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**MANAGEMENT ACCOUNTING—APPROACHES,**  
**TECHNIQUES AND MANAGEMENT PROCESSES**

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## **EXECUTIVE SUMMARY**

- Management Accounting is in disarray with competing approaches, techniques, and management processes, along with the bickering between which is best.
- The Institute of Management Accountants (IMA) has made a renewed commitment to bring knowledge of international methods to the U.S.
- The IMA's effort has involved investigating, documenting, and explaining successful methods and using or adapting them to improve practice.
- Currently comparing management accounting methods is confusing without some form of categorization and criteria for comparison.
- Various management accounting approaches, techniques, and management processes are categorized, described, and evaluated in the interest of making meaningful comparisons.

## **ABSTRACT**

In this article we place management accounting methods in a framework that is designed to promote meaningful debate and usefulness for comparisons. We define and evaluate traditional and newer methods with the purpose of affirming and promoting the IMA's commitment to investigating management accounting practices and improving practice

**T**he Institute of Management Accountants (IMA) has published a number of recent articles that suggest that management accounting (MA) is in disarray and in need of change. This seems to be an issue that managers have already recognized as the 2003 IMA/E&Y survey would suggest. Here's a quick rundown of some relevant results:

- Data: 80% say MA data is important, but only 23% are satisfied with their decision support information; 98% say their MA information is distorted; but 80% say change is not a priority.
- Respondents complain of impaired cost visibility but say new tool adoption is not a priority— 80% currently use traditional approaches.
- The predominant belief is that costs are distorted, allocated costs are increasing— allocation is where most distortion occurs—and yet there is little urgency to change.

Other recent studies confirm similar results in New Zealand, the U.K., and Australia (Waldron, 2005; Adler, et al. 2000).<sup>1</sup> Waldron states that for “advanced management accounting techniques...” [the] “adoption has been less rapid than would have been expected (p. 245).” Moreover, there is plenty of evidence of ebb and flow for support of the vast array of methods, and unfortunately there has often been inconsistency with their application causing more confusion.

Another problem may be that managers do not know how to compare the array of methods that litter the MA landscape. This lack of clarity is exacerbated by management accountants' insatiable appetite for *new* and *advanced* concepts and lack of guidance on what's important, merely *fashionable*, and what's been used successfully. For example, an article (dated fall 2003) described the “cost of unused capacity” as a “relatively recent issue” in MA. But the fact is, Gantt and Church were seriously debating this issue in the early 1900's.<sup>2</sup> Another example is the recently emphasized German approach (GPK) that has been

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<sup>1</sup> See Waldron, Marilyn, “Overcoming Barriers to Change in Management Accounting Systems,” *Journal of American Academy of Business*, (March 2005); and Adler, Ralph, Andre Everett, and Marilyn Waldron, “Advanced Management Accounting Techniques in Manufacturing: Utilization, Benefits, and Barriers to Implementation,” *Accounting Forum*, (June 2000).

<sup>2</sup> e.g., Gantt made a presentation in 1915 that has become a classic work that addresses the proper treatment of unused capacity in a manner that is still relevant today.

in use for 50 years or more. Although neither GPK nor the proper treatment of unused capacity is widely practiced in the U.S., both could easily be considered *advanced* for U.S. companies. Thus, everything that is *new* in some way is not necessarily *advanced* and visa versa.

Accordingly, our goal is to bring some method to the madness by providing a categorization as well as criteria for comparison. Below we segment the MA landscape into three categories. However, space constraints will limit the evaluation and discussion to the first category. We start off by using scope to arrive at our categories.

## **COMPREHENSIVE MA APPROACHES, MA TECHNIQUES, AND MANAGEMENT PROCESSES**

There are almost an infinite number of tools, methods, techniques, approaches, and other concepts floating around; and we must first own-up to being unable to canvas the MA landscape exhaustively. However, the point is to provide practical help to those trying to understand the most visible of what's out there.

### **DEFINITIONS**

Our categories include (1) Comprehensive MA approaches, (2) MA techniques, and (3) management processes. *Comprehensive MA approaches* attempt to offer enterprise-wide capabilities in each of the following three areas:

- Providing a monetary reflection of enterprise operations,
- Accommodating the management processes of planning, control, and adaptive and corrective actions with the aim of overall enterprise optimization, and
- Contributing to key organizational processes such as performance measurement and the reward system

For our purposes, a *MA Technique* addresses one, or at the most two, of the above areas and not necessarily comprehensively. Techniques are predominantly MA related but they don't offer the full spectrum of information of MA approaches. Examples include lean, theory of constraints (TOC), just-in-time (JIT) The *management processes* category is rather

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broad but includes methods that are most limited in application to MA. Examples of management processes include capital budgeting, CVP analysis, incentive compensation, transfer pricing, and benchmarking.

It should be noted that our categorization purposely avoids the term MA *system* here, which we view as that specific combination of an approach, relevant techniques, and management processes required to effectively manage a particular enterprise.

### **COMPREHENSIVE MANAGEMENT ACCOUNTING APPROACHES**

We include five entries in this category. Traditional approaches include standard costing and normal costing. Reasonably new or advanced approaches include ABC/M, GPK, and Resource Consumption Accounting (RCA). An important trait of comprehensive MA approaches is that they are neutral to the specific treatment of fixed costs (i.e., they can potentially function as an absorption or a variable costing system and in some cases both). The *comprehensiveness* of this categorization is best described in relation to enterprise optimization. In particular, examples of the decision cost concepts to be supported include:

- throughput costs (when deciding to produce one additional product unit),
- incremental costs (the difference in total cost between two alternatives in a decision),
- short run variable costs (for opportunity cost decisions—mutually exclusive uses of resources),
- attributable costs (for divestment decisions—e.g., outsourcing payroll)<sup>3</sup>, and
- full costs (for strategic decisions—e.g., establishing operations in the Asian market).

Comprehensive MA approaches also serve as the foundation or the enabling platform for a number of MA techniques and management processes. Exhibit 1 provides a comparison of the five approaches discussed here based on a set of criteria.

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<sup>3</sup> Shillinglaw, G. “The Concept of Attributable Cost,” *Journal of Accounting Research*. (1963). p. 73-85. Attributable cost is the most complete cost concept (i.e., the closest to full cost) achievable through the principle of causality.

**EXHIBIT 1: COMPREHENSIVE MANAGEMENT ACCOUNTING APPROACHES COMPARISON**

Criteria:	Traditional Standard Costing	Traditional Normal Costing	Activity-Based Costing/ Management	Resource Consumption Accounting (RCA)	Grenzplan - kostenrechnung (GPK)
1. Consistent treatment of consumption and cost behavior	Low	Low	Low	High	High
2. Integration:					
o Conceptual	Low	Low	Medium	High	High
o Value Chain	Low	Low	Low	High	Some
o Technology	Low	Low	Low	High	High
3. Self-updating/ maintaining	Low	Low	Low	High	High
4. Flexibility	Low	Low	Low	High	High
5. Capacity treatment	Low	Low	Medium	High	High
6. Ability to generate relevant decision support information	Low	Low	Medium	High	High
7. Easy to implement	High	High	Medium	Low	Low
8. Adaptable to existing organization	High	High	Medium	Low	Low
9. Exposure in the U.S.	High	High	Medium	Low	Low

**CRITERION 1: TREATMENT OF RESOURCE CONSUMPTION AND COST BEHAVIOR**

Coming to terms with consumption and cost behavior is arguably the most crucial requirement for any MA approach. Falling short here adversely affects the approach’s ability to deliver on other criteria, including effective decision support. In particular, this criterion is concerned with:

- accurately reflecting the cost structure of the enterprise (embodied in the resources in which the company has invested), and
- a consistent treatment of consumption and related cost behavior as resources are consumed in enterprise operations.

Traditional approaches limit themselves by defining cost behavior only in terms of

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production or sales volume. ABC/M highlighted this problem, but it faltered in implementation by not recognizing the role and importance of resources. Moreover, ABC/M has perpetuated the tendency in practice to confuse *operational* cost concepts (fixed and variable) with *relevant* cost concepts (avoidable and unavoidable).

GPK and RCA define resource consumption by quantities and define cost behavior as either fixed or proportional to resource outputs. These methods also recognize that the nature of a cost can change from proportional to fixed in consumption relationships. This treatment is indispensable in achieving an accurate reflection of cost behavior. RCA adopted the German approach and extended it by including the flexibility to use activity-based drivers where appropriate.

## **CRITERION 2: INTEGRATION**

The next three criteria (integration, self-updating/maintaining, and flexibility) are interrelated as will be evident from the cross referencing below. Integration, is a key component in modern MA solutions of any type and should be considered in three key ways:

- (1) *Conceptual Integration* - the ability to coherently combine the three elements of a comprehensive MA approach in a single cost model. That is, a conceptually integrated cost model should *effectively* unify:
  - the monetary reflection of an enterprise's operations,
  - with management's processes for overall enterprise optimization,
  - while also contributing to key performance management processes.
- (2) *Value Chain Integration* - the ability to track quantitative elements (quantities) in various operational applications and to overlay them with dollar values without the need for data duplication.
- (3) *Technology Integration* - the ability to accommodate both conceptual integration and value chain integration in a single technology platform.

The integration ability of standard and normal costing is virtually non-existent on all dimensions. These approaches are (by both design and default) embedded in the general ledger to support external reporting.

ABC/M suffers from a number of integration maladies. Its initial market penetration was based on a quick and easy sell as an actual cost system. Conceptual integration came to ABC/M fairly late (in the form of Activity-based budgeting and later activity-based planning) and then only with very limited success. The problems in this regard stem from two factors:

- ABC's inability to come to terms with resource consumption and cost behavior issues, and
- activity-to-resource relationships that are not often preserved.

Implementing ABC/M as a *stand-alone* system makes value chain integration unattainable. Unfortunately, this approach has dominated practice leading to high maintenance and sustainability costs. The newest iteration of the approach—time-based ABC—fails to address any of the integration issues.

GPK is significantly more integrated than the approaches already discussed and achieved conceptual integration several decades ago. GPK's quantity-based approach has been at the forefront of value chain integration and has pioneered the use of information technology in MA.<sup>4</sup> With the incorporation of GPK principles in the first ERP system (SAP's R/2 system) in 1986, technology integration was achieved and all three facets of integration harnessed successfully. However, GPK's value chain integration is not as extensive as it could be.

RCA, with GPK as its baseline, inherits a similar level of conceptual integration but adds integrated activity-based methods. However, GPK lacks value chain integration in some key areas such as resources (e.g., machines) and in results management. RCA minimizes duplicate data and related maintenance by using machine objects in the asset management application of the software and customer dimensions in the Customer Relationship Management (CRM) application. RCA provides the same level of technology integration capability as GPK.

### **CRITERION 3: SELF-UPDATING/MAINTAINING**

The self-updating or self-maintaining criterion is important in reducing cost and time

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<sup>4</sup>Plaut, H.G., H. Moeller, W. Medicke, and W. Munchen. Grenzplankostenrechnung und Datenverarbeitung. (GPK and Data Processing). (1973).



of collecting and organizing information that is both current and useable. This criterion has two components, (1) the degree of value chain integration the approach achieves, and (2) the ability to impute quantity-based standards as actual data. For example, instead of recording the actual electricity consumed by each machine on the factory floor, each machine's rating (i.e., the kilowatts it consumes per hour) can be used to impute the actual electricity cost.

We have already acknowledged traditional approaches' lack of value chain integration. In addition, traditional standard and normal costing typically use a percentage-based, plant-wide allocation of overhead with (variable and fixed) rates. Allocations and standards are maintained in the general ledger until year-end when they are adjusted to actual. Imputing quantity-based standards as actual is a foreign concept to traditional approaches.

The self-updating/maintaining criterion is what many have claimed to be a major downfall of ABC/M and much of the reason why implementations have not often been sustained. We have touched on the lack of value chain integration in ABC/M. It's unfortunate that ABC/M has suffered from this problem since it can otherwise be quite beneficial. As a stand-alone application, the beast must still be fed; but another problem surfaces here—the lack of robust planning and quantity-based standards means actual data cannot be imputed when it is both accurate and convenient to do so.

GPK is the benchmark when it comes to self-maintaining/updating. It brought value chain integration and the practice of imputing actual consumption quantities to the main stream—at least in Germany. The latter capability called the target-equals-actual method (i.e., what the Germans call 'Soll-Ist Vergleich'), does not merely impute the actual quantity consumed from the planned standard but first flexes the budget/plan based on actual output volume, to arrive at a target consumption quantity. For example, assume a 500 Kwh rated machine's planned output was 90 machine hours, thus planned electricity consumption would be 45,000 Kwh's ( $90 * 500$ ). But the machine actually works 100 hours. In this case, using the target-equals-actual method the target quantity ( $100 * 500 = 50,000$  Kwh's) will be posted as the actual electricity consumed. In a final step, the 50,000 Kwh's is valued (assume 5 cents per Kwh) to reflect an actual input cost of \$2,500. GPK's self-maintaining/updating capability is likely a primary contributor to its sustained adoption rate.

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RCA adds to GPK's abilities in two ways, (1) through more extensive value chain integration (as indicated above), and (2) by subjecting its activity-based logic to GPK's low maintenance and self-updating principles. For example, by using an integrated ERP application purchase orders, customer orders, and invoices can all be used to impute the demand on the respective functional area resources—potentially in real time. Moreover, this is possible without lifting a finger to upload a driver data file or worrying about the fact that the model is out of date since actual quantities of purchase orders, customer orders, and invoices have turned out to be totally different from the volumes planned.

#### **CRITERION 4: FLEXIBILITY**

Flexibility refers to an approach's ability to adapt or change in three respects:

- the cost modeling options it provides,
- adapting to changes in the enterprise environment, and
- the ability to support dual modeling (i.e., quantity-based and value-based).

*Cost modeling flexibility* refers to a customized cost model for the specific enterprise—within a broad framework but subject to specific guiding principles. The opposite of flexibility here is the 'I have a spade you need a hole' syndrome where everything is subjected to the same cookie cutter, whether cost beneficial or relevant to managers.

*Environmental adaptation* takes two forms: (1) normal volume, mix, and utilization fluctuations or changes, and (2) structural changes. The former was covered above with the target-equals-actual method. Structural changes require human intervention such as deleting a decommissioned machine or creating a new customer's master record. This intervention occurs naturally in operational applications; value chain integration ensures that MA benefits from such structural changes without duplication or additional effort. *Dual modeling* refers to an entirely quantity-based model of enterprise operations with a separate and transparent valuation layer. Such duality allows for modeling/simulation of efficiency gains (reductions in input quantities required) separate from input price increases/decreases.

The lack of flexibility of both traditional approaches and ABC/M should be self-evident—the traditional approaches because they are predicated on the rigid dictates of

external reporting. In isolation, ABC/M leaves no room for alternative cost flows—only through activities. The activity-based view is presented as an all or nothing proposition, when in fact it is neither always appropriate nor necessary. The lack of value chain integration in both approaches hinders, and in most cases defeats, environmental adaptation and dual modeling. It should be noted that one does find dual modeling applications of ABC/M in practice but the lack of technology integration increases cost-to-own and threatens sustainability. This is also the reasons why managers should avoid a stand-alone software vendor that claims to support GPK or RCA.

With the advent of ABC, GPK has been criticized in German circles for its rigidity in cost modeling. In particular, the absence of an activity-based view in GPK has meant its preference for direct resource charging resulted in an inappropriate lack of emphasis on indirect cost areas due to practical limitations. As indicated above, there is also room for further value chain integration in GPK. RCA addresses the GPK flexibility weaknesses through its integrated activity-based view and more extensive value chain integration. In the area of cost model flexibility, for example, RCA is able to use either its GPK-derived resource driver method or activity drivers, which significantly increases modeling flexibility. Both approaches score high on environment adaptation and dual modeling.

#### **CRITERION 5: CAPACITY TREATMENT**

Capacity evaluation considers the ability to (1) provide quantity-based resource information, and (2) appropriately treat fixed costs. *Quantity-based resource information* is indispensable for effective capacity management, regardless of the particular capacity management model a manager selects.

Capacity treatment is one of the biggest problems of traditional cost methods. Apart from using a plant-wide rate with a volume-based denominator that is generally a poor driver of overhead consumption, management typically uses budgeted levels (most often direct labor hours) for the denominator volume in cost allocations. Thus, product costs are inappropriately based on capacity *available* rather than what is actually *used*. Product cost often fluctuates widely throughout the year and even more over the product life cycle providing great cost

distortion within traditional approaches. In addition, even the best of traditional approaches typically neither capture nor report excess/idle capacity.

Exhibit 1 shows that ABC/M reflects some ability to improve over traditional methods when it is done appropriately. This is because activity-based drivers are not restricted to the cost-to-volume correlation of traditional methods. ABC/M provides a better ability to reflect capacity used where resource-to-activity consumption relationships are accurately tracked. However, to capture information on excess/idle capacity, the denominator volume used must be compared to the amount *available* for use rather than the amount *budgeted*. Otherwise the activity-based system can seem even more inaccurate than the traditional system.

GPK and RCA both provide consistent and beneficial treatment of the cost of capacity. This is a natural result of their resource treatment (using a quantity-based model) and the consistent concept of consumption and cost behavior as mentioned above. In the case of RCA, this consistency is applied to both resource-to-resource and resource-to-activity relationships. Specific rules for the tracking, recording, and reporting of excess/idle capacity is also provided.<sup>5</sup> Moreover, today manufacturers are often subjected to big product mix changes, product substitutions, and demands for customization. Automation has made fixed costs a much larger portion of total cost while allowing productive machine usage in excess of 23 out of 24 hours. In some industries (e.g., high-tech), product life cycles are so short that 80% of the products that will be manufactured on the last day of the fiscal year do not yet exist when the fiscal year starts. Clearly, the assignment of fixed costs based on planned outputs and planned mix can no longer be considered sound practice.

RCA proposes a supply based volume denominator—theoretical capacity. This not only addresses the fixed cost issues mentioned above but also serves to provide stretch targets in capacity management.

#### **CRITERION 6: ABILITY TO GENERATE RELEVANT DECISION SUPPORT INFORMATION**

The decision support criterion hinges entirely on the definition of comprehensiveness as defined above. In particular, information for all of the decision cost concepts—from

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<sup>5</sup> Van der Merwe, A and Keys, D. 2001. “The Case for RCA: Excess and Idle Capacity” The Case for

throughput costs to full costs must be provided.

Since traditional standard and normal costing are designed to fulfill the requirements of external reporting, they are deficient in satisfying relevant decision support needs where external reporting data is inadequate. ABC/M has some ability to generate relevant information since it can be used to aid activity management and waste reduction. In practice, ABC/M has suffered in the area of decision support due to (1) its inability to come to terms with consumption and cost behavior, and (2) the fairly common practice of full absorption.

Only GPK and RCA tend to provide comprehensive treatment of relevant decision support information. However, GPK does not provide accurate throughput information. GPK can also function as either a variable or absorption costing system, but the assumptions underlying the latter are incomplete regarding causality. GPK's choice of denominator volume (practical capacity) renders it unable to satisfy the attributable cost concept.<sup>6</sup> RCA adds resource classification that enables accurate throughput information and satisfies the attributable cost concept as a primary objective in cost modeling.

#### **CRITERION 7: IMPLEMENTATION EFFORT**

The implementation effort associated with GPK and RCA is likely the biggest constraint to widespread adoption. Because of conceptual and value chain integration these approaches require more analysis, more thoughtful design, and ideally an ERP system. This implies time-intensive work to establish the relationships involved. Some of these implementation costs can be avoided if the company has taken preliminary steps. If they already have an ERP system, have the capability to track resource quantity consumption, are capturing data in cost centers that are sufficiently detailed, and have a capacity management mechanism in place, the implementation will be less costly.

Traditional standard and normal costing approaches are often not designed for optimization, but for GAAP reporting. Thus, they are economical in that they provide what's required for external reporting. Companies must have the minimal capabilities of these approaches to satisfy legal requirements, and thus they are already well understood and

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Resource Consumption Accounting Series. *Journal of Cost Management*, (Jul/Aug). RIA Group. NY.

present at the vast majority of companies. The typical stand-alone ABC/M approach is reasonably easily implemented in most companies due to less value chain and technology integration.

### **CRITERION 8: ADAPTABILITY TO EXISTING ORGANIZATIONS**

Adaptability refers to the degree of change required by the typical organization to successfully implement and use an approach. Since most companies have traditional systems for external reporting already, the adaptation criterion is not at issue. For ABC/M implementation, changes will have to be made and continual maintenance will be required thereafter. The biggest change is often required in how managers use information. GPK and RCA are quite different from prevailing U.S. approaches, so considerable change is required. Their levels of integration (conceptual, value chain, and technology) impact the typical enterprise in a number of areas:

- Planning/budgeting – in the initial stages only quantities are involved.
- Real time profitability information (at standard) is fairly easily achievable but requires diligence in refining standards to be useful.
- Appropriate use of management information is important since new concepts abound (e.g., no full-absorption; marginal and attributable costs on all resources, products, and customers; step assignment of common fixed costs to multi-dimensional P&L's; and profitability management based on relative - not absolute - margins).
- The treatment and understanding of fixed costs at various levels of the enterprise, and the appropriate application of the concepts in decision support is a giant leap from current practice.

### **CRITERION 9: EXPOSURE IN THE U.S.**

Exposure is an indication of risk based on the prevailing level of knowledge in the market. A buyer with insufficient knowledge of a particular approach cannot distinguish a poor design or implementation from a good one. Other factors to the benefit of the buyer are formal certification of service providers and an approach with clearly defined methods/rules.

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<sup>6</sup> Attributable cost suggests a complete costing concept based on causality.

Approaches like GPK and RCA enjoy less exposure in the U.S. RCA is in its infancy and accordingly bears the most exposure risk of all the approaches. Nevertheless, GPK and RCA are slowly becoming more popular in the U.S. As mentioned previously, ABC/M has suffered from poor implementation and some would claim it has incurred mortal wounds due to a lack of standards and the snake-oil syndrome that once prevailed. Despite these setbacks it remains popular with some companies but it includes some risk for new adopters. Traditional approaches clearly provide the least exposure risk given the rules-based environment of external reporting.

## **MANAGEMENT ACCOUNTING TECHNIQUES**

MA techniques contribute to a specific but limited purpose. Alternatively, they may address a weakness of a less than stellar MA approach such as a lack of integrated budgeting, which attempts to facilitate the management process of planning. However, techniques cannot provide the benefits of integration. Management and management accountants should therefore examine specific goals of the company that they are incapable of reaching without using additional MA techniques. Managers should be careful about being talked into adopting MA techniques. Providers that flock to a particular technique often seem to describe it to be something more than it really is.

## **MANAGEMENT PROCESSES**

A factor to consider here is that some MA approaches already include beneficial tools that need not be replicated. The benefits of using tools that are not already integrated into the MA approach must be weighed against the cost of bolting it on and compromising important features of integration.

## **CONCLUSION**

Given the criteria specified here, each company will need to consider what each method contributes to their unique needs. In general, we can say that companies with a blend of methods that best satisfy Exhibit 1 criteria will provide superior MA information for most

purposes. Beneficial MA techniques and management processes may prove helpful, but they will also be of much greater value if they are integrated in the MA approach selected. Failing that, ease of use and their effectiveness is a function of conceptual compatibility with the MA approach adopted.

No review of the MA landscape would be complete without touching on the issue of simplicity versus complexity. When one considers Exhibit 1, MA urgently needs to understand the difference between importance and desperation. Desperation has clouded judgment. Enterprise optimization is a complex endeavor; it is irrational to assume a simple solution will solve all ills. First, simplicity is not defined yet—something those advocating it seem unwilling to do. Moreover, when will a MA solution be too simple? As Einstein put it, “Everything should be made as simple as possible, but not simpler.” Recognize that ‘as simple as possible’ might in fact still be complex. Silver bullets are likely neither real nor practical.

Given that the MA landscape hopefully now appears more ordered—in at least three piles—it seems appropriate to top it off with a little irony and our reason for not including the cost-benefit tradeoff as a criterion. We are referring to the bane of MA—cost justifying investments in new/advanced MA approaches. Stated differently, the decision support system that justifies most other decisions seems incapable of justifying itself. Or perhaps the fact that it justifies most other decisions *is* its justification! But this begs the question because justifying the solution predates its implementation, and thus measurement of its effectiveness is not possible. Disentangling oneself from the benefits approach to MA investment decisions leaves the pure cost approach. What is current imperfect/bad information costing me? Of course you have to trust the bad information to tell you that....

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