

Accounting's shift to decision-based costing

Gary COKINS

SAS Institute Inc., Cary, North Carolina, USA
gary.cokins@sas.com

Sorinel CĂPUȘNEANU

“Dimitrie Cantemir” Christian University, Bucharest
sorinelcapusneanu@gmail.com

Sorin BRICIU

“1 Decembrie 1918” University, Alba Iulia
sbriciu@yahoo.com

Abstract. *Managers are increasingly shifting from reacting to after-the-fact outcomes to anticipating the future with predictive analysis and proactively making adjustments with better decisions. Despite some advances in the application of new costing techniques, are management accountants adequately satisfying the need for better cost planning information? Or is the gap widening?*

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1. Introduction

In this century where information plays a pivotal role in the success of a company, do management accountants provide the necessary information required by a company's managers?

There is a widening gap between what management accountants report and what managers and employee teams want and need. This does not mean that information produced by management accountants is of little value. In the last few decades, accountants have made significant strides in improving the utility and accuracy of the costs they calculate and report. The gap is being caused by a shift in managers' needs – from just needing to know what things cost (such as a product cost) and what happened in the past – to a need for detailed information about what their *future* costs will be and why.

Despite the accountants advancing a step to catch up with the increasing needs of managers to make good decisions, the managers have advanced two steps. Managers already recognize that projections of future outcomes must recognize which resource capacity expense. In order to understand this widening gap, and more importantly how accountants can narrow and ideally close the gap, let's examine the broad landscape of accounting.

2. The conceptual approaches of management accounting

Management accounting historically evolved as the production of goods and competitive market economies developed. In the earlier conditions where the market was only producers satisfying a scarcity of goods demanded by consumers, the role of management accounting could be summarized as to provide cost information which permits the manufacturer to adjust prices to improve profit margins. With time, due to intensified competition, there have been changes in economic markets. Economic power shifted from producers to consumers as a result of the emergence of new management models, technical progress, the Internet etc. These influenced the evolution of accounting systems with a shift in emphasis to forecasting and planning.

In countries with a developed market economy, management accounting is considered an information system that integrates business applications with specific techniques and concepts that make up the entity's overall management system.

For Anglo-Saxon economies, for instance, management accounting includes all of the "valued" information that managers need, and not only the information on costs. It recognizes that the purpose of management accounting is related to the capacity of economic resources supplied and not just in their consumption.

In France the management accounting is defined as an "analysis technique" of the work activities of an entity and its manufactured products to *control* internal production conditions through the use of cost information.

The National Council of Accounting in France since 1996 defined the management accounting thus: "*management accounting is designed primarily to the needs of the enterprise; it constitutes a part of its information system, providing an economic modeling of the enterprise in order to meet the objectives of measuring performance and aid in decision making*". The process constituted part of the performance measurement and methods in support of their decisions.

Henri Bouquin (2004) defines the management accounting as: "*an information system which is aimed at helping managers and influence behaviors through modeling the relationship between resources allocated to the goals pursued and consumed*".

The definition given to management accounting by the National Association of Accountants (NAA), which is now the Institute of Management Accountants (IMA, 2008), in the USA is: "*the process of identification, measurement, analysis, collection, processing, transmission and interpretation of information used by the management of a financial undertaking for planning, evaluation and monitoring of appropriate and responsible use of its resources*".

Management accounting, whose initial goal was calculating costs, considerably expanded its role by providing information systems for routing dynamic supply-production-sales receipts with regard to *their impact on costs and outcomes*.

Management accounting's main objectives are: *cost calculation, establishment of results and profitability of products manufactured, work performed and services rendered, forecast of expenditures and incomes through the establishment of an internal network of budgets, control of costs and budgets through the deviations and providing the necessary data to the grounding decisions on the management of the entity*.

In the market economy, formation of prices according to supply and demand causes producers to pay particular attention to the actual cost of products compared to the sale price in order to show their effectiveness or inefficiency of their work and as a result, the level of competitiveness.

3. What is the purpose of management accounting?

Contrary to beliefs that the only purpose of managerial accounting is to collect, transform and report data, its primary purpose is first and foremost to influence behavior at all levels – from the desk of the CEO down to each employee – and it should do so by supporting decisions. A secondary purpose is to stimulate investigation and discovery by signaling relevant information (and consequently bringing focus) and generating questions.

The widening gap between what accountants report and what decision makers need involves the shift from analyzing *descriptive* historical

information to analyzing *predictive* information, such as budgets and what-if scenarios. Obviously, all decisions can only impact the future because the past is already history. However, there is much that can be learned and leveraged from historical information. Although accountants are gradually improving the quality of reported history, decision makers are shifting their view toward better understanding the future.

This shift is a response to a more overarching shift in executive management styles – from a command-and-control emphasis that is reactive (such as scrutinizing cost variance analysis of actual versus planned outcomes) – to an anticipatory, proactive style where organizational changes and adjustments, such as staffing levels, can be made before things happen and before minor problems become big ones.

There is an issue with managerial accounting. There appears to be competing costing methods (e.g., lean accounting, activity-based costing, throughput accounting), each with passionate advocates. As a result, there is some confusion as to which one to use; or alternatively, can two or more methods co-exist despite calculating different costs for the same item? A purpose of this article is to discuss the various situations, conditions and types of decisions that can use different types of cost information.

4. An accounting framework and taxonomy

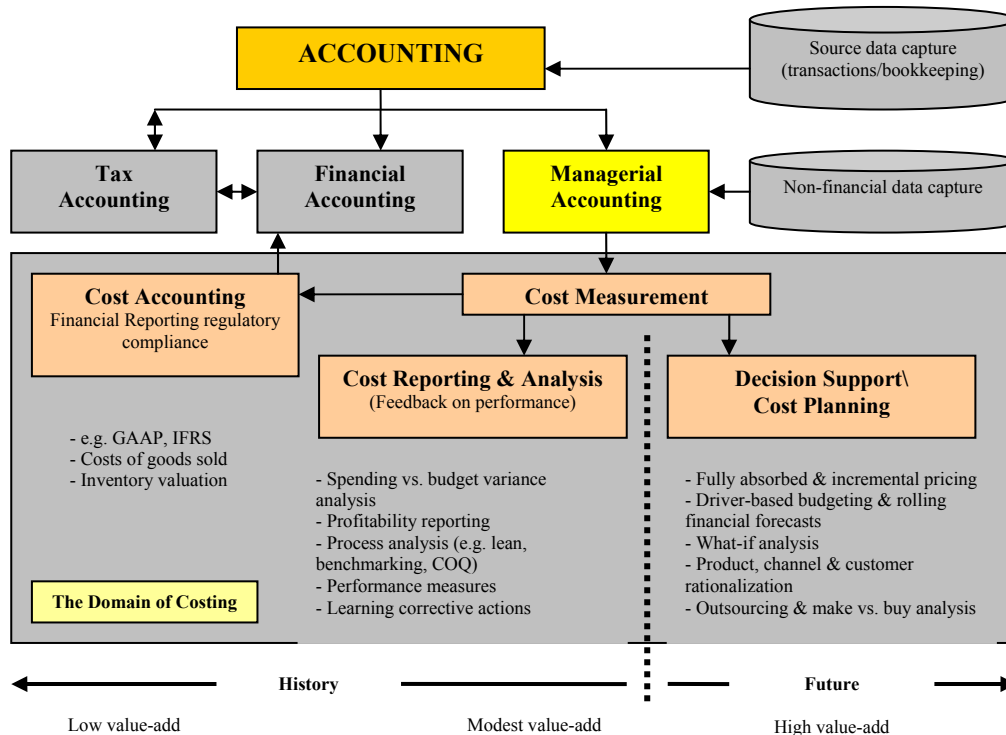
Figure 1 illustrates the large domain of accounting with three components: tax accounting, financial accounting, and managerial accounting. There are two types of data sources displayed at the upper right. The upper source is from financial transactions and bookkeeping, such as purchases and payroll. The lower source is non-financial measures such as payroll hours worked, retail items sold, or gallons of liquid produced.

The financial accounting component is intended for external reporting, such as for regulatory agencies, banks, stockholders and the investment community. Financial accounting follows compliance rules aimed at economic valuation, and as such is typically not adequate or sufficient for decision making. And the tax accounting component is its own world of legislated rules. Financial accounting reflects *the consumption of resources by their nature*, presents through the synthesis statements the results of the entities as a whole, without ensuring cost calculation of work, services, products, and does not allow any analysis of their results.

Whereas financial accounting does not deal with the use of resources, the transformation after their destination for the resolution of these aspects shall be involved in management accounting.

Financial accounting lost “*the informational war*” inside business, because it is considered to be much “too slow” and irrelevant, seeking of this cause the development of new channels of information to solve these disabilities of financial accounting (too slow and way too general). In addition, financial accounting has created a highly developed mechanism of conventions that try to present economic situation through the prism of such conventions.

While financial accounting assumes a passive information role, management accounting in exchange provides tools for the control of microeconomic processes by allowing its use in managerial decision everyday. Our area of concern – the management accounting component – can be broken into three categories: cost accounting, the cost reporting and analysis, and decision support with cost planning. To oversimplify a distinction between financial and managerial accounting, financial accounting is about *valuation* and managerial accounting is about *value creation* through good decision making.



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Figure 1. The managerial accounting component

The managerial accounting component in Figure 1 is comprised of three parts that are all recipients of inputs from the “Cost Measurement” procedure of transforming incurred expenses (or their obligations) into calculated costs:

- *Cost accounting* represents the assignment of expenses into outputs such as the cost of goods sold and the value of inventories. This box primarily provides external reporting to comply with regulatory agencies.
- *Cost reporting and analysis* represents the insights, inferences, and analysis of what has already taken place in the business in order to track performance.
- *Decision support with cost planning* involves decision making and taking. It also represents using the historical cost reporting information in combination with other economic information, including forecasts and planned changes (e.g., processes, products, services, channels) in order to make the types of decisions that lead to a financially successful future.

It will be apparent that the key differentiator between cost accounting and the other two uses of “cost measurement” is that cost accounting is deeply constrained by regulatory practices and describing the past in accordance with principles of financial accounting. The other two categories offer diagnostic support to interpret, and draw inferences from respectively what has already taken place, and what can happen in the future. Cost reporting and analysis is about explanation. Decision support with cost planning is about possibilities.

The message at the bottom of the diagram is the value, utility and usefulness of the information increases, arguably at an exponential rate, from the left-side to the right-side of the diagram.

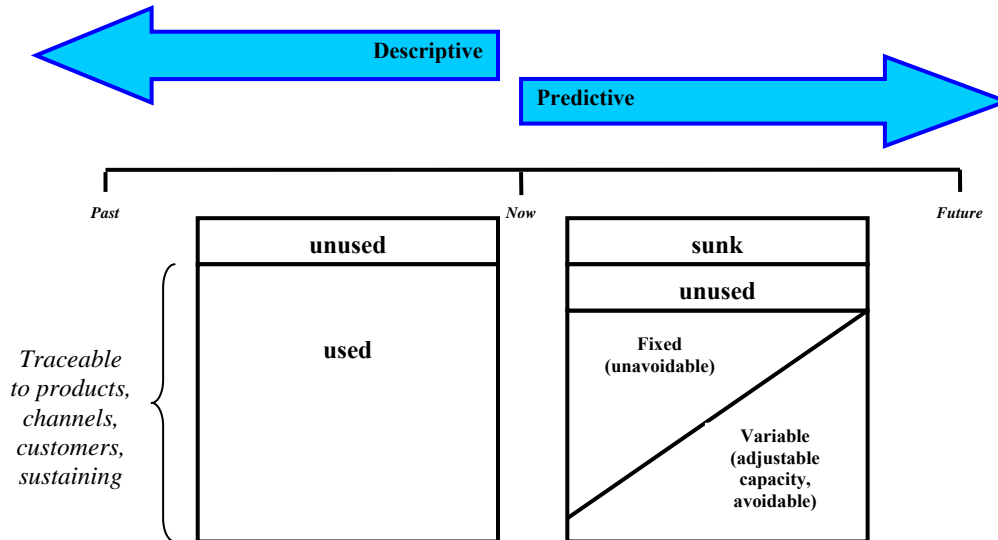
5. What? So what? Then what?

Figure 1 also illustrates that the degree of value-adding information for decision making increases from left to right. The *cost accounting* data establishes a foundation; it is of low value for decision making. The *cost reporting for analysis* information converts cost measurement data into a context. It is useful for managers and employee teams to clearly observe outcomes with transparency that may have never been seen before, or is dramatically different from their existing beliefs derived from their firm’s less mature cost measurement method. Cost reporting displays the reality of what has happened, and provides answers to “What?” That is, what did things cost last period?

However, an obvious follow-up question should be “So what?” That is, based on any questionable or bothersome observations, is there merit to making changes and interventions? How relevant to improving performance is the outcome we are seeing? But this leads to the more critical, and relatively higher value-added need to propose actions – to make and take decisions – surfaced from *cost planning*. This is the “Then what?” question; for example, what change can be made or action taken (such as a distributor altering its distribution routes), and what is the ultimate impact? Of course, changes will lead to multiple effects on service levels, quality and delivery times, but the economic effect of profits and costs should also be considered. And this gets to the heart of the widening gap between accountants and decision makers that use accounting data. To close the gap, accountants must change their mindset from managerial accounting to managerial economics – nicknamed here as “decision-based costing.”

There is a catch. When the Cost Reporting and Analysis component shifts rightward to the Decision Support with Cost Planning box in Figure 1, then analysis shifts to the realm of decision support via economic analysis. For example, one needs to understand the impact that changes have on future expenses. Therefore, the focus now shifts to resources and their capacities. This involves classifying the behavior of resource expenses as fixed, semi-fixed, variable, etc. with changes in service offerings, volumes, mix, processes and the like – which gets tricky. A key concept is this: The “adjustability of capacity” of any individual resource expense depends on both the planning horizon and the ease or difficulty of adjusting the individual resource’s capacity (i.e., its stickability). This wanders into the messy area of marginal cost analysis that textbooks oversimplify, but is complicated to accurately calculate in the real world.

Figure 2 illustrates how a firm’s view of its profit and expense structure changes as analysis shifts from the historical *cost reporting* view to a predictive *cost planning* view. The latter is the context from which decisions are considered and evaluated.



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Figure 2. Accounting treatments and behavior of capacity (expenses)

In the figure's left-hand side during the historical time period, the resource expenses were incurred. The capacity of these expenses were incurred for were *supplied*, and then they were either (1) *unused* as idle or protective capacity; or (2) they were *used* to make products, deliver customer services or to internally sustain the organization. This is the *cost reporting and analysis* component from Figure 1 that calculates output costs. The money was spent, and costing answers where it was used. This is the *descriptive* view of costs. Accountants refer to this as full absorption costing when all the expenses for a past time period are traced to outputs. It traces expenses (and hopefully does not allocate expenses on causal-insensitive broad averages) to measure which outputs uniquely consumed the resources, including individual output costs. Full absorption costing uses direct costing methods, which are relatively easy to apply, and supplements the reporting with activity-based costing techniques for the indirect and shared expenses – which are trickier to model, calculate and report.

In contrast, Figure 2's right-hand side is the *predictive* view of costs – the *decision support with cost planning* component from Figure 1. In the future, the capacity levels and types of resources can be adjusted. Capacity only exists as a resource, not as a process or work activity. The classification of an expense as fixed, semi-fixed or variable depends on the planning horizon. The diagonal line reveals that, in the very short term, most expenses are not easily changed;

hence, they are classified as fixed. As the time horizon extends into the future, then capacity becomes adjustable. For example, assets can be leased, not purchased; and future workers can be contracted from a temporary employment agency, not hired as full-time employees. Therefore, these expenses are classified as variable.

In the Predictive view of Figure 2, changes in demand – such as the volume and mix of products and services ordered from customers – will drive the consumption of processes (and the work activities that belong to them). In turn, this will determine what level of both fixed and variable resource expenses are needed to supply capacity for future use. For purchased assets, such as retail store display shelves or expensive equipment, these costs are classified as sunk costs. Their full capacity and associated expense were acquired when an executive authorized and signed their name to the purchase order for the vendor or contractor. Some idle capacity (such as staffing a customer call center) is typically planned for. This deliberately planned idle capacity is intended to meet temporary demand surges, or as an insurance buffer for the uncertainty of the demand forecast. Its cost is justified by offsetting potential lost revenues from unacceptable, low service levels to customers.

Since decisions only affect the future, the predictive view is the basis for analysis and evaluation. The predictive view applies techniques like what-if analysis and simulations. These projections are based on forecasts and consumption rates. However, consumption rates are ideally derived as calibrated rates from the historical, descriptive view – where the rate of operational work typically remains constant until productivity and process improvements affect them. These rates are for both direct expenses and rates calibrated by an activity-based costing model for the indirect and shared expenses. And when improvements or process changes occur, the calibrated historical consumption rates can be adjusted up or down from the valid baseline measure that is already being experienced. Accountants refer to these projections as marginal expense analysis. For example, as future incremental demands change from the existing, near-term baseline operations, how is the supply for capacity affected?

Various costing techniques, to be discussed following the next section, rely on these costing principles.

6. What types of decisions are made with managerial accounting information?

There are hundreds of pages on managerial and cost accounting within university textbooks. Let's try to distill all those pages to a few paragraphs.

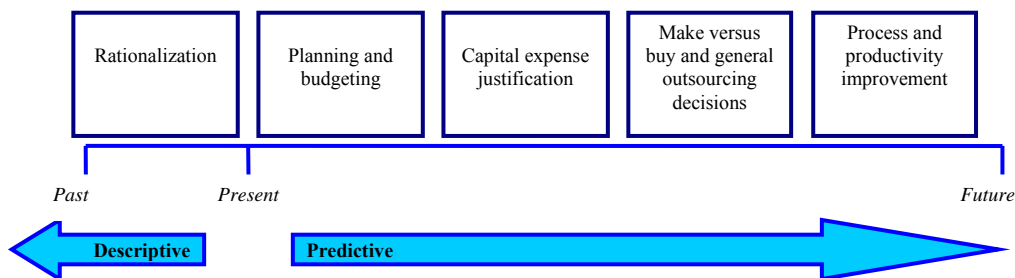


Figure 3. Decision-making categories for applying managerial accounting

The broad decision-making categories (Figure 3) for applying managerial accounting are:

1. *Rationalization* – Which products, stock keeping units (SKUs), services, channels, routes, customers, etc. are best to retain or improve? And, which are not and should potentially be abandoned or terminated?

Historical and descriptive costing (the left side of Figure 2) can be adequate to answer these questions. In part, this explains the growing popularity in applying activity-based cost principles to supplement traditional direct costing. There is much diversity and variation in routes, channels, customers, etc. that cause a relative increase in an organization's indirect and shared expenses to manage the resulting complexity. IT expenses are a growing one. Having the direct and indirect costs become a relevant starting point lets you know what the variations cost. This answers the “What?” question. It is difficult, arguably impossible, to answer the subsequent “So what?” question without having the facts. Otherwise, conclusions are based on gut feel, intuition, misleading information or politics.

2. *Planning and budgeting* – Based on forecasts of future demand volume and mix for types of services or products, combined with assumptions of other proposed changes, how much will it cost to match demand with our supplied resources (e.g., workforce staffing levels)?

When questions like these and many more like them are asked, one needs more than a crystal ball to answer them. This is where the *predictive* view of costing (the right side of Figure 2) fits in. This is arguably the sweet spot of costing. On an annual cycle, this is the budgeting process. However, executives

are increasingly demanding rolling financial forecasts at shorter intervals. This demand is partially due to the fact that the annual budget can quickly become obsolete and future period assumptions, especially sales forecasts, become more certain. At its core, this costing sweet spot is about resource capacity planning – the ability to convert and reflect physical operational events into the language of money – expenses and costs.

3. *Capital expense justification* – Is the return on investment (ROI) of a proposed asset purchase, such as equipment or an information system, justified?

If we purchase equipment, technology or a system, will the financial benefits justify the investment? A question like this involves what microeconomics refers to as “capital budgeting.” Capital budgeting analysis typically involves comparing a baseline, reflecting business as usual, with an alternative scenario that includes spending on (i.e., investing in) an asset where the expected benefits will continue well beyond a year’s duration. An example would be investing in an automated warehouse to replace manual, pick-and-pack labor. Some refer to the associated investment justification analysis as “same as, except for” or comparing the *as-is* state with the *to-be* state. A distinction of capital budgeting is it involves discounted cash flow (DCF) equations. DCF equations reflect the net present value (NPV) of money, incorporating the time that it would take for that same money to earn income at some rate if it were applied elsewhere (e.g., a bank certificate of deposit). The rate is often called the organization’s cost of capital.

4. *Make versus buy and general outsourcing decisions* – Should we continue to do it ourselves or contract with a third party? If we choose to have a third party make our product or deliver our service instead of ourselves – *basically outsourcing* – (or vice versa by bringing in-house) then afterward, how much of our expenses remain and how much will we remove (or add)? This type of decision is similar to the logic and math of capital budgeting. The same description of the capital budgeting method applies – measuring “same as, except for” incremental changes. Ideally, activity-based costing techniques should be applied because the primary variable is the work activities that the third party contractor will now perform, which replace the current in-house work. Since cost is not the only variable that shifts, a service-level agreement with the contractor should be a standard practice.

5. *Process and productivity improvement* – What can be changed? How to identify opportunities? How to compare and differentiate high-impact opportunities from nominal ones? Some organization’s operations functions are focusing on reducing costs and future cost avoidance (Strategic profitable revenue enhancement is addressed with managerial accounting for

rationalization). These operations functions are tasked with productivity improvement challenges, and they are less interested in understanding strategic profitability analysis – which of our priced products and services makes or loses money – and more on streamlining processes, reducing waste and low-value-added work activities, and increasing asset utilization. This is the area of Six Sigma quality initiatives, lean management principles and just-in-time (JIT) scheduling techniques. Examples of these types of costs are:

- Unit costs of outputs and benchmarking.
- Target costing.
- Cost of quality (COQ).
- Value-adding attributes (such as non-value added vs. value-added).
- Time-driven activity-based costing (TDABC).
- Resource consumption accounting (RCA).
- German cost accounting (*Grenzplankostenrechnung* [GPK]).
- Accounting for a lean management environment (also Kaizen costing).
- Theory of constraint's throughput accounting.

The term “cost estimating” is a general one. It applies in all of the decision-making categories above. One might conclude that the first category, rationalization, focuses only on historical costs and thus does not require cost estimates. However, the impact on resource expenses from adding or dropping various work-consuming outputs also require cost estimates to validate the merit of a proposed rationalization decision.

7. Managerial decision and the role of management accountant in making decision

Managerial decision must rely on relevant costs, recognizable by their forecast features that include hidden costs, social costs and external costs. Because decisions aimed at future action management requires detailed information on future costs, some of these are not included in the data collection system of managerial accounting.

Management accountant must take into consideration only those predictions or estimates of the costs that is relevant to decision making. Relevant making decision information is data on costs, revenue and future resource consumption which are different for each analyzed alternative. In general, managers follow a making decision model to choose the direction of action such as: obtaining information; making forecasts; choosing an alternative; implementation of the decision; performance evaluation.

In making decision, the role of management accountant is to provide accurate, timely, and in useful form information. In other words, the

management accountant shall discharge to collect relevant information and to report them in a manner relevant to management. There are many general techniques of making decision, which helps management accountants to generate this information and related reports, such as: Activity-Based Costing, Direct Costing, marginal and incremental expense analysis, etc. Each of these techniques offers specific reporting format and applies information relevant to a specific decision in the making decision process.

The role of management accountant is to provide management the necessary information for making decision and to reflect both the effects of the risk in conditions of uncertainty, and the most likely outcomes (results). In this context, decision makers require the types of information considered relevant for assessing decisional alternatives, but they should not be "overloaded" with a very large volume of data. The cost data that remains the same without being impacted for all alternatives are not relevant (Needles et al., 2000). The role of the management accountant is to collaborate with the managers, analyzing and presenting information in a particular format and helping them to finalize their decisions.

8. Concluding remarks

In our introduction, we described the purpose of this article as “to discuss the various situations, conditions and types of decisions that can use different types of cost information.” Confusion can arise because some of the methods calculate and report different costs that are not just variations in cost accuracy, but are also different costs altogether.

For example, the method of accounting for a lean environment violates the accounting principle of causality. This raises the question, “Is lean accounting a viable replacement for, complement to, and/or supplement for current and evolving management accounting approaches, such as activity-based costing?” Another way of asking this question is “Should there be two or more different, *coexisting* cost reporting methods that report dissimilar numbers?” For example, one tactical costing method is used for operations and making short-term decisions; another strategic costing method (for planning, marketing, pricing and sales analysts to evaluate profit margins) is used for longer-term decisions.

There will be debates, but eventually some form of consensus will triumph within an organization. The underlying arguments may be due to the inappropriate usage of standard costing information – and the potential inappropriate actions that may result. But there may be a deeper problem: Cost accounting system data is *not* the same thing as cost information that should be

used for decision making. The majority of value from cost information for decision making is not in historical reports – the descriptive view. Its primary value is in planning the future (such as product and customer rationalization), marginal cost analysis for one-off decisions, or trade-off analysis between two or more alternatives.

Therefore, key tests for deciding which costing method to use should be: How does it handle economic projections? Can it accommodate classifying resource expenses as variable, semi-variable, fixed, or as unavoidable or avoidable (i.e., allowing for capacity adjustment decisions)? Does it isolate unused/idle capacity expenses?

The good news is that organizations are challenging traditional accounting. So, in the end, any accounting treatments that yield better decision making should prevail. The coexistence of two or more costing approaches may cause confusion over which one reports the correct cost. But that is a different problem. What matters is that organizations are seeking better ways to apply managerial accounting techniques to make better decisions.

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