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Designing and Implementing a New Cost Management System

John A. Miller

To remain competitive in world markets, companies must continually improve the performance of activities and business processes. Since improvement of processes and activities is fundamental to long-term survival, managers need relevant and timely feedback so that they can measure and judge the performance of activities. Since traditional financial and cost accounting systems do not produce the information that managers require, new cost management systems must be designed and implemented. These new cost management systems must be designed and implemented with two purposes in mind: (1) to gather financial and operating information that reflects the performance of activities; and (2) to supply management with relevant information to plan, manage, control, and direct the activities of the business in order to improve processes and products, eliminate waste, and execute business operations and strategies. This article discusses how to plan, design, and implement a new cost management system.

Since the early 1970s, dynamic factors have reshaped the competitive marketplace. More than ever before, companies must compete on a global basis and meet world-class standards in order to survive. As managers have learned, world-class competition requires a commitment to continuous improvement (*kaizen* in Japanese).

Many managers have embraced total quality management (TQM) and just-in-time (JIT) improvement efforts as the cornerstone for continuous improvement in their organizations. The ultimate goal of this shared philosophy of TQM, JIT, and other continuous improvement efforts is for companies to continually improve their processes and activities so that their companies can effectively and efficiently meet customer needs.

An organization's TQM and JIT efforts focus on improving quality, reducing cycle time, and providing increased customer satisfaction as the means for achieving the lowest overall business cost. Therefore, managers responsible for continuous improvement need information about quality, cycle time, and customer satisfaction in addition to cost information. Having this information enables managers to evaluate how well they manage and control all aspects of a business—from initial customer contact through final customer satisfaction. Relevant information to plan, direct, and manage an organization's activities and operations is essential. The development of a new cost management system (CMS) is the most efficient and activist response to this business need for information.

A new paradigm for cost management

Traditional cost management systems focus on managing cost by means of cost-based budgets, standards, variances, and measurements established at the departmental level. In this paradigm, organizations have a vertical orientation; the emphasis is on the *cost* part of cost management. Accountants design and implement systems and procedures that make it possible to manage and control cost.

But the new paradigm for cost management is focused on managing processes and activities. Cost and performance measurements for quality, cycle time, customer satisfaction, and productivity are established at the business process and activity levels. In this new paradigm, organizations have a *horizontal* orientation; the emphasis is on the *management* part

of cost management. Accountants design and implement systems and procedures that make it possible to manage and control *activities*.

In the new paradigm, cost management is viewed within a philosophy of continuous improvement and defined using active verbs: to plan, manage, control, and direct the activities of a business to improve processes and products, eliminate waste, and execute business operations and strategies. The purpose of a CMS in this new paradigm is to provide management with relevant information needed to judge how well cost management efforts are working. Linking cost management with continuous improvement broadens the definition and interpretation of cost management and drives a change in an organization's mind-set from managing costs to managing activities as the focal point of cost management.

Traditional cost management systems do not accumulate or report the information that managers require under the new paradigm for cost management. Therefore, new systems, procedures, and methods must be designed and implemented to provide management with the information they require to manage the activities of the business.

Cost management system outputs

The driving force behind the new paradigm for cost management is a focus on the outputs of the CMS—information to manage and improve activities and processes of the business as the means to achieve reduced cost. Therefore, the CMS must provide information about:

- How well activities are being performed; and
- Whether improvement efforts are working.

Feedback under this new CMS is not limited to cost information, although cost is an important part of the new CMS.

Organizations that are designing and implementing a new CMS will find that there are five basic information outputs for the new CMS. These include:

1. The cost of activities and business processes;
2. The cost of non-value-added activities;
3. Product cost;
4. Performance measurement; and
5. Cost drivers.

These information outputs are discussed below.

The cost of activities and business processes

Activities are the processes or procedures that cause work to be performed in an organization. They are, in essence, aggregations of tasks (whether performed by people or machines) to satisfy the needs of customers (whether they are internal or external customers). *Processes* are a series of activities that are linked to perform a specific objective.

Activities and business processes represent the way that a company uses its resources. Competitors serving the same customers and having access to the same labor pools, machinery, technology, and raw materials differentiate themselves on the basis of how well activities are executed. Even companies that dominate markets must continue to improve how they execute activities and design processes if they intend to remain dominant in the long term.

The new paradigm for cost management is focused on managing processes and activities. Cost and performance measurements for quality, cycle time, customer satisfaction, and productivity are established at the business process and activity levels.

Since activities form the very core of what a business does, the basic output of a new CMS must be to provide management with relevant cost information about each significant activity. Cost information about what the business does—i.e., about its activities—is a fundamental information output of a new CMS.

The cost of non-value-added activities

Some activities add value to a product or service, while some do not. In a manufacturing operation, the cost and time associated with moving parts, waiting, rework, and scrap

are often-cited examples of non-value-added activities. Rework and scrap are not limited to the factory floor. Many nonfactory floor activities include inefficiency, redundancy, and duplication.[1] Virtually every organization will acknowledge the existence of work that could be done more efficiently or that never should have been done at all.

A *non-value-added cost* is a cost that does not contribute to customer value or to the organization's needs. "Non-value-added cost" is often defined as "a cost or [an] activity that can be eliminated with no deterioration of product attributes (e.g., performance, functionality, quality, perceived value)."[2] A CMS that identifies the cost of non-value-added activities has enormous value to management. With this crucial information output, the CMS provides a focal point for cost improvement efforts.

Performance measurement

Measuring the performance of activities provides a scorecard to report how well improvement efforts are working. Performance measurement is an integral part of continous improvement. A key output of the new CMS is the measurement of performance at the activity and business process level.

A CMS assesses at least four elements when measuring the total performance of activities:

1. Productivity;
2. Quality;
3. Cycle time; and
4. Customer satisfaction.

Each of these information outputs has limited value when viewed independently, because in isolation none of them can fully measure performance or fully describe how well the company is doing. For example, high levels of productivity would not be meaningful if cycle times were increasing or customer service levels were dropping. Each of these four performance measurements must be considered in tandem when judging total activity performance. For some companies, a fifth performance measure of an activity—flexibility—may be useful.

Productivity

Estimating and monitoring productivity are among the most critical information outputs that a new CMS can provide to management. Productivity can be defined as the physical output of an activity divided by the cost of resources consumed, thus expressed as a cost per unit of output. Productivity improves, therefore, when the cost per unit of output declines. This productivity calculation links the physical output of an activity to its cost, a linkage that is unique to the new paradigm for a CMS.

Quality

A manufacturing organization that turns to a new CMS must be concerned with quality. Quality has many meanings in the new manufacturing environment, but its meaning can be narrowed by the new CMS to conformance to specification for an activity. The new CMS can measure this information output by identifying, for example, errors per thousand units or percentage of material scrapped. The CMS can then provide a comparative analysis of the numbers needed to conform to the activity's specifications.

Quality is perhaps the clearest example of why the four elements of performance measurement must be analyzed in tandem. Poor conformance to specifications directly affects productivity, for example, in that it slows the manufacturing process. This same nonconformance also slows productivity and lengthens cycle time. Above all, quality as a performance measurement is one of the most useful information outputs that a new CMS can offer management in its goal of achieving the lowest product cost and at the same time meeting customer needs.

Cycle time

Cycle time is a measurement of how long it takes to complete an activity or a business process. The total cycle time to make a product or service and deliver it to the customer is the summation of the "nonoverlapped" cycle time for each of the activities necessary to produce and deliver a product or service to customers. Cycle time is a measurement of time expressed in hours, days, weeks, months, or years. Like the other performance measurements, reduced cycle time is predicated on improved productivity, increased quality, and customer satisfaction.

Customer satisfaction

Improved productivity, increased quality, and reduced cycle time are meaningless if customers are dissatisfied. Customer satisfaction is an important element to consider when measuring the overall performance of an activity. This performance measurement should be quantified and expressed at its source—*by the customer*. For example, overall customer satisfaction for a given activity might be expressed on a scale of 1 to 10, where a 1 rating is poor and a 10 rating is excellent.

All four performance measurements evaluated by a CMS—productivity, quality, cycle time, and customer satisfaction—are interdependent. Their relative ranking and importance, in relationship to measuring activity performance as a whole, are dependent on the specific activity, product or service, organization, industry, and customer. Organizations that are designing and implementing a new CMS must include in their plans an initial commitment to performance measurement activities. How each organization actually measures performance—and each organization may have a different strategy—matters less than making performance measurement a priority of the new CMS.

Linking cost management with continuous improvement broadens the definition and interpretation of cost management and drives a change in an organization's mind-set from managing costs to managing activities as the focal point of cost management.

Product cost

Products and services are provided to markets and customers through various distribution channels; they consume resources at different rates and they require different levels of support. Accurate product cost information is vital for selecting the individual and segmented markets where an organization competes and for pricing in those markets. Product cost information is a pivotal information output for the new CMS.

Product cost is the summation of all company resources consumed in creating, producing, designing, supporting, and delivering a product or service to a customer. New CMS product cost information encompasses cost beyond the factory floor, to identify the total product cost (i.e., including distribution and support costs) associated with a particular market, customer, or distribution channel. The new CMS can provide accurate cost information by linking the consumption of activities directly to those products or services that require the activity.

While product cost has strategic value, its operational value is limited to directing managers to those products that consume too many resources to be competitive in a particular market, product, or customer group. Operational improvements can only come from improving the processes and activities used to design, produce, and deliver the product or service to the customer, all activities that the new CMS can measure.

Cost drivers

The final output of a new CMS is cost driver information. A *cost driver* is any factor that causes a change in the total cost of an activity. It is, in short, the cause of cost. Understanding the causal relationship between an activity and its cost enables management to focus improvement efforts on the areas that will produce the best result.

For example, a business process for one company that provides a service to manufacturers that consists of collecting and processing product and demographic information about customers includes the activity of data entry—manually keypunching customer-supplied information into a database. Productivity in this company is measured as a cost per card or the cost per entry of a customer response. Improvement efforts that focused on making data entry clerks (the company's major cost) work better and faster, produced mixed results. A new CMS that the company adopted instituted a cost driver analysis. This analysis discovered that, more than any other

Exhibit 1. *XYZ Corporation*
Cost Management System Top Management Report
Business Process 1

Activities	Cost Effectiveness			Performance		Cost Drivers		Product/Service Profitability		
	Value-Added	Non-value-added	Total	Measure	Measurement	Measure	Volume	Product/ Service 1	Product/ Service 2	Product/ Service 3
Activity 1				Productivity Quality Cycle time Customer satisfaction						
Activity 2										
Activity 3										
•										
•										
•										
Activity *N*										

factor, the design of the card was the root of cost in data entry. Poorly designed cards that were difficult to read slowed the data entry operators. Armed with this output information from the new CMS, management focused its improvement efforts on the card design activity, and ultimately achieved performance improvements in the data entry activity.

As this example shows, by identifying and reporting cost drivers, a new CMS can direct management toward areas where improvement efforts will produce the best results. When cost drivers are quantifiable (e.g., number of parts causal to manufacturing overhead or number of feet traveled causal to factory logistics costs), improvement efforts that focus on reducing the numbers of parts or on decreasing the distance traveled can be measured.

The CMS outputs described above—the cost of activities and business processes, the cost of non-value-added activities, performance measurement, product cost, and cost drivers—all contribute to management's effort at continuous improvement of the manufacturing process. Exhibit 1 illustrates the format for a CMS top management report from *XYZ* Corporation for a specific business process. It depicts, in *XYZ*'s particular style, each of the basic CMS outputs.

Relationship between a cost management system and the financial and accounting systems

Financial information produced under generally accepted accounting principles (GAAP) is not useful for planning, managing, controlling, and directing activities, because it does not provide information on how well activities are executed. GAAP information is more useful to banks, investors, regulatory agencies, and taxing authorities than it is for managing activities. The accounting and cost accounting required to produce GAAP financial information have little relationship to a CMS that emphasizes activities; the systems have different purposes.

In addition to external reporting, accounting systems are used to pay bills, track money that customers owe, record the flow of inventory, monitor fixed assets, record depreciation, and ensure that obligations are recorded and paid. Cost accounting in this context picks up where accounting leaves off. The primary purpose of cost accounting is to determine product and inventory costs, set standard costs, and prepare variance reports.

Most traditional accounting and cost accounting systems do not produce the kind of information that management needs in order to oversee the activities of a business. The only

relationship between a new CMS and traditional accounting systems is that cost information is an integral part of each system. A CMS serves different users. Accounting and cost accounting systems are typically not designed to provide the new CMS information that managements require, although much of the cost data for a new CMS comes from the existing accounting system. Therefore, a new CMS must be designed and implemented to provide the information that management needs to execute its commitment to continuous improvement.

Designing and implementing the new system are discussed in the following sections.

Designing a new system

The fundamental design objective for a new CMS is to create methods, procedures, and systems to collect and report financial and operational data about the activities of an organization. To meet this design objective, the outputs of a CMS must mirror the organization's activities and provide appropriate and meaningful information for management. Accurate information about the cost and performance of activities is the cornerstone of a new CMS.

Unfortunately, most organizations do not collect financial and operational data about their activities; many have never even defined activities. Therefore, before implementation can take place, significant resources must be devoted to defining activities and establishing methods, procedures, and systems to meet the fundamental design objective.

In addition to this fundamental design objective (i.e., the ability to collect data about activities), several other issues must be addressed in the design stage of a CMS, including:

- Defining the system's purpose and use;
- Linking the organization's operations and strategy;
- Establishing simplicity as an effective tool;
- Maintaining relevance of information for decision making;
- Applying benchmarking, best practices, and target costing;
- Determining the frequency of distribution (i.e., the collecting and reporting of information under the new CMS); and
- Examining hardware and software issues.

Each of these CMS design issues is discussed below.

Purpose and use. The design of a CMS is driven by management's definition of the purpose and use of the system. While managers who help design and implement a CMS are all focused on making sure that they receive information that they can use to improve performance, the specific information required varies from management team to management team, company to company, industry to industry, and customer base to customer base. Therefore, management must assume the responsibility early in the design stage for clearly setting the parameters for the purpose and use of the new CMS.

For example, a company that competes primarily on the basis of innovative new products (e.g., in the computer industry) might design the CMS to place additional emphasis on the cycle time of activities associated with new product development. A wholesale distributor, on the other hand, which competes in different market segments on the basis of availability or service, might design its CMS to emphasize the cost of resources (i.e., activities) consumed in the various distribution channels. Designing for purpose and use means continually asking how the output information from the CMS will be used and what decisions it will drive.

Linkage between operations and strategy. Activities represent what an organization does and encompass daily operations. Both of these elements bridge the gap between the organization's operations and its strategy. According to Michael Porter, strategy simply means developing sustainable competitive advantage by outperforming competitors over the long term in those areas that have value to customers.[3] The selection, execution, and improvement of activities are sources of competitive advantage, and the result of activities performed over a long period of time is, in essence, the execution of a strategy.

Some companies and industries compete primarily on the basis of cost. Others compete primarily on the basis of innovation, value, or product availability. Marketing, distribution, and manufacturing strategies differ between companies. Therefore, a CMS must be designed with these differences in mind. The

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key design point after the system's purpose and use are articulated is that a CMS is based on activities, and activities enable the designer to link operations—what the business does—to strategy.

Simplicity. Virtually all successful TQM and JIT improvement efforts have a common principle: Simplicity. A cornerstone of an effective CMS is the avoidance of complexity whenever possible. The simpler a procedure is, the easier it is to implement, and the greater support it provides management.

Designers of a new CMS can follow the lead of their manufacturing counterparts, the designers of machinery. Machinery designers have learned that complex designs lead to complex repair problems and difficult modifications. Complexity can come in little doses, as when using two different kinds of fasteners in a product when one kind would do the trick. Complexity adds cost, does not improve functionality, and must constantly be designed out of products and services.

There is no reason to believe that it may be different for designers of a new CMS. Designing a CMS with a high degree of complexity means that management will be giving up future flexibility and guaranteeing that modifications, improvements, and changes will be difficult and costly.

A basic rule to follow when designing a new CMS is as follows: If the users of the output of the CMS are unable to understand the system's basic features and functions, then the system is too complex.

Relevance. For a new CMS to be useful, its focus must be on the important aspects of the business, at a level relevant to improvement efforts and for decision making. A common mistake of CMS designers is to define activities at such a low level that they represent tasks, not activities.

Designing a CMS so that its information output is relevant to management decision making is predicated on up-front management feedback about its goals for the CMS. Once these goals are articulated, the CMS design team must write specifications that will deliver the information management needs in order to assess its goals.

The following rule of thumb can be helpful to designers when they are narrowing the specifications of a CMS to meet management's needs: At least 80 percent of business costs should be captured in a framework of no more than twelve business processes, each containing from five to ten critical and key activities. In this way, both simplicity of design and relevance of information are built into the design of the system.

Benchmarking, best practices, and target costing. A new CMS should be designed so that users can compare internal costs and performance measurements of activities with externally driven targets. Management can then set standards or highlight performance gaps for a particular activity or business process.

CMS designers should anticipate and plan to compare internal costs and measurements from a CMS with external standards and requirements. To do so, design specifications for the CMS should take into account such techniques as benchmarking, best practices, and target costing.

Frequency of distribution. The frequency of distribution—i.e., the collecting and reporting of information under the new CMS—is largely a function of the system's purpose and use. It would not be unusual to report cost and performance measurements on an hourly basis for some activities, yet on a quarterly basis for others. The reporting of activity performance on both an hourly and a quarterly basis could exist within the framework of a CMS, assuming that activity performance is measured and reported to line managers hourly and summarized in a quarterly report to top management.

A design team has a more straightforward task when creating specifications for the frequency of distribution of information under the new system. They can design the system with this simple fact in mind: Whether reported on an hourly or a quarterly basis, the activity is the same—only the period of performance varies.

Hardware and software issues. The key design point when examining hardware and software issues is whether to implement the CMS off-line through a stand-alone (or net-

worked) personal computer or to integrate the system on-line as part of existing financial and operations systems. This decision is largely driven by how well existing reporting systems mirror the activities of the organization. Integration works best when the existing system reports cost information consistent with activities.

At least initially, most organizations would be better served if they implemented a new CMS on a stand-alone basis using activity-based software currently offered in the marketplace. This approach enables the CMS designers to gain hands-on experience and knowledge about activity management without committing the organization to a major change of systems. Later, after managers gain experience with the reporting of the new CMS, integrated systems can be designed.

Implementing the new system

Management commitment is a prerequisite to implementing a new CMS. This commitment is a deeper one than the mere commitment of resources typically associated with improving an existing CMS. This difference can be explained in terms of the change in management's mind-set—from managing cost to managing activities—that a new CMS demands. In addition, implementing a new CMS requires management's willingness to pursue a strategy for improving the activities of the business. Without improvement efforts to reduce or eliminate non-value-added activities and costs, the resources devoted to implementation of a new CMS would be wasted.

Once committed to a CMS implementation, management must address its three phases:

- *Phase 1*—consisting of the data gathering and analysis needed to develop the knowledge, structure, and methodology for collecting and reporting information about the organization's activities. The amount of effort and resources required for Phase 1 depends on how well existing financial, accounting, and operating systems mirror the organization's activities. Companies in the process industry may have accounting systems (process accounting) and operating systems that are already fairly well aligned with activities. In such companies, managing departments is, in essence, managing activities. Most often, however, this situation will not be the case in Phase 1, which means that considerable effort will be required to rethink the business in terms of its activities;
- *Phase 2*—consisting of implementing the procedures, methods, and systems to routinely collect and report data and information about the organization's activities; and
- *Phase 3*—consisting of maintaining the CMS. This phase is ongoing and is required in order to continuously improve the CMS.

Phase 1. Data gathering and analysis

Most organizations have never defined activities, much less routinely collected financial and operational data about the cost and performance of activities. Therefore, in most CMS implementations, significant effort must be devoted in Phase 1 to defining, understanding, documenting, and analyzing activities.

Phase 1 is a data-gathering and analysis stage. It includes six general steps that are necessary to build a new CMS:

1. Specify activities;
2. Trace cost to each activity;
3. Determine value-added versus non-value-added activities and cost;
4. Determine output measures and volume;
5. Select the appropriate cost drivers; and
6. Trace costs to product cost objects.

The completion of these steps, each of which is discussed below, is a prerequisite to an ongoing CMS. Once completed, the Phase 1 implementation provides a snapshot of activities at a particular point in time and serves as the base of knowledge and information for ongoing reporting.

Specify activities. Specifying activities is the first and most important step. This involves defining what is important to the business. A significant amount of time must be spent on data gathering (including specifying cost and other information or factors about these activities).

Activities should be defined in a way that captures the most important aspects of the business—its core activities—but not at such a detailed level to represent tasks. Once defined, activities can be linked to major business processes.

Exhibit 2. *XYZ Corporation*
Traditional vs. Activity-Based Costing

Traditional

Department/Expense Type	Amount
☐ *Sales/service* • Expense types include salaries, travel and entertainment, and rent	$ 8.4
☐ *New product development* • Expense types include prototypes, outside services, and depreciation	0.8
☐ *Manufacturing* • Expense types include direct labor, indirect labor, depreciation, and tooling	14.8
☐ *Engineering* • Expense type includes primarily salaries	4.2
☐ *Finance and administration* • Expense types include salaries, computer and office supplies, and professional services	3.6
☐ *Project management/question and answer* • Expense type includes primarily salaries	0.8
☐ Total cost	$32.6

Activity-Based

Business Process/Activities	Amount
☐ *Determining that a customer need exists* • Activities include targeting accounts, making sales calls, and preparing sales materials	$ 5.2
☐ *Preparing and delivering bids and quotes* • Activities include pricing determination, determining estimated costs, and preparing the quote to the customer	2.7
☐ *Interpreting a customer order and creating the sales/engineering documentation necessary to execute the order* • Activities include preparing bill materials, assigning part numbers, and preparing manufacturing blueprints	3.9
☐ *Planning and securing the necessary resources so that the customer's requirements are met* • Activities include preparing routers, N/C programming, and purchasing goods and services	4.3
☐ *Manufacturing and assembling products to the customer's specifications* • Activities include machining, welding, moving, and inspecting	10.8
☐ *Delivering the product, service, and/or documentation to the customer* • Activities include preparing of shipping documentation, performing billing and collection, and implementing installation	2.4
☐ *Other business processes and activities to support, control, and guide operations* • Activities include preparing budgets, preparing and processing financial information, and initiating research and development	3.3
☐ Total cost	$32.6

Trace cost to each activity. The purpose of tracing cost to each activity is to determine the cost of the activities. This step involves recasting cost from a departmental and expense-type base to an activity base; in other words, cost is recast from what it was spent *on* to what it was spent *for*. Tracing cost in this way is a time-consuming and detailed activity that involves interviews, analyses, and inspections of detailed cost information. The results of this step must be documented and preserved, since the methodology for recasting cost is integral to the ongoing CMS reporting.

Caution must be exercised when employees are interviewed to determine how they spend their time on various activities. The way that people actually spend their time, after all, can often be quite different than the way they *think* that they spend it. This disparity of perception can be used to explain why, in more sophisticated cost reporting, for example, labor cost may be collected on the basis of time cards that indicate activities performed.

Exhibit 2 illustrates a report from a company (again, *XYZ* Corporation) that recast cost from a departmental base to a business-process and activity base. This company produces a highly engineered piece of capital equipment for the oil service industry. Significant activities that were part of the business

process are indicated in parentheses. From this exhibit, it is readily apparent that *XYZ* looks completely different when viewed from an activity standpoint.

Determine value-added vs. non-value-added activities and cost. Once activities are specified and cost is determined, the next step requires determining whether an activity and its cost are value-added or non-value added. This judgment should be made within the context of a companywide and well-understood definition for the terms.

Making non-value-added cost visible is one of the biggest benefits of CMS, but also one of the most difficult to achieve. For one thing, although employees may acknowledge the existence of waste and inefficiency on a companywide basis, they may find it difficult to acknowledge waste and inefficiency in their own areas. Also, defining what is value-added versus what is non-value added can be problematic.

Definitions of value-added and non-value added are often confused and misunderstood. To some, non-value added means waste; to others, it might mean the cost of quality; and to still others, it might mean everything other than touch labor. The reporting of non-value-added activitives and cost can quickly become a "people" issue, because no one wants to be labeled as performing non-value-added activities; such labeling can easily be considered a threat to job security.

To address these ambiguities, therefore, a new CMS should report the cost of non-value-added activities within a predetermined, specific definition for a particular company in a particular industry. The CMS should focus on the activity, not on the people who perform the activity. The reporting of value-added and non-value-added activities and cost should be used to encourage and direct employee efforts to those activities that have value to customers.

At a minimum, the new CMS should provide a companywide estimate for non-value-added costs based on published case studies or on reliable empirical data. Even this minimum amount of clarification and visibility of non-value-added costs enables management to focus on the enormous opportunity available to improve the organization.

Determine output measures and volume. The purpose of determining output measures and volume is to select appropriate measures to accurately reflect an activity's cost, quality, cycle time, and customer satisfaction performance. In some cases, the volume information for the most meaningful measurement may be difficult or costly to obtain. In these situations, it is appropriate to select a measurement where the volume information is more readily attainable.

Select the appropriate cost drivers. A cost driver is a factor that has a direct influence on the cost and performance of activities. Cost drivers should explain why an activity's costs increase or decrease. Cost drivers are valuable because they enable management to focus on the cause of cost.

Selecting appropriate cost drivers is a creative process in the sense that it goes beyond traditional analyses in its search for the underlying reasons for cost. Many companies assume that the cost driver for manufacturing overhead is direct labor: The more direct labor, the more overhead. Consequently, reducing direct labor should lead to lower overhead.

Experience shows, however, that manufacturing overhead in many companies is driven not by direct labor but by the number of transactions and by the level of complexity on the plant floor. Significant correlations have been found between the number of part numbers, the number of engineering change notices, and the number of transactions on the shop floor and the amount of overhead. Correlation exists because significant amounts of overhead are required to balance, account, execute, confirm, and keep track of the various part numbers, engineering change notices, and transactions. Knowledge and understanding of cost drivers in these cases enabled management to attack the cause of cost by reducing the number of part numbers, engineering change notices, and transactions. In those cases where volume can be associated with cost drivers (e.g., number of part numbers), measurements can be established to gauge improvement efforts.

Trace costs to product cost objects. The purpose of tracing costs to product or service

cost objects is to determine the pattern by which products or services consume the activities of the business. This step involves the creation of a bill of activities that lists all the resources (activity outputs) consumed by a product or service in a particular market, for a particular customer, or for a specific distribution channel. Linking the cost of activities directly to the products and services that consume the activities is the basis of product cost under the new CMS.

Once the initial Phase 1 data gathering and analysis are completed, the result should be a well-understood and clearly defined structure in which to develop the systems and procedures necessary to support ongoing CMS reporting.

Phase 2. Implementing procedures, systems, and methods

Phase 2 is the stage when procedures, systems, and methods needed for ongoing reporting are implemented. This phase often involves creating procedures to collect data for the first time, as well as redirecting information and other data sources from existing sources to the CMS.

Phase 2 is a true "hands on" period in the organization. It requires extensive training of personnel in the use of the new CMS. Due dates and implementation schedules should be established, and the quality requirements expected of data entering the new CMS should be standardized.

Phase 3. Maintaining the cost management system

Phase 3, unlike Phases 1 and 2, is an ongoing stage in the implementation of a new CMS. Phase 3 is the stage when the CMS is maintained. The resources required for maintenance include feedback on those activities and costs associated with the ongoing data gathering and information reporting. Feedback is also required about the resources and efforts needed to update, improve, and maintain the quality of reported data.

Activities change over time. Since activities are the basis of a new CMS, the system must be updated to reflect those changes. If estimates are used, they should be replaced with actual data. CMS improvements can be made by identifying more accurate performance measurements. New products will also have to be costed. In short, Phase 3 reflects the concepts of continuous improvement. For the CMS implementation to be successful, Phase 3 must involve continual reassessment and effort.

Key factors for success

The design and implementation stages for a new CMS can often be quite technical in nature. These stages, however, must be supported by an entire array of both technical and nontechnical factors for the ultimate installation of the CMS to meet management's goals.

The key factors often associated with a successful CMS installation include:

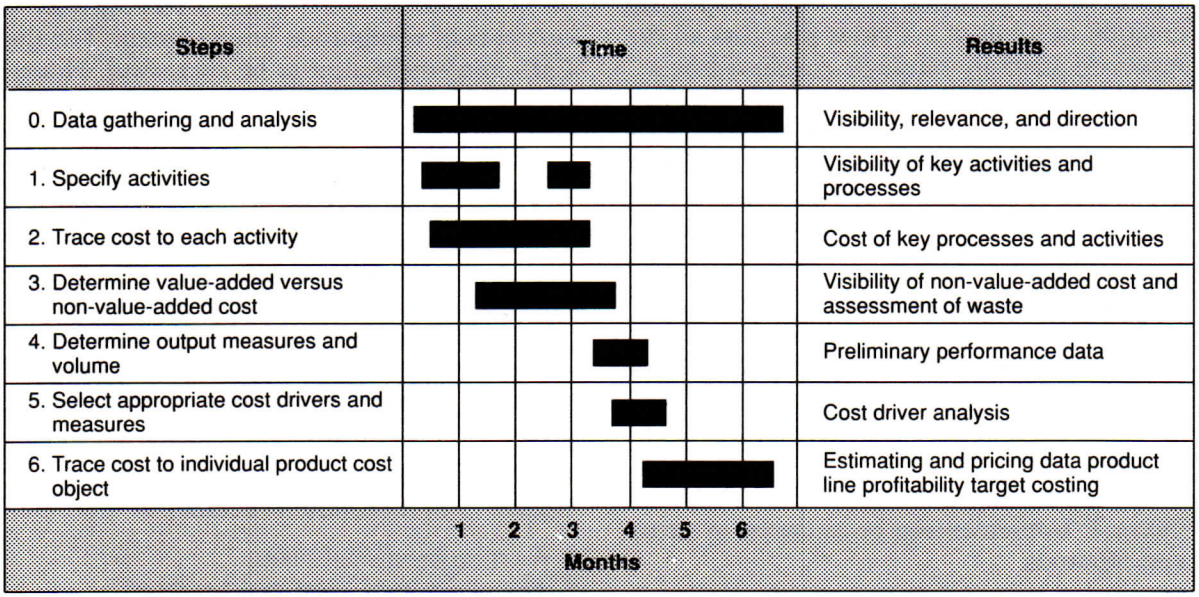
- A cross-functional team;
- The company's "best and brightest";
- An environment that promotes waste reduction without job loss; and
- An easy-to-succeed first project.

Each of these supporting factors is discussed below.

A cross-functional team. A new CMS is an across-the-board phenomenon in an organization. Thus, it will have broad-based and pervasive effects on all employees and work strategies. A CMS has its best chance for success when a cross-functional team is associated with it. The cross-functional team should be comprised of various disciplines within the organization. It should include not only a representative from the accounting department, but also representatives from all departments affected by the CMS (e.g., production, engineering, marketing).

The best and brightest. The members of the cross-functional team will have high visibility. Their personal credibility often will lend legitimacy to the activities in which they are involved, including the cross-functional team. Thus, for a CMS to be perceived as an organizational priority and an important enterprise, members of the cross-functional team must be well respected by employees and managers. Members of the team must have previously demonstrated an ability to be flexible, innovative, and forward-thinking.

Exhibit 3. *Typical Time Line for Installation (Phase I Steps)*



The company's best and brightest should be encouraged to join the cross-functional team involved with the new CMS. The leadership qualities that they bring to the team lend instant credibility to the new CMS. Since these employees often have strong communication skills, they can be the best advocates for the organization's new system. In its early and "bumpy" stages, a CMS will often have to traffic off the goodwill and respect that other employees have for the team members.

An environment promoting waste reduction without job loss. If a CMS is perceived as a "witch hunt" that is designed to eliminate jobs or to determine which managers are inefficient, the effort is doomed to failure. All companies have waste. The best companies develop an environment in which employees constantly look for ways to eliminate waste and do so without the threat of losing their jobs.

It is in such an environment that a CMS installation will thrive. Employees can broaden the horizons of the CMS effort if they feel that their jobs are not threatened. Liberated by this job security, they can often provide management with the most relevant feedback—straight from the shop floor, where the results of the system have the most impact. A collegial work environment and job security are assets in any CMS installation effort. They create an open atmosphere—one that is ripe for change.

An easy first project. An easy first project is a tried-and-true approach for any new undertaking, but especially for a new CMS. Building confidence is important with any new enterprise. Thus, instead of selecting the most difficult activities and business processes of the organization around which to design and implement a new CMS, management should target an area where information is easy to access and where only two or three departments are involved.

The experience gleaned from a successful easy-to-succeed first project will breed confidence in the employees involved with the new CMS. Once they become less tentative, they will be more receptive about applying the new CMS to the more complicated and difficult aspects of the business. As the initial activities are defined in this "easy" project, concentration should be on continuous improvement and waste reduction as a means to promote and finance the ongoing CMS effort.

Installation time lines

Once the supporting key factors for success are identified and satisfied, management must set time lines for the CMS installation. As a rule of thumb, the early phases of a CMS effort should involve a five- to eight-person team that is assigned to the project on a full-time basis for a period of from four to six months, regardless of the size of the business.

The variable in establishing these time lines is *scope*. For very large organizations, the resources available and the time lines needed may enable the cross-functional team to examine only two or three major business processes and perhaps twenty-five to thirty activities per year. Smaller businesses may be able to complete the entire CMS installation within a six-month period. Management, along with the cross-functional team, must determine what is reasonable for the organization to achieve and within what time line.

Exhibit 3 illustrates a typical time line plan that reflects the six general steps of the Phase 1 implementation.

Continuous improvement for success

To remain competitive in world markets, managers must continually improve the performance of activities and business processes. No organization can rest on its past success or performance. Improvements to processes, activities, and products must be continuous and ongoing.

Since improvement of processes and activities is fundamental to long-term survival, managers need relevant and timely feedback to enable them to judge the performance of activities. Existing financial and cost accounting systems do not produce the information managers require. The answer is the design and implementation of a new CMS.

A new CMS must be designed and implemented with two purposes in mind:

1. To gather financial and operating information that reflects the performance of activities; and
2. To supply management with relevant information to plan, manage, control, and direct the activities of the business in order to improve processes and products, eliminate waste, and execute business operations and strategies.

Yet a CMS, by itself, produces no increase in productivity, no reduction in cost, no improvement in quality, no reduction in cycle time, and no increase in customer satisfaction. Its true benefit can be measured only in light of management's actions initiated based on information provided by the new CMS. Those actions should be directed toward continuously improving the organization's activities and business processes through better decision making. ▲

John A. Miller is consultant adjunct at the American Productivity and Quality Center, located in Houston, Texas.

Notes

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