatedly change the input parameters for the demand and the people and equipment resources supplied. By tinkering with both inputs and capacity, managers can see the outcomes and compare the trade-offs in volumes and in service levels (e.g., order

due date performance). Dynamic simulation relies on multiple iterations of the *same* parameters but also incorporates random fluctuations that can trigger queuing and constraint problems. The range of outcomes is reported probabilistically.

Unfortunately, the plan that is selected from running the simulations does not come with a valid financial view. Simulation tools are strong on physical measures—such as time, weight, or volume—but they are weak at translating the results into financial equivalents. The problem for operations as well as financial managers is solved by unifying the process and financial analytical information systems.

Forecasting the Impact of Simulated Changes in Financial Terms

The following material is the result of some pioneering research and application conducted by Herb Crowther, president of Computer Aided Planning, a Cleveland-based consulting firm. Figure 8.19 reveals the steps that link together ABC/M and discrete-event process simulation software. Herb integrated the leading software vendor tools for each application by constructing a “planning console” on top of and interacting with both software tools.

Each step requires manipulating data:

- A base period of time duration (e.g., month, quarter, year) is synchronized for both models. There will be some commonly shared data (such as expenses, quantities of events, volumes of outputs), but each software tool

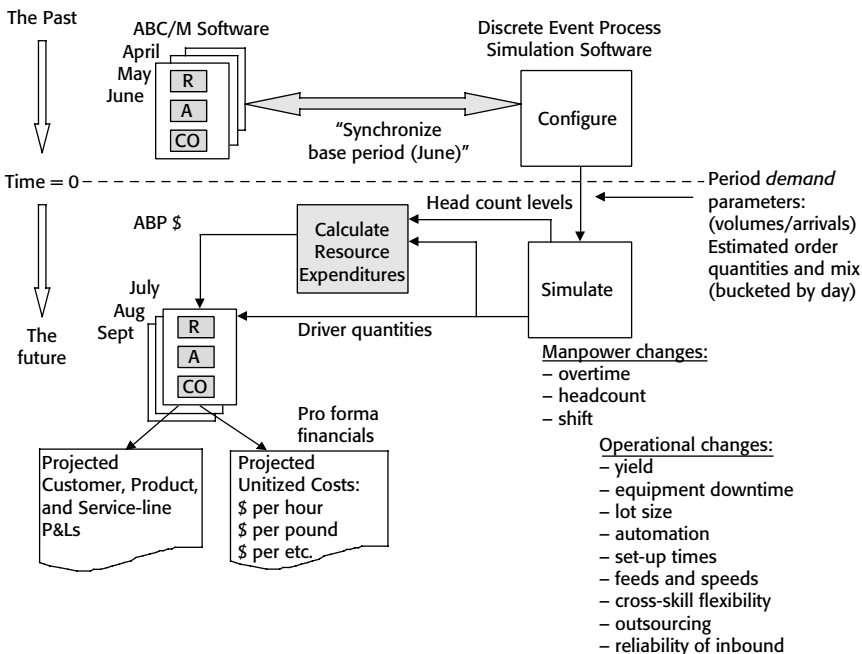


FIGURE 8.19 Cost Forecasting Steps

relies on some data that are unique to its own purposes. The process simulation software is initially configured to line up with the ABC/M costing software based on a recent historical time period. This serves to synchronize both tools baseline parameters.

- Estimates of future customer demand (orders, volumes, and mix of products and service lines) are entered into the process simulation software.
- Multiple scenarios are simulated until a “money-print”—meaning what appears to be a reasonable plan option—is worth saving to compare with other plans.
- The process simulation software exports metrics to two applications: the Resource Expenditure Calculator and the ABC/M Calculator. Both applications reside within commercial ABC/M software.
- The Resource Expenditure Calculator (which applies the ABB/P functionality) considers the nuances of how expenses vary with other changes (e.g., linearly or nonlinearly variable, semi-variable, step-fixed, discretionary fixed, truly fixed). Many of the assumptions required here are “calibrated” cost rates derived from recent previous (historical) time periods. This calculator’s output populates the initial resource expenditures needed by the ABC/M Calculator to compute activity and output costs.
- The ABC/M Calculator computes costs (i.e., it segments the resource consumption based on output mix variation) for the future projected periods. These prospective calculated costs are then combined with the forecast revenues to report profit margin layers in a format that the managers are accustomed to viewing. The ABC/M reports allow for comparative analysis against historical time periods (i.e., benchmarking, trend analysis, mix effect analysis) and among alternative future scenarios.

Manpower Changes versus Operational Changes

As changes in external customer demands are expected to fluctuate (i.e., order volumes, mix, and dates), the process simulator has many flexible levers designed to predict outcomes of those changes. To demonstrate the interplay between the two tools, the initial scenario iterations are

- First restricted to only changes in the number and job types of employees needed to be added or removed from the organization to meet service levels with an acceptable level of idle capacity;
- Then, using the best (e.g., highest volume) scenario level of demand, multiple operational changes to management policies, yields, queue times, and so forth are similarly modified to achieve even higher performance results.

Figure 8.20 represents a fictitious sequence of nine iterations that would pass through the entire cost forecasting cycle.

With the combination of these two tools, the bidirectional exchange of data is no longer a technological obstacle. The critical application to make the duality

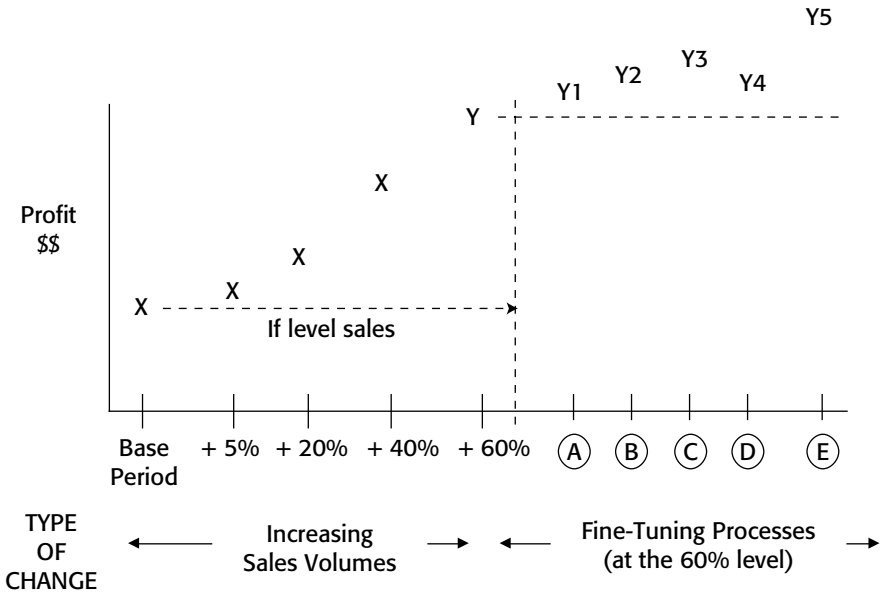


FIGURE 8.20 Scenario Sequence: Volume Increments, Then Fine Tuning

of these two software tools operate harmoniously is the Resource Expenditure Calculator.

One of the output reports from ABC/M is a pro forma (i.e., projected) financial statement. This is identical to step 3, the Cost Analysis, in the ABB/P framework shown in Figure 8.12, “ABB/P Information Flow.” Each projected period’s P&L statement would be segmented by product, service line, and customer. In effect, ABC/M is accurately tracing the consumption of the organization’s resource costs to products and service lines as well as those types of customer segments that place varying demands on the organization. ABC/M also produces pro forma customer-specific P&L statements based on the simulations.

A commercial organization ultimately manages itself by understanding where it makes and loses money, or whether the impact of a decision produces incremental revenues superior to incremental expenses. Organizations are increasingly achieving a much better understanding of their contribution profit margins using ABC/M data. By combining ABC/M with discrete event process simulation tools, an organization can produce a fully integrated plan. It can be assured that its plan is feasible, determine the level of resources and expenditures to execute that plan, then view and compare the projected results of that plan against its current performance to manage its various profit margins.

The combination of these two tools allows “boardroom” level thinking to begin with the company’s complete income statement, generate a feasible operating plan, and restate the results of that plan with an income statement—again for “boardroom” reporting. Advocates of simulation planning software believe

that the brute force computing power of personal computers now adequately provides simulation information that is comprehensive, finite-scheduled, and rule-based and allows for various assumptions about uncertainty. Some advocates argue that it is a superior method to TOC.

In the next chapter I debunk a long-held misconception that it takes months and years to implement a usable ABC/M system. The technique of ABC/M rapid prototyping, coupled with iterative remodeling, has shortened an ABC/M implementation to only weeks.

NOTES

1. *Opus Major* (1266–1267).
2. ABC Technologies, Inc., 1999; www.abctech.com.

Implementing ABC/M Through Rapid Prototyping

“Failing to prepare is preparing to fail.”

—Vince Lombardi, famous coach of the Green Bay Packers, U.S. National Football League¹

INTRODUCTION

Many organizations that are initially applying activity-based cost management (ABC/M) are unsure whether they should solve operational or strategic problems with the new data. The data can be used for both! This section describes the options and suggests that one of those choices may ensure greater long-term sustained success for ABC/M than the other.

When an organization is initially approaching an activity-based project, which kind of ABC/M pilot should come first, top-down activity-based costing or bottom-up activity-based management? Which should follow the other? Activity-based management (ABM) and then activity-based costing, or vice versa? One problem these questions create is a deeper question: What is the difference between ABM and activity-based costing? You have probably noticed that I have separated ABC/M into its components, activity-based costing and ABM. I begin this chapter by addressing the definitions of these terms.

Return to the original question of which to do first, activity-based costing or ABM. Many advocates of ABM might disagree with this, but when a project team is embarking on an ABC/M journey, my suggestion is to first pursue strategic cost reporting and analysis using enterprise-wide activity-based costing, then immediately *use* the results. That is, first calculate the costs of different types of outputs (i.e., final cost objects). Next, starting with the same information and findings from the strategic activity-based costing, drive deeper into more operational cost management issues and apply ABM.

Applying ABM will require more disaggregated activity data and will involve reporting on more intermediate outputs of work relative to the initial,

What Is the Difference Between Activity-Based Costing and Activity-Based Management?

If you ask five cost management experts to differentiate activity-based management from activity-based costing, you will probably get five different answers. Achieving a consensus on the definitions of these terms is a thankless task. I defined ABC/M in Chapter 1. It ultimately becomes a semantics game, so my preference is to suspend this debate and simply refer to activity-based costing as using *strategic* cost information and to activity-based management as *tactical* and *operational* actions planned or taken based on the activity-based data. An additional refinement is that activity-based costing is “the math,” meaning tracing expenses into costs. Activity-based management occurs whenever anyone “uses the results of the ABC math—the ABC/M data.” For sake of simplicity, I refer to ABC/M as the combination of activity-based costing and ABM for those organizations that strive to do both.

higher level activity-based costing model. More important, applying ABM will require asking more questions of the data because they merely produce many findings and observations, but not necessarily conclusions. Many have learned techniques for root-cause analysis, such as the quality management professional (see “ABC/M Measures Total Quality Management’s Cost-of-Quality” in Chapter 6)—with ABM data they now have fact-based information to assist them with that analysis.

As an alternative, activity-based costing models can be designed for ABM purposes by constructing several ABC/M models *inside* the enterprise-wide ABC/M system. These are described as *children ABC/M models* in the discussion of ABC/M Rapid Prototyping. It is acceptable to have intra-ABC/M models within enterprise models. A large parent ABC/M model is simply subdivided into its component children ABC/M models. Commercial ABC/M software accommodates consolidations of children into parent ABC/M models. The costs and information are unaffected regardless of which ABC/M models you work with.

Note that I view an ABC/M pilot as more of a “local” proof-of-concept exercise, often without even bothering to identify the business problems for the activity-based costing data to solve. We are not discussing an ABC/M pilot here, but moving one step beyond an activity-based costing pilot. We want to accelerate how an organization can more quickly receive higher value utility from ABC/M data. In short, you want to make haste . . . slowly.

ABC/M Rapid Prototyping has proven to be a method that accelerates an organization’s learning about ABC/M. I personally experimented one day in 1994 with a consulting client when I was with EDS. My co-worker was quite competent with commercial ABC/M software. Instead of starting the project with extensive training and laborious interviews and data collection, on the first day of

the project I made a request of the president of my client. I asked him to postpone the agreed work plan for a day, provide me with five cross-functional employees for the day, allow us to collectively construct a tiny ABC/M model of their company, and meet at 4:00 P.M. that day. When the president arrived, I asked the five employees to explain what they had built. That meeting continued four hours, with great questions and discovery. I then realized that this method had many better features than the time-consuming method of implementing ABC/M.

ABC/M Rapid Prototyping Accelerates Learning and Provides a Vision

I strongly recommend ABC/M Rapid Prototyping followed by iterative remodeling of each ABC/M's predecessor as a superior approach to implementing ABC/M systems. It is a way to overcome the temptation to construct an ABC/M system that is too detailed prior to the organization's ability to absorb what ABC/M is all about and how it can work for the organization. This is accomplished in just a few days. ABC/M Rapid Prototyping is also an effective way to drive out the natural fear and resistance to ABC/M through training and participation.

ABC/M Rapid Prototyping accelerates the organization's use of ABC/M data by relying on only a few key employees. These informed employees first rapidly construct a high-level ABC/M model for their entire organization (or alternatively for key processes or portions of their organization as described as "local ABC/M" in "Local versus Enterprise-Wide ABC/M," in Chapter 2).

After this initial ABC/M has been modeled and the participants have a much better grasp of what ABC/M is and does, with the help of co-workers they all can subsequently and selectively adjust the ABC/M model to lower levels of detail and higher accuracy. With the subsequent ABC/M models additional employees, who are more familiar with and local to areas highlighted in the initial ABC/M model, can revise and modify the initial effort. These employees are in a much better position to improve the prior version of the ABC/M model. This is because they are more knowledgeable about the employees' work in their respective areas and their outputs.

The intent of ABC/M Rapid Prototyping is to make your mistakes quickly, up-front, and early when it is easier to change the ABC/M model, not later when it is difficult to change. Through ABC/M Rapid Prototyping organizations can build a working and useful ABC/M model in days as opposed to trying to build a Rolls Royce ABC/M model in months. With this speed-up approach, the benefits from improvements gleaned from the ABC/M data can be reaped almost immediately. The initial ABC/M models can then graduate into a repeatable, reliable ABC/M system. This implementation approach is more practical and sensible relative to ABC/M pilots than one-shot big bang ABC/M implementations where the implementers cross their fingers and pray at the end that it will all work.

ABC/M Is Perfectly Obvious, After the Fact!

At first glance the idea of ABC/M can be overwhelming, and this perception might prevent an organization from proceeding with implementing its ABC/M system. There is a general misconception among those unfamiliar with ABC/M that it is a massive enterprise-wide involvement of people with a mudslide of data that must address activities in great detail from all parts of the organization. Another misconception is that there will be no results until the ABC/M system is completely constructed and operating like a production information system. These people are unaware that ABC/M is an analytical tool that is best designed as a layer of reporting that sits on top of and apart from the transaction-intensive information systems.

An additional misconception about ABC/M is that it will take forever to implement and perhaps may not be worth the effort. With ABC/M Rapid Prototyping, an ABC/M system can be built quickly and cheaply. By reducing the administrative effort but yet still raising an awareness of the benefits, ABC/M Rapid Prototyping shifts the cost-versus-benefits evaluation from reluctance to higher levels of interest. These include moving ahead with haste and beyond to a genuine motivation to finish the ABC/M model iterations and arrive at a permanent and repeatable ABC/M reporting system.

ABC/M Rapid Prototyping is an implementation approach in which the initial ABC/M model is immediately followed with an iterative remodeling of the same costs included in the prior ABC/M model, but deeper, with more resolution and visibility. Any issues related to data can be quickly flushed out. Figure 9.1 provides a sense of a succession of models plus some key benefits. ABC/M Rapid Prototyping is a valuable accelerated learning technique for a small but important number of employees and managers. These key participants, referred to as “functional representatives,” not only can get a solid vision of what their ABC/M system will look like; they also can start thinking about what they will *do* with the more robust ABC/M data when they get them.

In a short time, the epoch of ABC/M models graduates into the ABC/M system that can be repeatedly and reliably refreshed. With iterative remodeling the ABC/M team learns to identify and include activity drivers as they are needed rather than assuming they may be required. Figure 9.1 illustrates how the ABC/M models eventually become the ABC/M system. It also illustrates that as model iterations become more detailed the uses of the data can be more operational.

One must adjust one’s thinking to understand ABC/M. ABC/M is not initially modeling a work flowchart. Work flowcharts are somewhat easier for people to follow because they are time-sequenced, left-to-right. ABC/M can place the activity costs into flowcharts later on after the costs of the outputs are known. ABC/M flows costs with an orientation governed by diversity and variation of outputs. But after an ABC/M model is designed, it becomes more obvious to the employees who constructed it, and there is agreement that the resulting costs are logical and defensible.

Each iteration enhances the use of the ABC/M system.

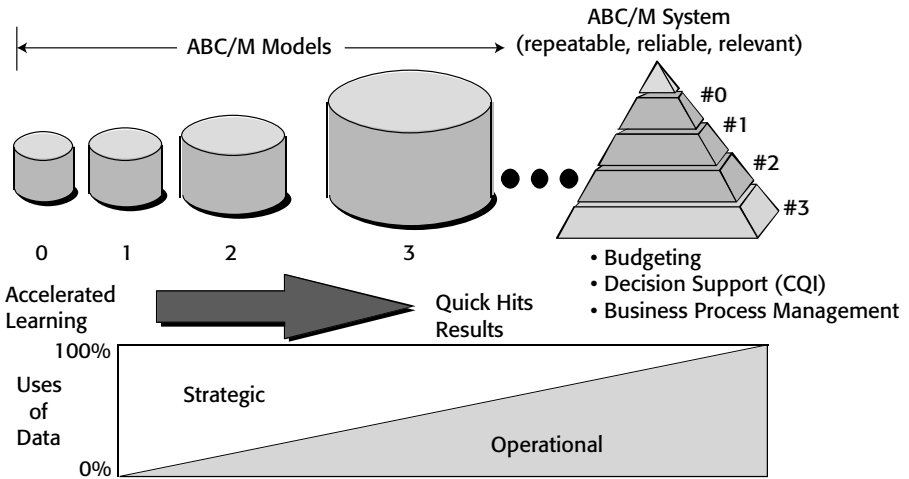


FIGURE 9.1 ABC/M Rapid Prototyping with Iterative Remodeling

ABC/M Rapid Prototyping is effective because it starts where people are already: They know what their organization is doing. They also recognize that they do not understand their costs or mistrust the cost data. ABC/M Rapid Prototyping gives them a chance to model their cost structure. The enthusiasm for implementing ABC/M comes more easily after an initial ABC/M model is completed, regardless of its size or scale. After the first ABC/M model is quickly completed, the participants can then see multiple views of their organization’s costs: its resources, activities, processes, and outputs. They can also realize how ABC/M data can collectively provide answers to questions they just could not get from the information they had been limited to using their existing accounting system.

ABC/M Rapid Prototyping is a much faster way to get phased-learning, buy-in, and results compared to the traditional approach of designing an ABC/M system. Traditional ABC/M system implementations are usually accomplished through intensive interviewing of many employees. Similar to an immersion approach to learning a foreign language, with ABC/M Rapid Prototyping only a few employees who are knowledgeable about the majority of what the organization does are brought together. They construct the first ABC/M model in just a couple of days with a trained facilitator and an ABC/M software specialist. The objective is less achieving accuracy or results and more learning and getting a vision.

In contrast to pilots that often are formally announced to employees with a loudly broadcast “banners-and-bugles” procession, an ABC/M Rapid Prototype is more stealth-like and noninvasive for employees. When senior management makes a major announcement that an ABC/M system will be investigated, some employees only hear the “C” in ABC/M for the costing, and their defensive

shields of fear and resistance go up. Employees may interpret the project as a cost-cutting exercise, perhaps cutting their jobs, rather than as a way to provide for better decision making.

In contrast to ABC/M pilots that begin with collecting vast amounts of data through extensive interviews and questionnaires from many people, the initial ABC/M Rapid Prototyping is conducted in a burst in a couple of days. The exercise involves as few as four to five knowledgeable employees with a facilitator and a trained ABC/M modeler using commercial ABC/M software. Many adults learn better and more quickly through doing as opposed to listening to lectures about the concepts. So the ABC/M model construction begins almost immediately. A key insight the team learns, and will share with their co-workers, is that incremental improvement is preferable to postponed perfection.

The participants are always intellectually engaged in constructing the ABC/M model because they are not modeling some fictitious case study organization; this is their *own* organization. The modeling also deals with and represents the people they know and work with, the things these co-workers do, and the outputs they provide to others. The participants are never bored during this fast-paced exercise. Simple rules are used to speed things up, such as no one being allowed to bring in any data with them; the model must be entirely constructed with what they already know. The only exception to this rule is the financial data. Total expenses for the period being modeled, usually the current or past year, are good to start with. Senior managers who will eventually see the ABC/M model will be able to relate with these total costs because they are already familiar with them. This also assures that the initial ABC/M model will be complete and not mistakenly omit a function. No stones are left unturned.

Building the First ABC/M Model: Tap Dance Now, Waltz Later

The first step in building the initial ABC/M model is quite simple. The organizational chart of employees and contractors, if applicable, is divided into groups of people who do similar things. These groups are often but not always the functional departments. This may result in 10 to 15 groups. The key is to count and sum the number of employees from each group to ensure that no portion of the cost structure to be analyzed is inadvertently left out. When the entire organization is initially modeled, validating this completeness is no problem because the total number of employees tends to be a familiar number and can be reconciled. Each functional representative takes responsibility for the groups of people he or she is most familiar with. Next, the functional representatives define three significant activities for each group they have selected to represent. Figure 9.2 shows an example of a time-effort worksheet that has been successfully used to collect the ABC/M data.

Within 20 minutes each form for each group is completed. More simple rules can be applied when defining the activities. As examples, the work activities should follow a “verb-adjective-noun” grammar convention. Assume that people are productive only five hours of an eight-hour day and ignore the other three hours for

Example for sales function with 45 salespersons

Natural Work Group Name (e.g., sellers)		No. of employees		
Work Activity Description	Percent	Ideal Activity Cost Driver	Code	Example
1. Make sales call	<u>45</u>	no. of <u>sales calls</u>	<u>C</u>	_____
_____				_____
2. Resolve customer disputes	<u>35</u>	no. of <u>customer disputes</u>	<u>C</u>	_____
_____				_____
3. Create strategies	<u>20</u>	no. of <u>planning sessions</u>	<u>D</u>	_____
_____				_____
4. _____	_____	no. of _____	_____	_____
_____				_____
5. _____	_____	no. of _____	_____	_____
	<u>100%</u>			

Key:
 A = Suppliers
 B = Products, Services
 C = Customer Prospects
 D = Business Infrastructure
 E = Intermediate Assignments (to other activities)

FIGURE 9.2 Work Activity Input Form

work breaks and social time. (The three hours are baked into the five productive hours. Deal with other three hours on some later day. Treatment of those hours is more of a work culture issue.) Instruct the functional representatives that the three activities should account for more than 90 percent of what the group does throughout the year. This rule forces each activity definition to be worded in what may appear to some as being too summarized for each group. But approximately 40 to 60 activities will result from all of the input forms, which is more than adequate to trace the activity costs to cost objects more accurately than the organization’s traditional method does.

Use estimates for the employees’ time-effort in increments of 5 percent. Discourage any one of the three activities from being 80 percent or more; if a participant struggles with that, then allow only that activity to be subdivided into two components, thus yielding four activities for that group but still summing to 100 percent. Do not allow these two specific activities: “supervise and mentor employees” and “attend meetings,” even though these things occur. Excluding them will ensure that all the work activities will be traceable to cost objects.

Ignore salary and wage differentials. Simply use an average salary for every employee. In effect, the mail clerk earns the same salary as the president in this first model. In most cases, this assumption won’t make a significant difference to the costs of outputs, service lines, and customers for purposes of this first model.

ABC/M's property of error dampening will help bring about that result. In future model iterations salary differentials for different departments can be considered.

Additional rules to speed up the process involve not allowing consensus among the "functional representatives" when it comes to defining the activity dictionary, the drivers, or the driver assignments, and estimating the quantities that flow through the drivers. (Refer back to Figure 2.10, "Assignment Rules for Activity Drivers" and the brief discussion about selecting activity drivers.) Each functional representative sufficiently knows his or her own area; the representatives do not need any help from others. Functional representatives "own" their area of coverage. Any estimating error on their part cannot have any grave consequence. The consequence of error is simultaneous over-costing and under-costing, but these minor errors offset and wash out anyway when the costs reassign to the cost objects. Regardless, the intent of this first ABC/M prototype model is not precision costing. It is simulating for the participants and the ABC/M project team. What they will have at the end is an economical and low-risk technique to get to their eventual ABC/M system.

A Key to Getting Desired Results: "Cost Object Profiling"

Preliminary estimates work well with ABC/M because any estimating errors in the activity costs will offset when they are further traced (combined) into the outputs, service lines, customers, and service recipients. (The concept of offsetting error may be counterintuitive, particularly to accountants who are trained for high precision and perfection, but the properties of an ABC/M assignment network as a "closed" system make offsetting errors possible.) Error dampening works even better when no activity cost is too large relative to the other activity costs. In this way any estimating error of any single activity cost cannot materially affect the cost of all the outputs. Error dampening also works better when the cost objects are deliberately predefined into look-a-like groupings that already reflect diversity and variation that ABC/M is so good at tracing into. The facilitator can ensure that well-segmented costs are easily accomplished by predefined the groupings to achieve this effect.

Like a caricature sketch artist at an amusement park, the facilitator is skilled at selecting just enough activities and cost objects to reasonably represent the organization without choosing too many and consequently getting the ABC/M model too far past diminishing returns in extra accuracy for extra effort. The technique of predefining the groupings of final cost objects is accomplished through "profiling." In most cases the organization has already been referring to families of its products and service lines. The functional representatives realize there may be dozens or hundreds of specific products and service lines within each family. Those subdivisions are already known and probably codified by their organization.

Cost object profiling is much more applicable for service recipients and customers because the standard groupings that organizations use do not usually work well for ABC/M. For example, some organizations may segment their customers

or service recipients by geographic territories. However, large differences in how customers consume the workload may have little to do with where these customers are located. Segmenting customers by demographic groups or by the levels of special attention for the customers and service-recipients may be a much better segmentation to reflect more dominant ways in which workloads are disproportionately consumed. Some ABC/M teams refer to these customer groups as “clusters” or “centroids.”

Figure 9.3 is a worksheet that the facilitator uses to define multiple and various types of customer or service recipient groupings. At a minimum, by selecting only three basis of differences, with only two extremes, the eight unique combinations (i.e., $2 \times 2 \times 2 = 8$) are assured to preset the diversity of any costs into these eight cost objects.

With profiled final cost objects and 30 or more work activities, no one activity being too large, the functional representatives are reassured that they will trace to and calculate fairly reasonable costs in their first effort.

Teach Them to Fish, and They Can Fish Forever

The construction of the model is fairly straightforward. Each activity is traced to the cost objects that cause the activity levels to fluctuate up or down. This link ensures that a causal relationship exists. Next, measurable activity drivers are

A key to initial ABC Rapid Prototyping to identify major sources of diversity.

Influencers of Diversity of Activity Cost Consumption	Customer Profile Candidates			Dominant Influences (Check Two)
	○ ←	Polar Extremes	→ ●	
Geography	Near	vs.	Far	<input type="checkbox"/>
Order Habits	Standard	vs.	Specials	<input checked="" type="checkbox"/>
Order Frequency	Infrequent	vs.	Frequent	<input type="checkbox"/>
Level of Demand	Light	vs.	Invasive	<input type="checkbox"/>
Technical Sophistication	Advanced (E-commerce)	vs.	Archaic (Manual)	<input checked="" type="checkbox"/>
Etc.	●	vs.	○	<input type="checkbox"/>
Etc.	▼	vs.	▲	<input type="checkbox"/>
				<input type="checkbox"/>

FIGURE 9.3 Final Cost Object Profiling

identified for each activity, and finally, activity driver quantities are estimated in total and for each cost object in relative proportions. Commercial ABC/M software does the rest by reassigning the costs through the linked cost assignment network into the final cost objects.

After the salary and fringe benefits-related costs have been totally assigned to the cost objects, the remaining resource expenditures go quickly. The financial controller provides the top 10 non-wage expense items in a way that they account for roughly 90 percent of the non-wage resource expenses. Non-wage expenses almost always follow the work, and each expense item usually traces into fewer than four of the many defined work activities. Sometimes the expense type is dedicated to only one activity. Because the ABC/M Cost Assignment Network was completed an hour before this exercise, all that needs to be done after these last resources are connected to activities is to recalculate the model. The non-wage-related costs trace all the way through into the final cost objects. The ABC/M model is then complete and ready for analysis.

The combination of using knowledgeable workers' informed estimates and the error dampening property of the ABC/M assignment network has very significant implications. Together these mean that using estimates in place of facts will have a minimal adverse impact on the accuracy of an ABC/M system's final cost objects. This also means that only a few key employees are initially needed for data collection. Everyone is somewhat surprised that the organization can achieve ABC/M results without having to have all of the data available from a subsystem to get started on ABC/M to see reasonable results. This revelation also ensures that ABC/M will first get some traction as a way to improve the organization's performance rather than potentially stalling out as a complicated information technology (IT) and systems project. The IT aspects of ABC/M come much later and well after a few users are already relying on the ABC/M data for making better decisions.

The ABC/M Rapid Prototyping experience is like a practice round in a sport without keeping score. By having a few key employees construct the initial model from scratch, they much better understand what they have created. There is ownership. The results are sufficiently credible to them despite the resulting calculated costs usually being quite different from their beliefs or standard costs from their existing accounting system. These traditional costs will probably have been calculated based on flawed allocations and misguided thinking. ABC/M is very logical. Allocating costs using factors without any causal relationships is not.

Constructing and Populating ABC/M Model Number 0: The Starting Point

Figure 9.4 presents an example of how the suggested three days for the ABC/M Rapid Prototype should be spent. Note that on the afternoon of the third day the peer group is invited in for a briefing from the small team that constructed Model Number 0. This is where the buy-in takes place.

	DAY 1	DAY 2	DAY 3
Morning	Brief training	Continue to choose and assign drivers	Analyze results
	Organizational chart, head counts	Trace nonwage related expenses	Prepare for peer group presentation
	Products, customers	Compute segmented profits	Peer Group Presentation
Afternoon	Define and cost activities	Assign attributes	Debrief
	Choose and assign drivers		

FIGURE 9.4 Three-Day ABC/M RP Work Plan

The initial ABC/M Rapid Prototype is nicknamed Model Number 0 to reinforce an understanding that Models Number 1, Number 2, and so forth will be used as further refinements. An ABC/M Cost Assignment Network is scaleable. (Refer back to Figure 2.16 (page 66), which illustrated how the ABC/M Cross has scaleable depth and can always be further disaggregated into lower levels of detail.)

Groupings of resource expenses, work activities, types of outputs, and types of customers or service recipients should be subdivided (i.e., disaggregated) only if more segmentation achieves needed visibility or additional accuracy. The participants learn the ABC/M rule to always ask: “Is the climb worth the view?” After Model Number 0, the ABC/M project team can gather additional specific data when it becomes apparent that the accuracy of outputs is more sensitive to those specific data. They can then substitute the higher-grade data for the estimates. The project teams can also substitute a few different activity drivers as better drivers than the ones they initially and spontaneously selected and used.

Instead of assuming that detail is needed everywhere, ABC/M Rapid Prototyping deliberately starts at high levels and adds more detail only selectively and only where it is justified. Sensitivity to error from adding more detail can always be tested with the existing ABC/M model. The team learns the properties of estimating error in an ABC/M Cost Assignment Network. To some, particularly to accountants, the result is counterintuitive. The impact of estimating error for the activity costs means some are slightly over-costed and the others must be under-costed; there must be zero-sum error. But as the activity costs combine together further down the network into the final cost objects, any error begins to offset. In ABC/M error does not compound, it dampens out. (Refer back to Figure 2.23 and the discussion about it, in which I revealed how high levels of accuracy can be quickly achieved with minimal effort. Much less additional accuracy comes from more effort.)

Refreshing the ABC/M Rapid Prototype models or the ABC/M production system is done with a blend of updated, measured data and estimates for the remaining and less vital areas of the ABC/M model. Of course, the financial ledger expenditure data should be a source, with its 100 percent perfect data.

(Some organizations, however, have simply begun with the total expenses from the most recent run of their payroll.) The purpose of the initial rapidly prototyped models is not to pin down all the details right away but rather to stimulate the participants. It gets them thinking, exchanging ideas, realizing how their current data are limiting or misleading, and most important, envisioning how their organization may use the output data to address problems and make decisions.

ABC/M is basically a self-discovery experience. Even when a much larger production ABC/M system is up and running, the ABC/M data do not necessarily provide answers. They tell people where to look and what additional questions to ask. The early participants begin experiencing what ABC/M is and what it is not. They will probably become a much better source to begin informing their organization about ABC/M's benefits than perhaps the designated ABC/M project team or hired consultants whom other employees may suspect as having self-serving motives.

ABC/M Rapid Prototyping helps prevent "death-by-details." ABC/M project teams often have a problem determining the right level of detail, work activities, products, channels, and customers to focus on. There are pitfalls if an ABC/M system is designed using traditional IT development methodologies to solve this problem, the ABC/M leveling problem. With IT methodologies, one of the work-steps in the traditional schedule for the first few weeks is to perform the "data requirements definition." But this step is not appropriate for designing the activity-based costing architecture. This is because there are too many interdependencies among ABC/M's resources, activities, and cost objects. There is interplay between the levels of detail, each affecting the ultimate accuracy of outputs to be costed. The intent of the ABC/M Rapid Prototype is to get reasonably right results in a workable and timely fashion. Drilling too deep too soon is a trap that should be avoided. The extra benefits of a little more accuracy aren't worth the extra effort. Ironically, after Model Number 2 or so, the data requirements are a derivative of the ABC/M Rapid Prototyping exercise.

Ideally Model Number 0 should be completed in two days so that the third and last day of the experience can be dedicated to playing with the model, analyzing the ABC/M data, and learning the principles and properties of ABC/M.

The first thing the ABC/M team can do on the last day of the exercise is to add a few attributes to the model. Two effective attributes are the level of importance and the level of performance. Adding these attributes lets the participants appreciate that their ABC/M system delivers much more visibility than just calculated cost amounts. They realize that attributes begin to suggest what general directions they should investigate. Where should they scale back on spending? Where should they invest more energy? What processes might they consider to outsource? What activities, products, or customers should be promoted more?

Analyzing Model Number 0 to Get Buy-In

Finally, the ABC/M team can begin analyzing the model with the intent of evaluating the impact of specific changes. By adding volume and quantity data, the model quickly computes the unit costs for each product, service line, and any in-

intermediate output such as the cost per equipment hour if that is relevant. As part of the unit cost calculation, ABC/M also reveals the unit cost of each contributing element, such as for each activity cost. Because unit of work output costs can substantially vary even for outputs with comparable total unit costs, the team can begin its own form of internal benchmarking to explore best practices.

Through this mock analysis, the team inevitably begins to test the feasibility of using the ABC/M data for some of the pressing issues the organization may be struggling with, such as estimating the costs of taking on certain types of orders from specific types of customers or service recipients. Team members can play with alternative ways to assign depreciation costs to equipment other than the traditional way the existing accounting system is assigning depreciation. And they can see costs without any depreciation, because depreciation is a sunk cost (not just a fixed cost), if they want to consider using a marginal cost rather than a fully absorbed cost in their analysis.

The functional representatives and the ABC/M team can get a glimpse of how much of their cost structure is organizationally sustaining relative to costs that make and deliver products or serve their customers and service recipients. That ratio may be shocking. The total sustaining costs may be greater than 30 percent of their cost structure, excluding purchased material costs. Is that good or bad? It probably depends on other factors. But at least they can see the amount and consider if they wish to maintain those same levels of spending on non-product, non-service, and non-customer-related costs. The functional representatives can also discuss the concept of unused capacity management now that the cost data are structured in a format that makes more sense to them.

The point here is not to over-analyze anything. It is to get the participants to already connect the data to uses of the data—and to connect some of those uses to some of the burning, high-priority issues of the organization. This creates the needed buy-in to proceed with building the ABC/M Model Number 1 and with ABC/M in general.

Securing and Propagating the Learning: A Communication Plan

A useful way to expand the learning and simultaneously gain further buy-in is to immediately have the Model Number 0 participants make a brief, unrehearsed presentation to specially selected peers, and perhaps an executive or two, covering the following about their few days building the model:

- What did we do?
- What did we learn
 - about our organization's cost structure?
 - about the ABC/M methodology and ABC/M model properties?
- What are our options for next steps?

It is important that the guests also have their expectations well managed, just as the functional representatives' expectations were. The peer group needs to know that the ABC/M model structure they are witnessing is a miniature scale

model and that the calculated costs were derived 100 percent entirely from estimates (except for the starting financial expenditure totals). Fortunately, even in ABC/M Rapid Prototype Model Number 0, the ABC/M properties begin to pile up the output costs in roughly the same relative amounts as will the subsequent, larger-scale ABC/M model numbers 1, 2, and so forth.

An important reason to conclude the first ABC/M Rapid Prototyping session by presenting to peers is that the ABC/M project team will much better appreciate that they really need two ABC/M plans: an implementation plan and a communication plan. The second plan may well be more important than the first. ABC/M is about behavioral change management. Who is initially exposed to ABC/M and subsequently the sequence of who else is exposed really matters. If naysayers or threatened managers who have clout are introduced too soon into the process, they can prematurely poison the project before ABC/M has a chance to take hold.

By generating some visible benefits with an initial group of employees with a positive attitude, enthusiasm builds. Inevitably everyone will learn that costs are abstract and intangible. Costs measure the effects of the things that are placing demands on work, so measuring and calculating costs is actually modeling to get a representation of how resource expenditures are used. Resources are where the capacity to do work resides. Capacity is what expenditures pay for. By working with and refining ABC/M models, workers find their knowledge growing, and they begin to appreciate the ABC/M adage that, "It is better to be approximately correct than precisely inaccurate!"

ABC/M Model Design and Architecture for Special Cases

An effective starting point for the ABC/M Rapid Prototype model is to be as broad as possible. This means to try to include all the head counts that fully and partially are involved in supporting and directly serving all of the customers and service recipients. There will be certain kinds of problems where the focus may be on only a specific process with a more narrow interest such as simply needing the costs of standard services excluding nonstandard services. Or the interest may be in only knowing the costs of certain outputs that are components of a standard service, such as the workstep to check a customer's credit when processing different types of sales orders. In some cases, broad scope ABC/M models begin by being divided into multiple "children" ABC/M models that are later consolidated into a single "parent" ABC/M model. Commercial ABC/M software accommodates consolidations. In the opposite cases, organizations start with the enterprise-wide ABC/M model, then later divide portions of it into dedicated "children" models that can be consolidated into the parent. Both of these cases are portrayed in Figure 9.5.

The other special case involves multidivision organizations with a central headquarters. When there are only a few divisions, perhaps fewer than seven, and the interest is on the "costs-to-serve" service-recipients, one can focus the entire

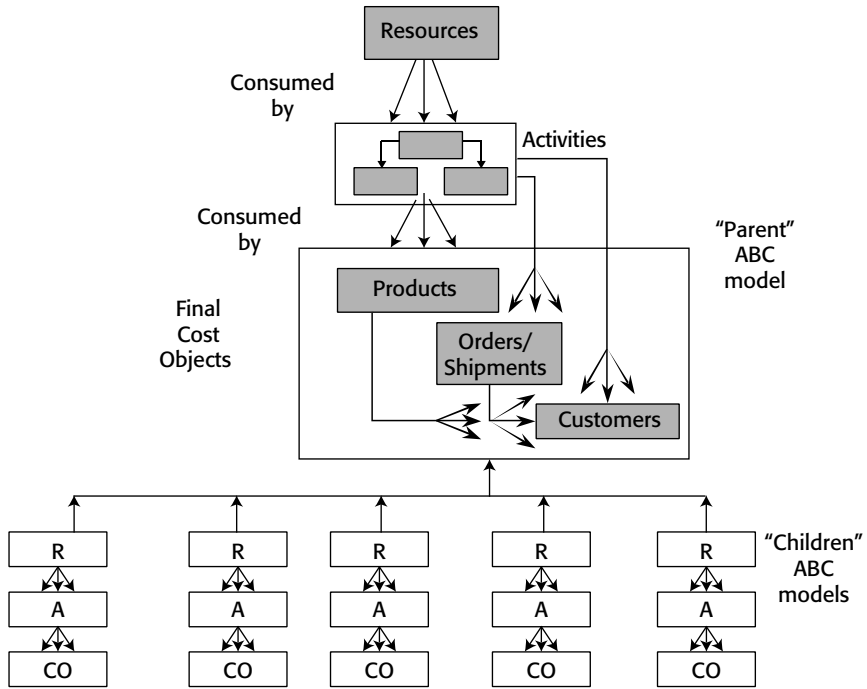


FIGURE 9.5 Children-Parent Consolidation Models

ABC/M Rapid Prototype on only one of the divisions, but also including the parent headquarters. A full activity dictionary, activity drivers, and activity driver assignments are developed for the division to be analyzed as well as for the headquarters. The other divisions are also included with only a single activity, such as “make Division B outputs.” The presence of the other divisions is to allow the corporate headquarters work activities to be traced proportionately to which divisions use more or less of their work. This helps the divisions realize there may be better and more just methods to trace headquarter expenses than the controversial broad and arbitrary cost allocations. Figure 9.6 illustrates this approach.

If there are a dozen or more branch offices of varying sizes and roles, it may be necessary to construct three or four “representative” ABC/M models based on a generic model. Similar to the single division ABC/M model, this arrangement should also include the support traced from the central headquarters as assignments. However, the headquarter activity driver assignments must reflect how much goes to all of the branches that make up the type of representative branch. Once each of the types of representative branches is modeled, each type can be scaled up by multiplying it by the number of branches that fall into that category. Figure 9.7 illustrates this method of ABC/M Rapid Prototyping.

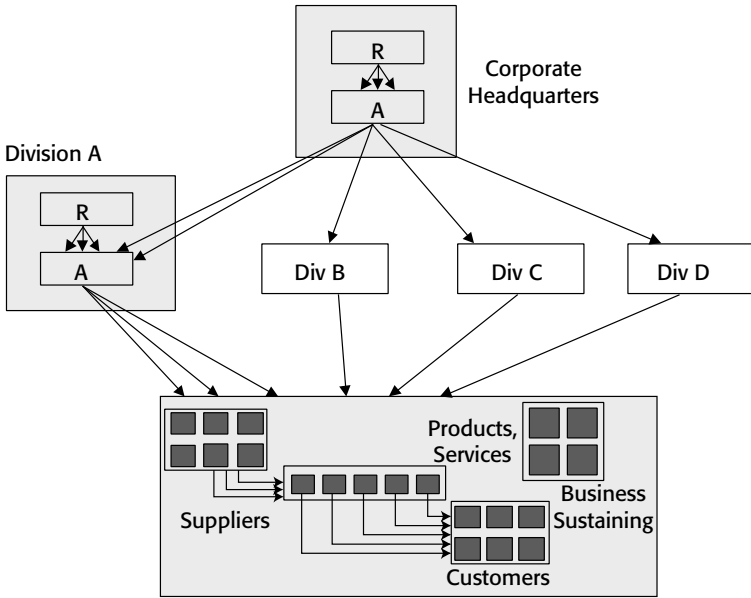


FIGURE 9.6 Multiple Division and Headquarter Models

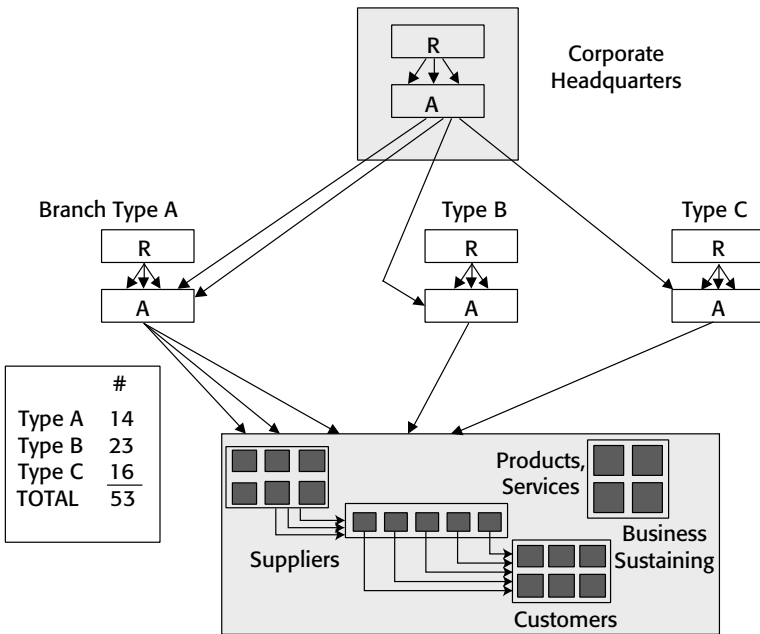


FIGURE 9.7 Representative Branch and Headquarter Models

assignment view. The main purpose of this initial step is to calculate the costs of outputs, products, service lines, channels, and customers based on their unique diversities and variation. Do not get distracted by the calculation of the activity costs. Work activities will eventually receive attention; what matters is getting visibility of the output costs.

An obvious next step is to combine all these costs with their matching revenue data to produce profitability analysis. (Governments and not-for-profits compare the various cost-per-each-unit of output, such as cost to plow a mile of highway for different types of highway.) This approach was described as number 5 of the ten advances in cost management in Chapter 2. Revisit Figure 2.17 to visualize the sequence.

This “activity-based costing comes first” approach suggests using the results from activity-based costing, reported as profit levels and the sources of profit, to focus and quickly react to low-hanging-fruit strategic opportunities. These types of opportunities usually involve one-time rationalizing decisions and changes. Examples of one-time actions are increasing prices; dropping certain products, service lines, and/or customers; and establishing surcharges for extra services using an à la carte menu-priced format. Follow-up actions for using the ABC/M data are covered in “Seven Options to Raise the Profit Cliff Curve” in Chapter 3.

ABC/M Rapid Prototyping supports this sequence of output costs first and process costs afterwards. After the activity-based costing data have been leveraged for strategic purposes, revisit all the work activity costs in the activity-based costing structure. There are two choices for the subsequent “ABM comes second” approach:

ABM Choice Number 1

The first is to disaggregate the activity costs and their outputs to allow for more detail and granularity. This additional visibility can lead to potential discoveries and revelations by managers and employees. The impact of disaggregating activities and outputs results in the same amount of total costs, only with a larger number of activities and cost objects that are more granular—they have been subdivided. With an increased number of more detailed activities and cost objects, there will probably be increases in intermediate outputs of activities, and there will be opportunities to calculate the costs for those intermediate outputs (e.g., cost per processed invoice).

This choice usually requires a dedicated and local intra-activity-based costing children model used for better resolution to aid in identifying problems. These local intra-activity-based costing models were described in “Local versus Enterprise-wide ABC/M” in Chapter 2. Local ABC/M models are somewhat like a stand-alone “departmental” ABC/M model. There is a minor risk that local ABC/M models can reinforce organizational stovepipe mentality that managers are trying to move away from toward process-based thinking.

The value to this approach is that it allows the manager and the department to appreciate how the increasingly broader diversity and variation of their outputs can have widely varying costs. In particular, the impact of all the reworked items emanating from customer returns, errors, and nonconformance events can be measured and analyzed. As constantly preached in this book, variety and diversity cause complexity, and complexity results in extra effort and costs. Many managers pursue efficiency and streamlining; however, often their real problem is not efficiency but understanding what causes the complexity they are dealing with daily. The local intra-activity-based costing model provides data for their total costs, unitized costs of outputs (plus total and unitized work activity elements within outputs), activity drivers, and cost drivers. These data are invaluable for root-cause analysis and performance measurement.

ABM Choice Number 2

An alternative “ABM comes second” approach would be to calculate “business process” costs. To accomplish this, one would readjust the organization’s view of the same original activity costs (or optionally the disaggregated and more detailed activities) that are used for activity-based costing. Now using *only* the activity costs prior to their reassignments, one should orient the organization’s thinking about how the activities constitute the business processes as sequenced in time. As described in the discussion of the two views of costs in Chapter 2, activities belong to business processes. With the activity costs now sequentially aligned along their business processes, a variety of ABC/M techniques can be applied to further focus and seek out root causes of problems or special cases.

By using whatever combination of ABM choices and cost analysis techniques are more appropriate for your organization, ultimately the “ABM comes second” approach identifies those work activities that promise the greater opportunities for cost management. In the end, ABC/M’s greatest value is as a focusing tool.

In summary, the “activity-based costing comes first” and “ABM comes second” approach shown in Figure 2.19 illustrates the sequence using the ABC/M Cross. The bold arrow-line simply represents the quest to first discover and learn how diversity and variation in products, service lines, and customers relates to profits, then dive deeper into the cost structure to better manage the organization’s activities and business processes.

Top-Down versus Bottom-Up ABC/M

Some organizations launch their ABC/M with top-down executive sponsorship from senior executives. Others begin their ABC/M as a grassroots effort relying on bottom-up pilots as proof-of-concept. The “top-down” and “bottom-up”

ABC/M should not be confused with the sequence of activity-based costing coming first and ABM second that is being advocated here. The “activity-based costing comes first” approach allows a model to be constructed much more quickly than normally perceived using ABC/M Rapid Prototyping. This quickly provides profit information that organizations are very interested in. Speed-to-results is becoming increasingly more important for senior managers. They are exhibiting less tolerance for lengthy projects with potentially shallow results.

Some organizations (and software vendors) think they are performing activity-based costing when, in reality, they are only performing activity analysis. Referring back to Figure 2.19, the project team is simply making an immediate left turn, after computing its activity costs, and then sequencing the activity costs into the business process costs. Now there is some value to this information; it does, for example, allow the organization to think about its work activities, costs, and how well its processes are performing. But activity costs alone do not reveal the critical insights about how diverse mixes of products, service lines, and customers create the complexities that manifest into extra costs. Only by further reassigning activity costs into their broad mix of outputs can managers better understand their cost structure.

In summary, I advocate first determining and understanding how your organization’s cost structure relates to its *true and actual* profitability, at all contribution levels. That step accomplishes bringing about focus—and possibly some one-time actions (e.g., repricing, rationalizing). And these actions can be cost-effectively achieved with a level of cost data accuracy that is reasonably right for those kinds of decisions.

After the results of the strategic activity-based costing has raised levels of awareness, the organization can begin disaggregating (and possibly construct several intra-activity-based costing models) to foster operational use of the activity-based costing data for productivity improvements. This subsequent phase is also where additional linkages of the activity-based costing data (e.g., performance measures, process-based management, EVA, TQM) can be leveraged for the purposes of activity-based management.

NOTE

1. Andrew Hill, *Be Quick But Don't Hurry* (New York: Simon & Schuster, 2001).

Common Misconceptions about ABC/M and Employee Buy-In

“The majority of people believe in incredible things which are absolutely false. The majority of people daily act in a manner prejudicial to their general well-being.”

—Ashley Montagu, *American anthropologist*¹

INTRODUCTION

When ABC/M implementation projects fall short of an organization’s expectations, it rarely has anything to do with the ABC/M methodology or technology that now supports ABC/M. Many failures result from misconceptions by the ABC/M project team. Regardless of the problem, however, almost all potential pitfalls must be considered and addressed to achieve the minimal threshold level for success, where users can continue to reuse the data and request updates from period to period. One specific area that exposes the project to risk is securing support and buy-in from both senior managers and employees.

Ninety percent of successfully implementing ABC/M is managing organizational behavior; the remaining 10 percent is the math. Unfortunately most organizations reverse these portions. They spend an excessive amount of effort agonizing about the construction of their ABC/M model and not enough time thinking about how people might react to the new data or might even be reacting to the announcement of the ABC/M project.

Failing to get buy-in is one of the major reasons that ABC/M projects do not live up to their expectations; the expectations of managers and employees are often not effectively managed. These expectations are part of the “soft” side of business and commerce, the people side. Issues will surface that relate to the psychology and culture of an organization because ABC/M usually challenges the belief system of an organization, which can result in resistance.

The project can fall into the category of “shoot the messenger.” Even if ABC/M provides managers with critically revealing information, managers may choose to continue using their old, flawed information because they are comfortable with it and know how to work around its inadequacies. As the expression goes, “Better the devil you know than the devil you don’t.”

I discuss the following seven problem areas related to acceptance of ABC/M:

1. ABC/M is perceived as a fad or another “project of the month.”
2. There is too much reliance on executive management buy-in to ensure success.
3. There is a false assumption that a good ABC/M implementation plan is the key to success.
4. ABC/M is perceived as another meaningless project from the accounting department.
5. Organizational ownership of ABC/M is destroyed by using “standard” definitions.
6. Upfront ABC/M training is completed too soon.
7. There is an assumption that progressing from activity-based costing to ABC/M will be easy.

ABC/M as a Fad or Another “Project of the-Month”

One reaction to an announced ABC/M project has been, “ABC/M is just another management improvement program. We’ve seen them come and seen them go. This too shall pass.”

Probably one of the major misconceptions about ABC/M is that it is an improvement program. It is not! The ABC/M data are simply a means to ends. That is why ABC/M itself should not be labeled as an improvement program. If employees and managers are given the impression that ABC/M will be the next magic pill, it becomes a candidate for “fad of the month.” ABC/M data only make visible the economics of the organization and the cost consumption that is occurring. However, ABC/M also provides the database that can be interrogated to understand cause-and-effect relationships.

Various management improvement programs will continue to evolve, but the laws of physics remain constant. ABC/M is basically modeling properties of the real world. And the output of the ABC/M calculation engine is always the input into someplace else. With regard to true improvement programs, ABC/M data can serve as an enabler to squeeze out greater results.

Improvement programs for which the ABC/M data can be used as an enabler include:

- Strategic planning: service line and customer rationalization
- Supply chain management: efficient consumer response (ECR)
- Performance measurement: balanced scorecards
- Total quality management (TQM)

- Cycle-time reduction
- Business process reengineering (BPR)
- Behavioral change management
- Theory of Constraints (TOC); finite capacity scheduling
- Shareholder value analysis (SVA) and value-based management (VBM)
- Product and service value engineering and value analysis
- Benchmarking
- Mass customization
- Core competencies
- Shared service center negotiated contracts: transfer pricing

Regardless of which improvement programs are initially being targeted for ABC/M, definitely select at least one, and start by working backwards with the end in mind. That is, clearly define the objective at the beginning. That will help guide the level of detail required. Ideally, start by attacking a problem that will not require extreme detail so that a higher level ABC/M model can be quickly constructed.

Over-Reliance on Executive Management Buy-in to Ensure Success

Many ABC/M implementation project teams assume that senior management sponsorship is critical and required for ABC/M to be successful. It is true that, as in all new ventures into unfamiliar areas, senior management endorsement is required for ABC/M. But in the long run the real judges of ABC/M will be the end-users of the data, not just the executives.

Because the ultimate end-users of the ABC/M data will determine ABC/M's success, senior management sponsorship is necessary, but not sufficient. In other words, although ABC/M needs senior management buy-in to succeed, that buy-in alone will not guarantee success.

Once you get some buy-in, strike quickly. Credibility is a commodity with a short shelf life. It must be continuously re-earned until the end-users understand what they are seeing in their ABC/M data. Build on small wins if that is all you get; just keep the momentum going.

False Assumption That a Good ABC/M Implementation Plan Is the Key to Success

Some ABC/M implementation teams believe that the key to a successful ABC/M project is having a *great* implementation work plan. In reality, ABC/M projects need *two* plans, an implementation plan and a communications plan. The second plan is usually more important than the first. Who is first exposed to the ABC/M data and methodology matters because there is a risk that those who are threatened might immediately discredit ABC/M and seek termination of the project. Because

ABC/M has such a significant behavioral change management aspect to it, one must include communications in the front-end planning. Too often the ABC/M implementation plan focuses mechanically on what data should be collected and from where, but it does not acknowledge how an employee could positively influence another employee.

Organizational change management is what ABC/M is all about. ABC/M may well be listed some day as a social tool. It can be used to modify behavior. It is important to treat the data responsibly, and not use the information like another accounting police control tool. ABC/M is excellent for decision making, and its rigor is also useful for individuals to build stronger cases for their decisions.

Another Meaningless Project from the Accounting Department

Some ABC/M practitioners suggest that if the ABC/M project champion is an accountant, the project is doomed to failure. That is, having the ABC/M project be initiated or led by the accounting function is the kiss of death.

Both individual and group leadership are closely connected, so it is best to address them together. The early ABC/M projects were most successful when they were initiated by an operational or strategic department, such as a bank's back office processing center. The ABC/M projects that work best are "pulled through" by operations rather than "pushed through" by the accountants.

The answers to two questions determine "organizational readiness" for implementing ABC/M: Are the conditions right for ABC/M data? Is the project leader committed and enthusiastic about ABC/M?

Four Reasons for Adopting ABC/M

A major reason that companies look into implementing ABC/M is that they have finally recognized that their existing cost allocation scheme is flawed because it allocates expenses into costs using an allocation basis without a sufficient cause-and-effect relationship. When this situation is present, there is a high likelihood that products, standard services, and customers are being improperly costed and thus are inaccurate and misleading.

Four primary forces influence organizations to adopt ABC/M:

1. Increasing heterogeneity and diversity of outputs, products, standard services, channels, and customers. This in turn leads to disproportionate consumption of different elements of the indirect and overhead costs.
2. Increasing complexity in the support overhead and core business processes; this results in interorganizational activity-to-activity cost relationships that are a step or more removed from the final cost objects.
3. Substantial indirect and overhead costs.
4. Increasing need to understand how the marketing, selling, distribution, general, and administrative (i.e., S, G, &A) period costs are caused and traced relative to their channels and customers.

An ABC/M Project Champion with “Fire in the Belly”

Whether the ABC/M project leader is an accountant or an operations person is less an issue than whether the individual has a real and burning desire to provide end-users with much better cost and managerial data. If the ABC/M project champion passes the “fire-in-the-belly” test, there is a strong chance the ABC/M project will be successful. Put the right people on the bus. That is, provide the ABC/M champion with a team of people who care about the destiny of their organization.

Organizational Ownership of ABC/M Destroyed by Using “Standard” Definitions

Some people believe that predefining standard activity dictionaries with standard cost drivers will prevent users from building bad ABC/M models. It is very important to secure the involvement of employees and managers in defining the ABC/M model and providing information for it. If the involvement of the ABC/M project team (or a hired consultant) extends beyond the primary role of facilitation, then the “ownership” by users is dramatically reduced, as well as their interest.

In the cases where “standard” dictionaries and cost drivers are dictated to the users, a similar undesirable result may occur. Standards may be applied to assure consistency and comprehensiveness, but they are best defined as one level of “summary” above the base level where the activity costs are actually being calculated, flowed, and accumulated. It is best to allow users to define in their own words the majority of the work activities, cost drivers, and cost objects.

Upfront ABC/M Training Completed Too Soon

Some people believe that everyone in the organization needs to be trained upfront. Their logic is that everyone’s buy-in can be quickly won, and the employees will also know how to use the ABC/M system.

Timing is crucial when it comes to ABC/M training. It is a mistake to train too many of the wrong people too early, but not training the right people soon enough is another trap. The key is to determine who are the initial three groups needed to successfully initiate the ABC/M project:

- The ABC/M project implementation team.
- The “functional representatives,” who estimate data as contributors but may not be initial users of the ABC/M calculated data.
- The end-users of the data, who may be not just senior managers but functional operators, such as the customer order quotations people. Without the ABC/M data, they may be placing the organization at risk.

Once these groups are identified, the next step is to develop a communications plan to systematically expose others on an “as-needed” basis. It is important to manage people’s expectations throughout the entire ABC/M roll-out process.

Assumption That Progressing from ABC to ABC/M Will Be Easy

Some people believe that managing costs is easy after one finally knows them. They believe that once their ABC system is in place, calculating costs, then managing them (i.e., ABC/M), will happen automatically.

One major disappointment for ABC/M project teams is when the prospective users of the ABC/M data fail to act on the information. Sometimes the prospective users simply do not do anything even when it is obvious that for the organization's safety or significant benefit they should. ABC/M suffers when users fail to move from analysis to action.

After the real, true, and actual costs become known and are accepted as credible, there may very well be winners and losers. It would be inappropriate to punish or reward the parties. No one in the organization knew the magnitude of the misleading data reported from the predecessor accounting system. Therefore, it is important to treat the *new* ABC/M data responsibly. ABC/M is an organization-wide tool and should be treated as a form of business intelligence, not as a new weapon for management to punish employees with.

Also, particularly at the beginning of an ABC/M project, be careful not to get caught in a pattern where the potential users keep sending the project team back to the drawing board to generate more data. This is a signal that ABC/M results are being politely received but ignored. If the users are not demonstrating use, or at least a high interest, in the initial ABC/M data, that is a warning. When these types of users ask for more and different ways to spin the data, it is likely a stalling tactic because they simply find this new ABC/M information too alien from what they are accustomed to.

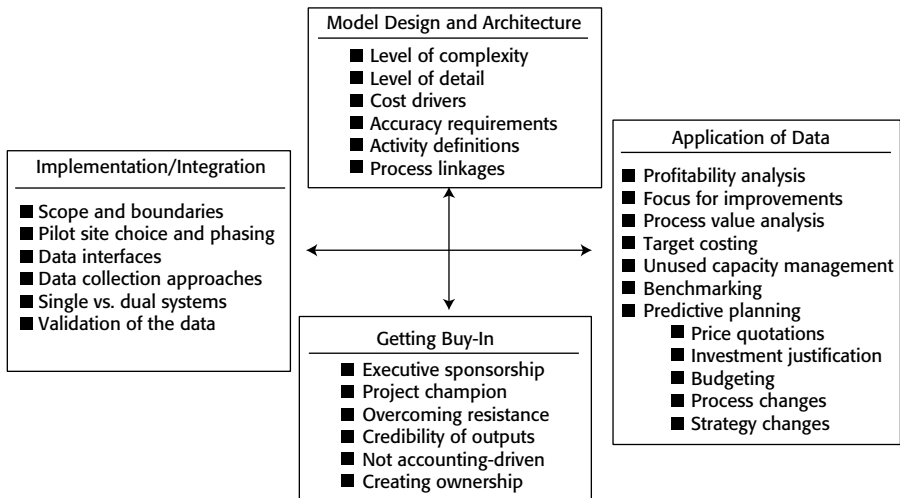
An effective solution is to encourage one or more senior executives to begin asking pointed yet open-ended questions about the ABC/M data, such as, "What could explain why this cost is so high?" That gets people's attention. As you progress, don't confuse motion with action. Get people to act on what they see in the data.

Critical Success Factors for Implementing ABC/M

In summary, the key to successful implementation and sustained use of the ABC/M data is to balance the four critical success factors presented in Figure 10.1:

- **Model design and architecture:** Combine art, craft, and science in constructing your ABC/M model.
- **Implementation and integration:** It is important to select promising sites and to involve individuals with modest, not highly sophisticated skills in information technology.
- **Getting buy-in:** Get the support of an executive sponsor and create widespread interest in and ownership of the information and its uses.
- **Application of data:** Be sure there are end-users with strong needs for the ABC/M data. Remember to work backwards with the ends in mind.

To succeed with implementing ABC/ABM, four areas need attention:



Balancing the emphasis is a project team’s biggest challenge.

FIGURE 10.1 ABC/M Critical Success Factors

Source: Gary Cokins, *Activity-Based Cost Management: Making It Work*, © 1996, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

This chapter focuses on factor 3. This book in general gives special attention to factor 1, because poor model design will lead to poor results. Factor 4 reinforces the message that ABC/M is only data. It is a means to an end. I spend less time on factor 2 because today companies have adequate experience with the information technology aspects of ABC/M.

Putting too much emphasis on any one of these factors or, worse yet, neglecting any one of them will jeopardize ABC/M implementation. Finding the right balance of emphasis will be unique to each organization.

NOTE

1. *In Fact* newsletter, as quoted in George Seldes, *The Great Thoughts* (New York: Ballantine Books, 1985).

Stage Five Cost Systems: The Future of ABC/M

“Management accounting could not go forward were it not for the achievements that brought it this far. But, it must go forward. New times often call for new thinking.”

—*John K. Shank and Vijay Govindarajan*¹

HOW MUCH DO ACADEMICS AND UNIVERSITIES SUPPORT ABC/M?

It is not entirely clear to me why the academic community has been so slow to embrace ABC/M. This does not mean that recently published textbook revisions do not include ABC/M; they do. However, the number of pages devoted to ABC/M is minimal. In general, the majority of academics have not exhibited much excitement and passion about ABC/M relative to the levels of excitement that practitioners demonstrate for it.

A possible explanation for the lack of interest in ABC/M in most colleges and universities is that academics may have concluded that there is little research opportunity for them. That is, there is not much that has not already been covered and written about absorption accounting (and ABC/M as a refinement of it). What research has shown is that in practice, many initial ABC/M cost assignment model structures are poorly designed. These ABC/M systems reveal a lack of understanding of ABC/M, which puts the project at risk. The poor ABC/M model design at best slows progress for an organization to make better decisions, and at worst jeopardizes the adoption of ABC/M altogether.

Managerial accounting witnessed a “dark age” in the early twentieth century when the responsibility for cost measurement shifted from the mechanical engineers to the accountants. Not much technical progress occurred after Frederick Taylor’s scientific management movement introduced the need for standard cost-

ing. It is likely that if Frederick Taylor were alive today to examine ABC/M he would approve of it. He would find the application of cost assignment principles for overhead costs logical and obvious. Taylor would take comfort from the fact that ABC/M focuses on work activities; this is an extension of his focus on establishing standards for worksteps.

Perhaps the explanation for the slow progress in university education about ABC/M has more to do with the culture of academic institutions. Some faculty simplify their instructional material to such a degree that there is little risk that any student will miss the key points. This has resulted in perpetuating the perception that ABC/M is restricted to a two-stage allocation scheme. A few academics have quietly proposed to me their pet theory that the authors of the more popular management accounting textbooks are intimidated by the thought of the sizable effort required to revise and enhance their existing, money-making textbooks.

Anecdotal evidence of problems in academia with managerial accounting can be telling. As an example, in 1999 the graduate school of business at Dartmouth University reclassified its managerial accounting course from mandatory to elective. This implies that the topic has declined in value. Another disappointment I experienced was in seeking information on research about cost forecasting. This involved the material covered in Chapter 8 on predictive costing and activity-based budgeting. In Chapter 8 it is apparent that one can get different answers to the same problem using alternative cost estimating methods. Despite the incentive of research grant money and the implications of Internet pricing and auction bidding for this topic, an appeal to management accounting faculty for research on this topic aroused no interest, either on their own part or that of their doctoral candidates. One professor suggested that faculty from operations management may be better suited than accounting faculty to address this topic.

As managerial accounting evolves into “fifth stage” managerial economics, we may discover that the practitioners, not the academic community, advance the understanding and applications of managerial accounting. Certainly this topic is complex. The issue of classifying expenses as being used or idle based on varying assumptions and planning horizons is tricky. To complicate matters, it is even trickier to determine which and when portions of committed in-case capacity, such as employees, can be outsourced to convert those costs to as-needed. The fixed costs become more variable. In addition, for specific decisions assumptions must be made about which costs should be considered relevant or irrelevant to the decision.

These are the tricky issues that managerial accounting will increasingly wrestle with as ABC/M becomes increasingly relevant as an analytical basis for decision making. Have these properties been around long? Yes; forever. Managerial accounting is intended to model the cost behavior. What is needed now is a much more widespread understanding of them and a more accepting mindset; cost management is much more about addressing causality in resource expenses than about bickering over how to measure costs.

FUTURE OF ABC/M IN ORGANIZATIONS

I am not going to prognosticate about how organizations should or will behave in the twenty-first century. Those crystal ball speculations are best read in other types of books about business and management. However, I will fast-forward the clock and describe an issue that has significant implications for all organizations, including governments. I believe an imminent problem is the lack of recognition that not only are employees more and better educated today, but organizations are increasingly dependent on their workers as intellectual capital.

We are moving out of a twentieth-century world in which management basically assumed the workforce was uneducated into an era in which the opposite is true. Brains are replacing muscle. The knowledge worker has become the intangible asset that all organizations are increasingly placing more value on.

The rise of the knowledge worker is leading to issues that governments may not have fully thought through. Economic decision making is becoming critical, but there are a few assumptions that must first be exposed as myths to ensure that good decisions are being made. Two key myths about the requirements and uses of managerial accounting that organizations should reflect on are discussed in the following sections.

Myth 1: All Users of Cost and Other Financial Information Require the Same Type of Information

Different types of desired information require different levels of detail. The level of detail and accuracy depends on the specific decision being made. There is obviously a broad variety of types of decisions, and each requires making assumptions about the planning horizon time frame.

Some readers may have had difficulty understanding Chapter 8, on predictive costing and activity-based budgeting. I apologize for not making this topic crystal clear; however, as you dig deeper into cost estimating, the more complex it is. My sense is that ABC/M provides an important foundation to pursue reasonable and more logical approaches to apply financial analysis to decision making. Different decisions will always require not only different types of information but different assumptions. Configuring and modeling must mature from a loose art form into a craft. Managerial accounting needs to be more rule based.

ABC/M serves as a powerful translator that receives as input three types of data: financial, empirical (e.g., employee estimates), and operational. These data can optionally be placed in a data warehouse and imported by ABC/M software. Most organizations directly input their source data into the ABC/M software. Loading the data is usually highly automated and uses scripted instructions that instruct the ABC/M software where to draw the data from. After the data are loaded, the ABC/M calculation engine then deploys the post-calculated data for a multitude of uses. (The Appendix maps uses of financial data back to the accounting framework taxonomy in Chapter 2.) Figure 11.1 illustrates how ABC/M appears on an information systems map.

ABC/M's future is in permanent, repeatable, and reliable production systems.

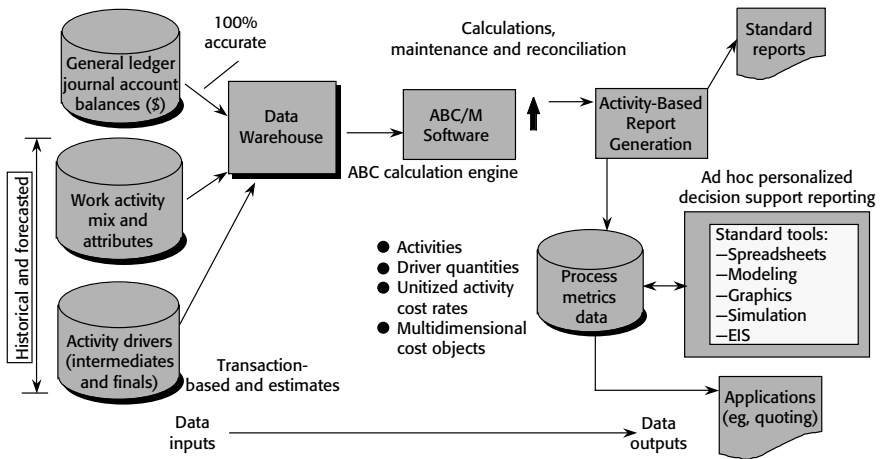


FIGURE 11.1 ABC/M Production Systems

Source: Gary Cokins, *Activity-Based Cost Management: Making It Work*, © 1996, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

In Chapter 1, I proposed a fifth stage of cost management systems (see Figure 1.10). In short, I believe that managerial accounting will support and evolve into a form of managerial economics.

Myth 2: Operational Excellence Will Eventually Trump the Finance and Information Technology Departments

Some operational managers await the day when they can get back to basics, such as applying common sense in providing good service while living within one’s means. These managers often view accountants and data processing personnel as necessary overhead. In contrast, they view their world as the core process for their organization: taking orders and fulfilling those orders. My sense is that twenty-first century managers and teams will require more, not less, integration of their organizations.

Reflecting on ABC/M, we observe that the initial ABC/M projects of the past, led by the finance and accounting department, often did not extend past the desks of the chief financial officer or the president. Due to the introduction of integrated technologies that now deliver activity-based information direct to any employee’s desktop, the pace of change has picked up. The ABC/M project teams can accelerate their organizational learning rates. They are able to expand and extend the use of the activity-based information to include operational managers, thereby migrating from an ABC project to an ABC/M program. Figure 11.2 illustrates the evolution that successful activity-based-thinking organizations usually pass through.

Many organizations are stuck in the bottom left corner of Figure 11.2, focusing on nothing more than expense recognition and control. The classic confrontation

Although ABC for profitability analysis became popular, there was buried treasure in activity data that were useful for improving operational effectiveness.

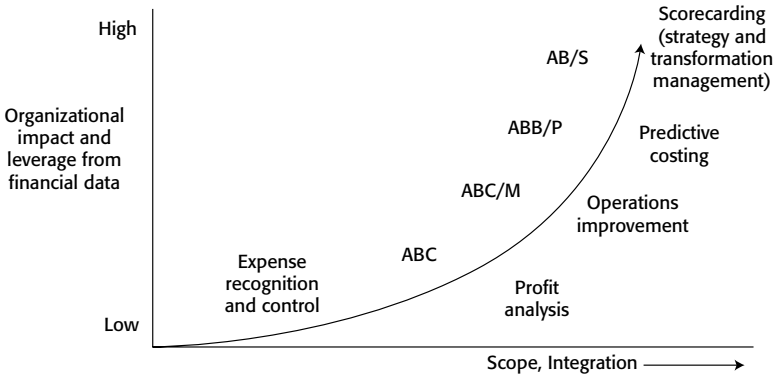


FIGURE 11.2 Evolution of ABC/M

Source: Gary Cokins, *Activity-Based Cost Management: Making It Work*, © 1996, McGraw-Hill. Reproduced with the permission of The McGraw-Hill Companies.

from the accounting police begins with, “You took two extra plane trips last period. Explain why. Right now.” The budgeted amounts become obstacles. Of course there will always be a place for spending control, but that alone will not advance the organization. This type of organization is in the stone age.

Figure 11.2 reveals how the early activity-based costing pilots of the 1980s, mainly commercial manufacturers, targeted simply better understanding product profitability. Then service organizations like banks and hospitals also began applying activity-based costing to examine their profitability; however, they traced their expenses all the way to channels and customers. The reaction to the data produced introduced ABC/M. People needed to take new steps and adjust things to make things better, to improve performance. Some operational managers did not really care whether their organizations made or lost money, but they did care about removing waste, streamlining, benchmarking, and so forth. These operational managers embraced ABC/M.

Figure 11.2 extends into activity-based budgeting and planning (ABB/P) and activity-based scorecarding (ABS). This book addresses these two important topics in Chapters 8 and 5, respectively.

But not all organizations that start an ABC/M project succeed in deploying it or sustaining it once it has been deployed. The winners are those that recognize the inherent power of integrating activity-based data into their information systems. This integration occurs in three dimensions: financial, operational, and technological. The increasing global acceptance of commercial activity-based information software is proving that executives and operational teams need information that is activity based, finance endorsed, information technology (IT) maintained, and routinely used. Activity-based information is obviously a part of organizational decision making. Overall organizational effectiveness is enhanced when there are more desktop computers for the activity-based information to reside on.

The IT people are critical to the equation. They provide three essential components for their organizations' business intelligence (BI) systems:

1. *Business modeling*, which includes cost assignments, process mapping, and discrete-event process simulation.
2. *Server deployment and data storage*, which involves collection and distribution of business intelligence (BI) to users.
3. *Multidimensional information navigation tools* (e.g., OLAP), which include database interrogation, query systems, and multidimensional (e.g., n-cube) analysis.

Activity-based information systems have evolved from personal computer (PC)-based stand-alone tools to powerful server-ready and Internet-hosted systems. These systems comply with industry standards to integrate best-in-class tools in nonproprietary environments.

In short, strategic and operational managers cannot and should not seek isolation from their co-workers in the accounting and data processing departments. They all need each other.

ESTIMATING THE RETURN ON INVESTMENT (ROI) FROM ABC/M

Some organizations have strict rules for accepting proposals to invest and spend money on equipment or projects. Sometimes the administration of these is called the capital investment justification process. Senior management may not authorize any spending unless the business proposal exceeds a certain return on investment (ROI) level, often referred to as the hurdle rate. Management wants to assure itself that any money re-invested will greatly exceed the level of return that its shareholders could achieve through other investments.

Organizations that are skeptical of ABC/M regularly ask, "What is the ROI from ABC/M?" My blunt reply from what I have learned is that it is not possible to calculate ROI on ABC/M. Here is why.

In the early 1990s CAM-I commissioned Professor Kay Silvester of the University of Maryland to research this question. She based her research on several successful ABC/M implementations in various industries. Her conclusion was that each company had several parallel improvement change initiatives (e.g., TQM, BPR, JIT) occurring simultaneously with their ABC/M implementation. As a result, it was nearly impossible for her to trace benefits, such as cost savings, directly back to each program. (This is like re-assembling a broken egg into a whole). Because the ABC/M data served each company as an enabler to turbo-charge the improvement programs, the contribution to profits coming from the ABC/M data was even more impossible to measure than the returns from the change initiative programs.

My reply to the question about the ROI from ABC/M is somewhat sarcastic, but I am trying to first catch the questioner's attention to make an important point about what ABC/M is and is not. I first answer with, "The ROI from ABC/M is often 1,000 percent!" There is some merit to this reply. As an example, after some two-day ABC/M Rapid Prototyping sessions, executives who see

these early results may decide to abandon certain losing products and service lines or to terminate (“fire”) a large but unprofitable customer. That single decision can ultimately realize a substantial amount of money in future cost avoidance that converts directly into profits. That type of financial return is a large payback from a small investment in employees’ time and the relatively minor cost of commercial ABC/M software.

That argument, however, may not be sufficiently convincing. Some managers may not believe that kind of opportunity is applicable to their organization. So I next pose this question to the requester: “I will answer the ROI on ABC/M *relative* to your estimate of the ROI you are already getting on something else. OK? What is the ROI from your general ledger accounting system?”

What we are discussing is actually what the incremental benefit from having better data to make better decisions is. As discussed previously in this book, the general ledger is so structurally deficient that it is at best useless and at worst dysfunctional and misleading. When an organization considering implementing an ABC/M system has to think about the ROI from what it has today, ABC/M data is multiples of their current cost data. It is likely that the financial return from an ABC/M system is well above the ROI of 99 percent of the capital expenditures and investments that the questioning organization has already pursued.

In short, you cannot measure the benefits of having better data. An organization considering an ABC/M implementation first needs to ask itself, “Given what we see our more fierce competitors doing, how long do we want our company to perpetuate making decisions with the flawed and incomplete financial data that our users are already grumbling about?”

I am not suggesting that a company pursue an ABC/M system based on blind faith, but there is some conviction required that ABC/M just makes good sense to provide better data. The flip side to doing ABC/M is to take no risk and keep using the same old costing method. Reluctance to act may be what is separating the stronger from the weaker economies and nations.

For example, the economy of the United States, particularly Silicon Valley, continues to boom for one reason: The people there are risk takers. They are not waiting for consensus and 99 percent proof that something works. They do not keep asking who else is doing what out of fear that if they fail, they may lose face. The risk-taking people in U.S. businesses and governments look at something, decide whether it makes sense, and then go for it if it does make sense. ABC/M is a no-brainer if you can articulate the comparison of ABC/M to what an organization already has. The challenge for advocates of ABC/M is to be able to articulate this.

ABC/M IS AN ORGANIZATIONAL BEHAVIOR CHANGE MANAGEMENT TOOL

ABC/M is more than just an accounting system. It is also much more than a managerial information system. ABC/M is even more than stage 5 managerial economics. It should be considered a change management tool.

Many ABC/M project managers have been slow to recognize the behavioral change management aspects of the ABC/M data. ABC/M is a socio-technical tool, and the emphasis should be on the social side. Many managers and ABC/M project teams see ABC/M as simply a better measuring scheme or cost allocator. However, its real value lies in introducing undebatable, fact-based information that can be used by employees and managers to build business cases, quickly recognize business problems or opportunities, and test hypotheses.

As the ABC/M model and system are being constructed, do not omit performing value analysis with ABC/M attributes. Costs are not the be-all and end-all. In addition to understanding what causes costs using driver analysis, it is important to classify the relative value that activities have in meeting the organization's goals.

When historians of organizational management in the twenty-second century look back at the twentieth century, they will likely observe that most organizations were operated more on intuition, instinct, and gut feel than on facts. Many organizations are a bit unwieldy. Some have gone through various rounds of serial slash-and-burn cost reductions in which they certainly took out the bodies, but perhaps not the work. The end result often was a newly reconstructed organization that was merely a cut-down stovepipe, still trying to operate the fragmented pieces of what in reality was always an end-to-end business process that transcends organizational boundaries. Even after downsizing, there still was no clear visibility of their costs or effective control. The real problem was that gifted and talented managers recognized that they had a problem with data, but they still could not compute costs or measure performance with any degree of accuracy or confidence.

It may be safe to begin questioning much of the traditional management theory that has been taught and unchallenged for years. Put simply, we must question whether much of what organizations measure as management and control information is really like "the emperor's new clothes." If middle managers cannot truly find a useful outlet for the data they receive, then aren't they living a myth? Business school professors and popular business gurus write articles and books proposing their principles. But are we not possibly like the early astronomers, defending the Earth as the center of the universe? We define elegant theories of which the fundamental logic and concepts are flawed.

ABC/M has many of the characteristics of an organizational methodology. Many managers are frustrated by the difficulties in bringing about change within their organizations. Behavioral change management is receiving wider attention, and ABC/M data will continue to play an important role in transforming organizations.

NOTE

1. John K. Shank and Vijay Govindarajan, *Strategic Cost Management* (New York: The Free Press, 1993), p. 4.

Appendix

“A man’s mind stretched by a new idea can never go back to its original dimensions.”

—*Oliver Wendell Holmes, U.S. Supreme Court Justice*¹

Figure A.1 cross-references the accounting taxonomy figures at the beginning of Chapter 2 (Figures 2.1–2.4). This figure reinforces the notion that accounting is only data. One must use the data for them to be of any value, but there are many uses. Figure A.1 is simply a beginning of a list of uses. It is intended to make you think about the broad purposes of using managerial accounting data. For example, control and strategic planning require different mindsets.

Accounting Taxonomy Code Number	Strategic ABC/M(s) or Operational Control and Learning (OC&L)	Type of Use, Measure, or Decision with Accounting Data	Application of Financial Data (Revenue, Spending, Profit Margin) for Analysis or Decision Making
1000		financial reporting	GAAP (external) financial reporting
1100		performance measurement	aggregate profit and loss reporting
		financial reporting	inventory valuation
		financial reporting	transfer pricing
2000		data collection	financial transactions (payroll, accounts payable, sales, and accounts receivable)
			operational transactions (production data, delivery data, timesheets, output quantities, activity drivers)
3000			

3000		Assign (C)— attribute analysis	cost “viscosity” (sunk, committed, fixed, step-fixed, variable, discretionary)
3000		Assign (C)— conditions	resources’ capacity time status mode (used, productive, idle)
3000		Assign (C)— conditions	update periodicity, planning horizon, level of detail, marginal versus full absorption, historical versus replacement, etc.
3500		Assign (M)— financial reporting	1—project management and costing
			2—job ordering costing
			3—standard costing, inventory valuation
			4—activity-based costing
			5—constraint-based costing (Theory of Constraints throughput accounting)
			6—total available profit (TAP)— <i>dynamic costing</i>
			7—process (Kaizan) costing
			8—supply chain costing
			9—parametric costing (feature-based costing)
3600		Assign (M)— profitability measurement	product life cycle costing
4000			“What do we need to fix?”
4000	OC&L	Use (control)— forecasting	1—traditional budgeting
	OC&L		2—activity-based budgeting (zero-based)

Accounting Taxonomy Code Number	Strategic ABC/M(s) or Operational Control and Learning (OC&L)	Type of Use, Measure, or Decision with Accounting Data	Application of Financial Data (Revenue, Spending, Profit Margin) for Analysis or Decision Making
4100	OC&L	Use (control)—control	variance analysis (actual versus budgeted)—responsibility center expense spending
	OC&L		variance analysis (actual versus standard)—efficiency, utilization
	OC&L		project management spending, schedule, and results
4500	OC&L	Use (control)—process improvements	cost of complexity
	OC&L		productivity/utilization/yield management reporting
	OC&L		supporting business process reengineering—measuring process costs (mapping, modeling, and focusing)
	OC&L		Total cost of ownership (TCO) (<i>supplier-focused</i>)
5000			“Where are we now? Where are we making and losing money? How much?”
5000	S	Use (assess)—cost analysis	risk management
5000	OC&L/S	Use (assess)—financial	cash flow rate and amount
5000	OC&L/S	Use (assess)—performance measurement	balanced scorecard performance measures (accountability and responsibility reporting)
	S		shareholder value added (SVA), economic profit, RONA, ROI

5100	OC&L	Use (assess)— attribute analysis	Total quality management's cost-of-quality: (1) error free, (2) conformance (prevention, appraisal), (3) nonconformance (internal failure, external failure)
	OC&L		impactability (near-term versus longer-term)
	S		level of focus (core, sustaining, and discretionary)
	S		level of importance (critical, necessary, postponable)
	S		location of control (centralized versus decentralized)
	OC&L		activity responsiveness type (reactive versus proactive)
	OC&L		value-adding content (e.g., low, medium, high)
5100	OC&L	Use (assess)— benchmarking	<i>external</i> benchmarking (unitized cost of outputs and work elements, processes) (<i>best practices</i>)
	OC&L		<i>internal</i> benchmarking (unitized cost of outputs and work elements, processes)
5100	OC&L	Use (assess)— capacity analysis	unused capacity analysis (cost assignment) <i>static costing</i>
	OC&L	Use (assess)— cost analysis	cost driver analysis (<i>root cause analysis</i>)
5100	S	Use (assess)— cost forecasting	capital investment— benefits realization
5100	OC&L	Use (assess)— process improvements	understanding TQM's cost-of-quality (<i>root cause analysis</i>)

Accounting Taxonomy Code Number	Strategic ABC/M(s) or Operational Control and Learning (OC&L)	Type of Use, Measure, or Decision with Accounting Data	Application of Financial Data (Revenue, Spending, Profit Margin) for Analysis or Decision Making
5100 (<i>cont.</i>)	OC&L		measuring environmental costs
	OC&L/S		supply chain management—cost and profit measurement across the supply chain
	OC&L		trend reporting—unitized output of work (cost per each unit of xx)
5500	OC&L	Use (assess)—profitability measurement	a) product/service line profitability analysis (cost-to-make)
	OC&L		b) sales/distribution channel profitability analysis (cost-to-deliver)
	OC&L		c) customer and/or market segment profitability analysis (costs-to-serve)
6000			“What would be the consequence of our plan or decision?”
6000	OC&L	Use (plan/supply)—capacity analysis	manpower staffing levels
6000	S	Use (plan/supply)—cost analysis	sourcing (vendor) analysis
	S		target costing (new product development)
6000	OC&L/S	Use (plan/supply)—cost forecasting	cost estimating
	OC&L/S		opportunity costing
6000	OC&L	Use (plan/supply)—financial reporting	chargebacks from shared services (e.g., the IT department)
6000	OC&L	Use (plan/supply)—process improvements	cost reduction planning (or future cost avoidance)

6010	OC&L/S	Use (plan/supply)— cost analysis	trade-off analysis (either/or)
	OC&L/S		what-if scenario analysis
6010	OC&L	Use (plan/supply)— cost forecasting	discrete event process simulation—projecting expenses and costs
6010	S	Use (plan/supply)— profitability measurement	break-even analysis (sales volume, cost, profit)
6020	S	Use (plan/supply)— cost analysis	make-or-buy analysis (outsourcing and privatization studies)
6020	S	Use (plan/supply)— cost forecasting	capital investment— justification
6020	OC&L	Use (plan/supply)— process improvements	supporting business process reengineering— justifying business cases
6030	OC&L	Use (plan/supply)— shared services	shared services improvements—joint service letter agreements
6500	S	Use (plan/ demand)— profitability measurement	customer mix rationalization
	S		product mix rationalization (add, promote, phase-out)
	S		strategic planning (repositioning the business)
6510	OC&L	Use (plan/ demand)— pricing/ quoting	determining minimum order profit margin threshold
6510	S		pricing products/service lines
6510	S		quoting a customer order
6520	S		demand (margin) management—service level options
6520	S		menu-based (à la carte)
6520	S	Use (plan/ demand) shared services	unbundling services into priceable/saleable components

Characteristics of Cost Management Systems

Characteristic of the Data	Control (4000)			
	Task Control	Management Control	Assessment (5000)	Planning (6000)
A <i>Use of Data</i>	feedback	feedback	learning, insights	actions
A <i>Level of Quality and Depth</i>	detailed, granular	summarized, exceptions, decision-relevant	decision-dependent	much information in analysis, but less to decision maker
A <i>Accuracy</i>	accurate	fairly accurate	reasonable	rough
A <i>Timeliness</i>	real time	speed more important than accuracy	periodic (monthly), as needed	speed not crucial
A <i>Focus</i>	each task distinct	enterprise-wide	products, service lines, customers, business processes	
A <i>Criteria</i>	efficiency	effectiveness	profit, capacity utilization	economic, wealth creation
A <i>Planning Horizon</i>	near term	future months	one year	many years
B <i>Persons Involved</i>	individual(s)	process owners, managers	cost object owners (e.g., product manager)	top management, staff
B <i>Responsibility</i>	supervisor responsible for results	manager responsible for both plan and results		planner not responsible for results
B <i>Nature of the Problem</i>	prescribed rules	limited options, precedents exist	discovery, aligning to expectations	many options
B <i>Decision Making</i>	follow the rules	formal analysis with deadlines	stimulated by what the data reveal	ad hoc analysis and judgment

B	<i>Indication of Goal Achievement</i>	immediate and obvious	less apparent	reasonable, adequate	subjective, lengthy, lag time
C	<i>Nature of Information</i>	much non-monetary, internal, actual	monetary/operational; financial core; external and internal; planned, desired, and expected results	monetary and operational	mostly external environment, future-oriented, expected results
C	<i>Mental Activity</i>	follow instructions	leadership, persuasive	analytical, practical	innovative, entrepreneurial

NOTE

1. Oliver Wendell Holmes, “The Path of Law” (1897), as quoted in George Seldes, *The Great Thoughts* (New York: Ballantine Books, 1985).

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