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The Association for Accountants and Financial Professionals in Business

Customer Profitability Management

Statement on Management Accounting

BUSINESS PERFORMANCE MANAGEMENT

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EXECUTIVE SUMMARY

Managing profitability requires not only a customer-centric focus but also a thorough understanding and effective management of customer profitability. Customer profitability management (CPM) is a strategy-linked approach to identifying the relative profitability of different customers or customer segments in order to devise strategies that add value to most-profitable customers, make less-profitable customers more profitable, stop or reduce the erosion of profit by unprofitable customers, or otherwise focus on long-term customer profitability.

Managers are often surprised to find out that a small percentage of customers generate substantially more than 100% of profits, and the remaining customers are either breakeven or unprofitable. Using a customer profitability management system replaces intuitive impressions of customer profitability with fact-based information and supporting analysis.

The backbone of a CPM system is a costing system that is focused on tracing and causally assigning costs to each customer or customer segment without arbitrary broadly averaged cost allocations. Assigning revenues to customers or customer segments can present a few issues, but the major challenge in implementing a CPM system is the selection and implementation of an accurate and informative costing system. A costing system should not only accurately assign product costs and gross margin to customers or customer segments, but it should also assign the costs to serve.

Cost accuracy and visibility are important in CPM. Using time-driven activity-based costing (TDABC) provides costs that identify resource consumption by customers or customer segments. The signals provided by the CPM system, based on full costing of traceable costs to customers and making visible business-sustaining costs, will lead management to consider strategies to increase profits. The signals do not provide answers in themselves, but they could lead to generating alternative courses of action. Decisions related to customer profitability strategies require tailor-made analysis.

There are system issues that must be considered in the design and implementation of a CPM system. Awareness of the commitment of time, financial, and personnel resources required by a CPM system is critical to its success.

Investments in customers should be considered in view of an estimate of customer life value. That is, in addition to current customer profits, the potential of generating future profits from a customer should also be considered. Managing customer life value is a means to enhancing long-term profitability.

Essential to the success of CPM is the buy-in by employees and managers who will be affected by its implementation. Resistance to change is a phenomenon that applies equally to CPM as it does any other organizational change. To develop the CPM system and then seek the support of employees and managers is not likely to result in developing a sense of ownership, nor will it guarantee an effective CPM system. To get employees and managers to buy in at the outset, they should be involved in its development and their ideas must be sought. Only with a sense of ownership will the organization be able to navigate the troubled waters of change.

I. INTRODUCTION

Many companies and managers are unaware that the secret to improving profitability is to measure and manage customer or customer segment profitability. Companies that implement customer profitability management (CPM) systems are able to see which customers contribute to profits, which customers do not contribute to profits, and which customers erode profits. CPM is a strategy-linked approach to identify the relative profitability of different customers or segments of customers, to devise strategies that add value to most-profitable customers, make less-profitable customers more profitable, stop or reduce the erosion of profit by customers, and otherwise focus on long-term customer profitability.

A CPM system is a profitability measurement and management system, and its backbone is a costing system that is focused on assigning costs to each customer or customer segment. A CPM system also assigns net revenue to each customer or customer segment. The resulting profit is identified with each customer or customer segment. As can be expected, customer-related costs are more problematic to trace or assign than customer-related revenues. It is important to emphasize that the quality of the CPM cost information is critical for the quality of CPM. Our approach is to focus on a cause-and-effect costing system, such as activity-based costing (ABC), that is relatively accurate in assigning costs to products, customers, customer segments, or other relevant cost objects. We briefly discuss a simplification of ABC—time-driven activity-based costing (TDABC).

THE CPM WHALE CURVE

Once profitability is measured for each customer or customer segment, they are ranked from most profitable to least profitable and are plotted on a profit graph, popularly referred to as a whale curve (WC) or profit cliff chart, where 100% of profits are the sea level (see Exhibit 1). The Y-axis of the graph shows profits in dollars or as a percentage of profit from all customers, and the X-axis shows cumulative customers or customer segments ranked from high to low in terms of profitability. Typically, about 20% of customers generate anywhere from 150% to 300% of company profits (50% to 200% above sea level), about 70% of customers are at breakeven, and 10% of customers reduce or destroy anywhere from 50% to 200% of company profits, bringing cumulative profit to sea level (Kaplan and Narayanan 2001).

Exhibit 1, Customer Profitability Whale Curves, shows customer profitability in dollars or percentages plotted on a whale curve. As can be seen, the potential improvement in profit in this case is $47 million, or a 112% increase in current profit level.

Exhibit 2, More Whale Curves, shows another typical customer profitability whale curve, where the highest tip of the curve is higher than in Exhibit 1. The potential improvement in customer profitability increases with the distance between the highest tip of the whale curve and sea level. In this case, the potential improvement in profitability is $96 million, or a 200% increase in current profit level.

The improvement in profit depicted in these figures is predicated on the assumption that the potential profitability is the highest level of profit on the graph, which is contributed by a small percentage of customers before being eroded by unprofitable customers. In fact, with CPM, the potential improvement in profit is even greater than indicated on the whale curves by turning marginally profitable customers into more profitable customers and turning profit-eroding customers into profitable customers or otherwise eliminating the profit erosion.

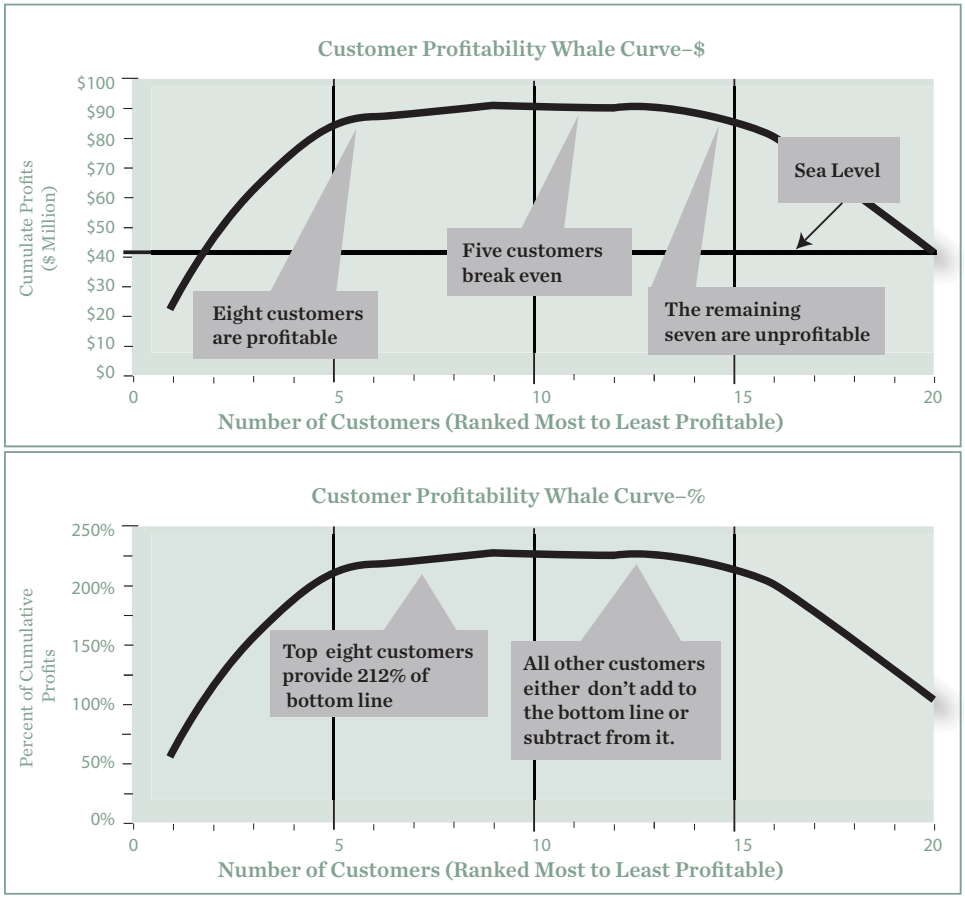
ORGANIZATIONAL TYPES THAT BENEFIT FROM CPM

CPM is suited for all types of profit and not-for-profit organizations where products (or service lines) and customers are not homogeneous. In companies where products and customers are homogeneous, using the same distribution channels and pricing policies, there would be little need to use CPM other than to increase visibility to types of activities and their costs. But there are few if any companies that meet this description. CPM is thus suited to organizations where products or service lines are different, customers or customer segments are heterogeneous, and pre-sale or post-sale customer service requirements vary.

These latter nonproduct or nonstandard service-line costs are commonly referred to as "costs to serve." As products and service lines increasingly become more commodity-like, with comparable cost levels among competitors, there is a shift toward activities to serve customers as the basis for gaining a competitive advantage. Hence, identifying activity cost drivers, tracing them to customers, and measuring the costs to serve forms a key benefit of CPM.

Service organizations such as banks, insurance companies, and other financial service companies naturally fit the circumstances that benefit from the application of CPM. Manufacturing companies can apply the same concepts in business-to-business settings

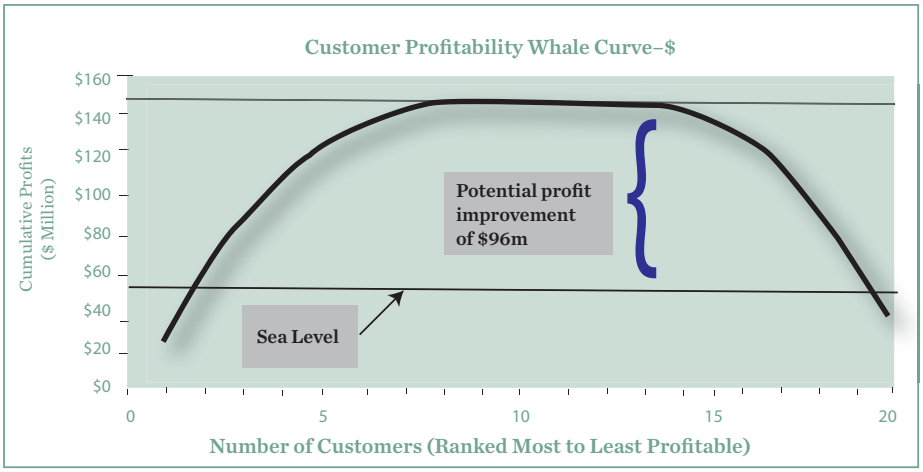
EXHIBIT 1. CUSTOMER PROFITABILITY WHALE CURVES

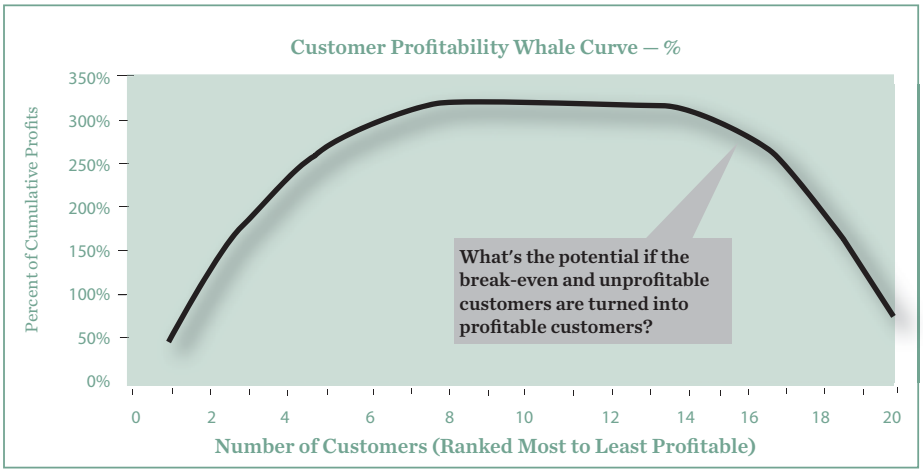


DATA FOR ABOVE CHARTS

CUSTOMER PROFIT RANKING	CUMULATIVE %	CUMULATIVE PROFIT IN MILLION $	CUSTOMER PROFIT IN MILLION $
1	52%	22	22
2	100%	42	20
3	143%	60	18
4	179%	75	15
5	198%	83	8
6	205%	86	3
7	210%	88	2
8	212%	89	1
9	212%	89	0
10	212%	89	0
11	212%	89	0
12	212%	89	0
13	212%	89	0
14	210%	88	–1
15	202%	85	–3
16	190%	80	–5
17	171%	72	–8
18	150%	63	–9
19	126%	53	–10
20	100%	42	–11

EXHIBIT 2. MORE WHALE CURVES





DATA FOR ABOVE CHARTS

CUSTOMER PROFIT RANKING	CUMULATIVE %	CUMULATIVE PROFIT IN MILLION $	CUSTOMER PROFIT IN MILLION $
1	67%	32	32
2	125%	60	28
3	175%	84	24
4	217%	104	20
5	250%	120	16
6	275%	132	12
7	292%	140	8
8	298%	143	3
9	300%	144	1
10	300%	144	0
11	300%	144	0
12	300%	144	0
13	300%	144	0
14	298%	143	–1
15	296%	142	–1
16	277%	133	–9
17	256%	123	–10
18	215%	103	–20
19	163%	78	–25
20	100%	48	–30

and in repeated, more frequent product purchase environments. Not-for-profit organizations that are customer-based can also benefit from applying CPM. For example, credit unions can successfully apply CPM to make members (what credit unions call their customers/owners) more profitable, and in turn, reduce the fees or rates to their members.

Organizations that may not benefit from CPM include those whose costs to serve are small and pre-sale and post-sale services are not important in gaining a competitive advantage. This would be the case in organizations whose customers are relatively homogeneous or indistinguishable. In such rare cases, customer gross margin may be sufficient to obtain CPM benefits. Because of the relatively low costs to serve, CPM in these organizations could be referred to as Customer Gross Margin Management. The strategic implications are the same as in CPM nonetheless. On the other hand, organizations whose customers are not homogeneous, and who compete or can compete on pre-sale or post-sale activities, are prime candidates for reaping the benefits of CPM.

IMPEDIMENTS TO CPM IMPLEMENTATION

If CPM offers such competitive and sustainable advantages, why is it not more widely implemented and used? We do not have any survey data to offer as an answer to this question, but we can speculate on the most likely reasons for the lack of CPM implementation.

First, it is clear that many companies are traditionally managed as functionally structured organizations without the customer focus. This typically would exist in organizations that rely on "supply push" rather than "demand pull" strategies. In such situations it is difficult for management to appreciate the effects of applying CPM. Even in organizations that utilize "demand pull" strategies, it is not clear that managers fully appreciate the potential benefits of CPM. It is also possible that some managers may not have a clear idea of what to do if they identified profitable and unprofitable customers.

Second, driver-based costing applications can be time consuming and costly, thus making the application of CPM difficult. In other cases the lack of available data (e.g., outsourced IT systems or not collecting cost driver data) may hinder the interest in gathering and implementing new systems.

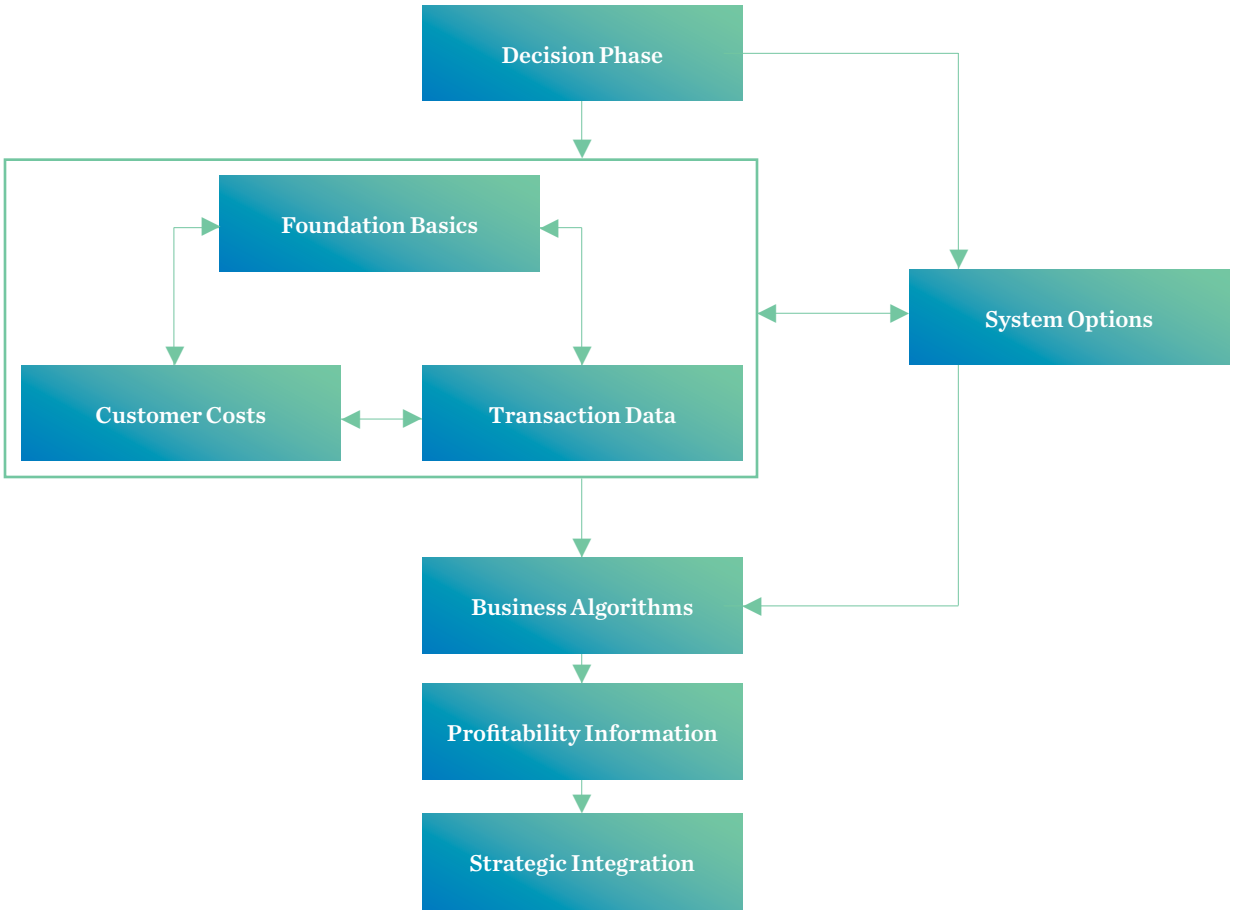
Third, some of the available material on CPM makes it hard to understand and implement (see Cokins 2008). One of the purposes of this SMA is to provide guidance as to how to effectively implement CPM. Applying CPM requires not only a desire and commitment by management to CPM, but it will also require an investment of resources. It is not easy to quantify the personnel effort and costs, on the one hand, and the benefits of CPM, on the other. But, the incremental investment, efforts, and costs of organizations that have successfully implemented CPM are justified by increased profitability and enhanced customer value. The well publicized success of CPM at Best Buy is just one example.

The value that CPM brings to an organization will depend on the quality of the information developed for managing customer profitability and on its ability to become customer-centric. Becoming customer-centric requires the buy-in by decision makers and their ability to forge effective implementation teams.

CPM implementation and profitability reporting should not be seen as a one-off system. Information should flow on a regular basis, triggering a process of customer profitability assessment, feedback, analysis, decisions, and implementation. This process enables management to tap the potential for increasing profitability by devising different customer targeting strategies, implementing differentiated services or service levels to customers, and making operating, marketing, or pricing adjustments in its attempt to make all customers profitable and manage overall customer profitability.

The potential benefits result from identifying customer or customer-segment profitability and then developing appropriate differential strategies for different customers. Held perceptions and biases in an organization may be shattered in light of facts and analysis. Armed with new information about customer profits, managers can focus on appropriate actions related to profitable customer retention and acquisition, making unprofitable customers profitable and reducing or eliminating profit erosion resulting from customers who destroy shareholder value.

EXHIBIT 3. CPM IMPLEMENTATION FRAMEWORK



II. CPM IMPLEMENTATION FRAMEWORK

Implementing a CPM system requires a framework as displayed in **Exhibit 3, CPM Implementation Framework**. This framework lays out the phases for implementation, with some phases being highly interrelated and running in parallel while other phases proceed sequentially.

The major phases to implement a CPM system:

1. Decision Phase
2. Foundation Basics
3. Customer Costs
4. Transaction Data
5. System Options
6. Business Algorithms
7. Profitability Information
8. Strategic Integration

The decision phase, required for any strategic initiative, is where the value and reasons for pursuing a CPM system are explored, the financial consequences analyzed, and a "go or no-go" decision is made. Another important component of this phase is establishing the purpose of the CPM system to guide its development and implementation.

The next three phases—foundation basics, customer costs, and transaction data—are highly interrelated. A decision in one of these areas directly impacts decisions in the other two.

The foundation basics phase establishes the cost object and ultimately what will be measured. This phase also includes establishing the system's costing principles, how profitability will be calculated, and how contentious accounting issues (e.g., capitalizing marketing costs) will be handled. Lastly, this phase is where customers, products, and channels are defined.

The customer costs phase is where consideration is given to the extent to which cost assignments can accurately be made to products or service lines, and the costs to serve can accurately be assigned to customers based on causality. This phase is where traditional general ledger unitbased cost allocations are replaced with customer, or cost object, costs. CPM's need for relatively accurate customer-level costs points to the use of some form of activity-based costing (ABC).

The transaction data phase poses many challenges. Although most companies have vast sources of disparate data buried in their various IT systems, harnessing it to serve a CPM system is costly and time consuming.

The reason these three phases are so interdependent is that decisions about which activities to include in costing are dependent on what transaction data is available (or obtainable). On the other hand, the transaction data to seek for availability is dependent on what activities are to be costed. And the cost object and costing principles established in the foundation basics must be compatible with both the available transaction data and the proposed costing activities.

The system options phase involves selecting the costing and profitability IT systems. This phase runs parallel to and is interrelated with the foundation basics, customer costs, and transaction data phases. IT resources, data sourcing requirements, and costing considerations must be factored into the selection of the appropriate IT systems.

Once the first five phases are complete, then the design and build of the business algorithms, or rules, will begin. The business algorithms must integrate with the IT systems and be consistent with the principles established in the foundation basics. Testing of the business algorithms runs concurrently with their design and build, followed by a total and thorough testing of the completed system.

The profitability information phase follows testing, where monthly or quarterly results are produced and distributed. This phase is where the CPM system enters production, system maintenance and upgrades occur, and the quality of results is guaranteed.

Finally, and most importantly, is the strategic integration phase, where CPM information is integrated into the company's strategic and tactical decisions. For example, CPM results could be incorporated into the organization's performance measurement systems. The ultimate goal is to use customer-based information to improve company performance and profitability.

Each phase of the CPM implementation framework is discussed in this SMA. A separate discussion of the behavioral considerations when implementing a CPM system is also provided. Appendix 1 is an example of the implementation framework applied in the financial services industry, and Appendix 2 covers technical considerations for the management accountant not discussed in the main body of the SMA.

III. DECISION PHASE

The decision phase is when senior management becomes aware of CPM and attempts to understand its potential benefits, costs, and strategic implications. It is important that management understands CPM, how it will benefit the organization, and how to develop and use the information to run a more profitable customer-centric organization. The benefits and costs are discussed in the next subsection. In order for management to be more effective, managers should obtain some training in CPM. Once a decision is made to implement CPM, as with any project, management should apply appropriate project management techniques with the full support and endorsement of senior management.

BENEFITS AND COSTS OF CPM

It is important to estimate the costs and benefits of implementing CPM. If management is aware of how CPM can improve customer profitability, a rough estimate of the recurring benefit is the difference between actual profitability and the peak of the whale curve, although the benefits can often exceed this amount. The problem is that in the absence of a customer profitability system, it is difficult to arrive at a precise estimate of the benefits of implementing CPM. Judgment must be made in the absence of precise information.

The cost of implementation will depend on the existing costing system and its appropriateness for CPM. If a company has a variant of an ABC system, the cost of implementation may relate to refinements necessary to capture data related to customers as the cost object to track their consumption of resources. The extent to which arbitrary cost allocations characterize the costing system might indicate the need to redesign the costing system, which of course can become a costly proposition. On the other hand, there are simplifications that may prove less costly, such as time-driven ABC.

An accurate CPM system requires an accurate costing system that assigns costs to cost objects based on the cost objects' consumption of resources. Implementing

activity-based costing in some form or another may be required to obtain accurate customer profitability estimates. It should be kept in mind that in a competitive environment, an accurate costing system is required whether or not a CPM system will be installed. Given that cost accuracy supports survival in a competitive business environment, the incremental cost of adapting a costing system to suit the needs of CPM could be relatively marginal. Without customer profitability information, customer profitability management is a shot in the dark.

Management must appreciate that effective CPM implementation integrates customer profitability information into a company's strategic decisions related to exploring profit opportunities with each customer or customer segment. Such strategic decisions affect financial outcomes, but they could require operational or marketing adjustments to meet customer needs as shaped by CPM strategic decisions. In this fashion, CPM provides long-term competitive advantages that can be sustained as long as it is periodically calculated, reviewed, evaluated, and used.

OBTAINING CPM BUY-IN

It is important for management to pave the way internally for CPM implementation by dispelling the myths and existing perceptions of customer profitability. Senior management's unquestionable support is required, and they should obtain the support of all those who are likely to be affected by the CPM system. Once the decision is made to embark on implementing CPM, it is important to pay attention to the behavioral issues that can make a difference in its success or failure. These issues are discussed more fully below. Briefly, any change creates resistance due to the uncertainty it creates, particularly by those who might be adversely affected by it. Buy-in can be obtained by getting affected employees involved from the beginning. Successful CPM implementation requires a team approach. As with any major organizational change, tact, communication, education, training, and excellent leadership skills can make the difference between the success or failure of CPM.

THE ROLE OF DATA IN CPM

To make the decision to implement CPM requires an appreciation of the role and importance of transaction data. The reason that many companies currently find improving profitability elusive is that the customer-detailed information they need is buried in transactional databases. If all a company does with its customers is manage the accounts receivables, and all it focuses on is overall customer profitability as reinforced by high-level, general ledger (GL)-based performance measures, it is missing important strategic opportunities to manage customer profitability and to increase the lifetime economic value of its customers. CPM measurements will replace the often erroneous impressions, guesses, or hunches about the relative profitability of customers with more objective information. For example, Searcy (2004) reports cases where entrenched perceptions about sales volume and profits were shattered when a company properly calculated its profitability measures by customer and channel segments.

IV. FOUNDATION BASICS

The foundational design of the CPM system is driven by the purpose established in the decision phase and starts with the definition of the cost object: customer, customer segment, product, channel, customer account, etc. The cost object determines what will be measured and managed. Clarity of purpose and thoughtful and clear definition of the cost object will lead the way to an effective CPM system.

ESTABLISH THE COST OBJECT

The cost object chosen must be compatible with both the transaction data available from the company's core application systems and the costing principles. Compromises may be required as desired features may not be available in the transaction data. The cost object chosen must also support the CPM system's purpose as defined in the decision phase.

For example, in the financial services industry, the customer account often becomes the cost object and the platform on which to attach all costs consumed. This approach works for that industry because information is already maintained for every customer account. Individual customer accounts belonging to the same customer are combined for customer-level reporting and management. Thus, customer A's profitability is the sum of the profitability of her individual accounts, such as her checking account, CD accounts, auto loan account, and home equity line of credit account.

An important consideration in establishing the cost object is whether its revenues are measurable. The ease or difficulty of collecting revenue data for the cost object depends on the industry and the company's core application systems. In cases where revenue is not measurable for the cost object (e.g., fast food), then the cost object will

EXHIBIT 4. MULTIDIMENSIONAL VIEWS OF PROFITABILITY

ACCOUNT NO.	CUSTOMER	PRODUCT	ORG. CENTER	REVENUE	TOTAL EXP	NIBT
Account 1	Smith Family	Checking Acct	Branch 1	$ 10	$ 8	$ 2
Account 2	Smith Family	Mrtg Loan	Branch 1	$ 125	$ 35	$ 90
Account 3	ABC Auto	Checking Acct	Branch 1	$ 1,500	$ 1,530	$ (30)
Account 4	Jack Cove	Auto Loan	Branch 2	$ 36	$ 23	$ 13
:	:	:	:	:	:	:

need to be aggregated to the level at which revenues are measurable (e.g., customer segment).

The cost object as the basic building block of the CPM system has a major advantage: multidimensional profitability. In the financial services industry every customer account (the cost object) is not only identified with a customer, but also with a product (or service line), the sales channel, the organizational unit assigned, the geographic location, the age of the account holder, and any number of other data tied to a customer's account. Although the CPM system's main purpose is to manage customer profitability, a customer account cost object allows profitability to be measured by any of the dimensions attached to a customer's account, such as product profitability, branch profitability, profitability by region, and profitability by age. These are different ways of measuring the same thing from different perspectives, and from which arise the profitability identity. **Exhibit 4, Multidimensional Views of Profitability**, shows the profitability identity as follows:

Total Customer Account Profitability =
Total Product Account Profitability =
Total Organizational Account Profitability

Although not all industries have customer account cost objects that can be used in this manner, those that do can take advantage of the multidimensional approach. For example, product profitability that includes customer costs is far more reliable than product profitability derived from average GL-based allocation assumptions. As another example, data summed by channel will yield channel profitability, possibly available for the first time to the company.

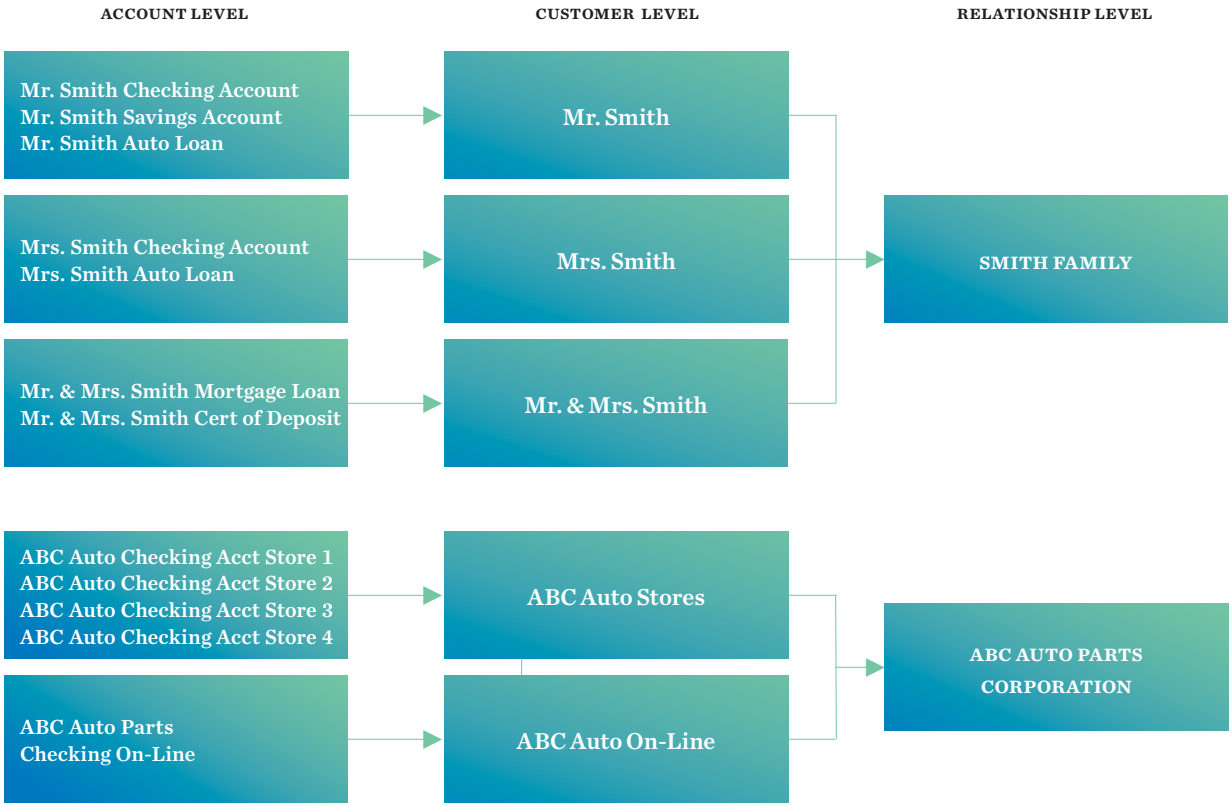
A word of caution when selecting the cost object: The cost object determines the detail available within the CPM system, which further determines the ability of the system to drill down and uncover underlying problems or answer specific questions. There is always a tendency to add as much related data as possible to provide deeper drill-down and the ability to answer questions not yet considered. Detail does not come without costs, however. The one-size-fits-all information system that can answer all questions posed requires more complex costs and transaction data, which adds significantly to the cost of developing and maintaining the CPM information system.

DEFINE CUSTOMER, PRODUCT, AND CHANNEL

During the foundation basics phase it is important to precisely define what constitutes a customer and whether customers will be combined into households or relationships. If so, a customer hierarchy table can assist in these combinations.

A hierarchy table is simply a document or database table showing how subgroups roll up, or are combined, into groups, which can further be combined into higher-level groupings. See **Exhibit 5, Customer Account Hierarchy**, for an example of a customer hierarchy for a bank or credit union.

EXHIBIT 5. CUSTOMER ACCOUNT HIERARCHY:
BANK AND CREDIT UNION EXAMPLE



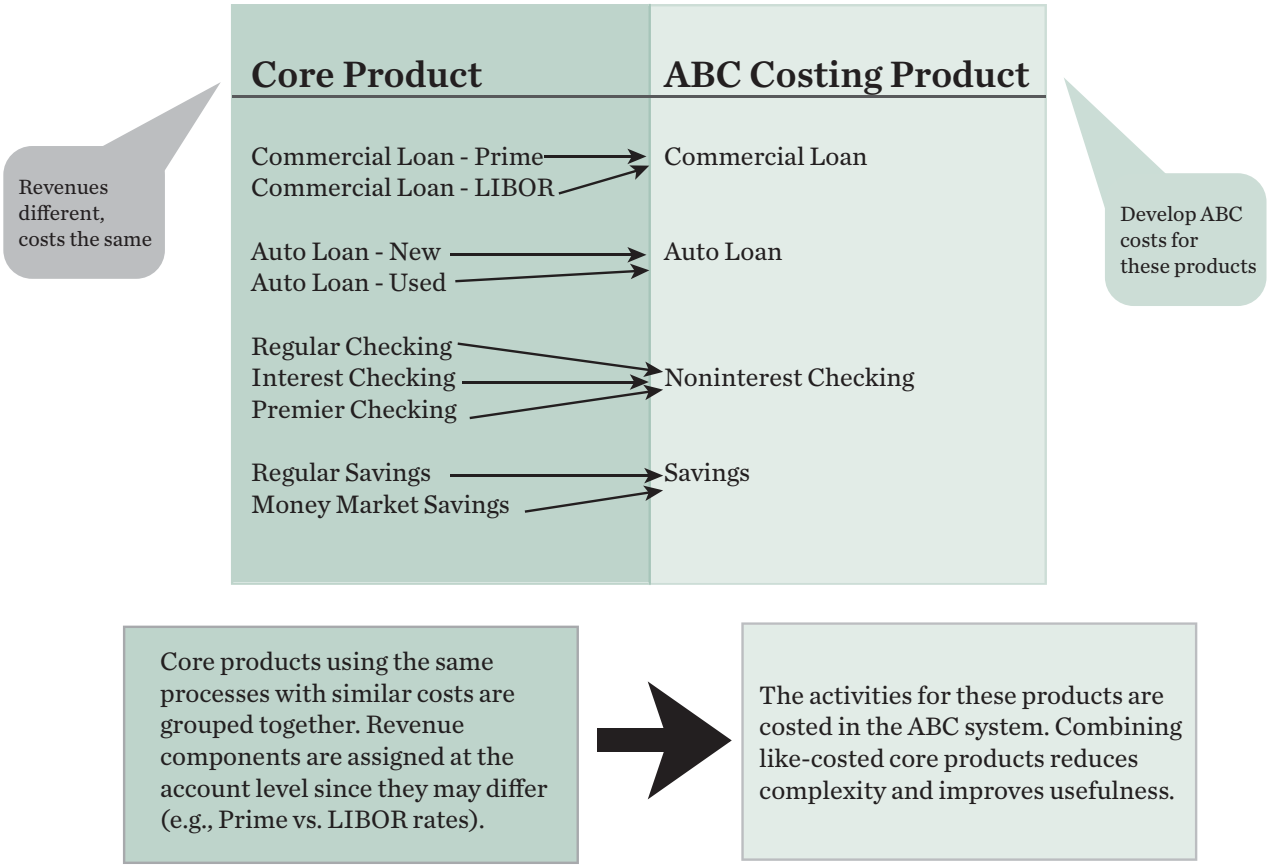
Another foundational basic is the definition of products or service lines. A product hierarchy defines the products and how they are combined into groupings. It is often practical to roll up products with similar processes into a higher level product for costing purposes. If the like-kind products appear to be homogeneous in their consumption of activity costs, then combining them into one costing product will reduce system and report complexity. **Exhibit 6, Product Hierarchy**, shows a product hierarchy for a typical bank. The column titled Costing Product indicates the product level at which cost driver rates are developed.

Other foundation basics include the organizational hierarchy and the definition of delivery channels, if applicable. The organizational hierarchy defines general ledger cost or profit centers, displaying the relationship of the centers or departments where work or activities take place and resources are consumed.

A customer delivery channel may be included depending on the industry and other considerations. The customer delivery channel is where customers interact with the company, or the customers' "touch-point." Large retail stores offer sales venues through their stores or on their website. In this case, there are two customer delivery channels: physical stores and a website.

Costs can vary significantly between customer delivery channels. It is likely that physical store sales require relatively more resources and are therefore more costly than website sales. A retail company may therefore consider strategies to encourage their customers to buy through its website rather than visiting its physical stores, a process called channel migration. A channel

EXHIBIT 6. PRODUCT HIERARCHY: BANK AND CREDIT UNION EXAMPLE



dimension included in the CPM system would help with these strategic initiatives.

In addition to defining who the customer is, it is also important to consider identifying relevant customer segments. Customer segments define patterns of customer characteristics and behavior that drive customer profitability (Epstein *et al.* 2008). In some cases it may be necessary to segment customers to obtain measurable cost objects; otherwise, it may be more appropriate to combine customers by segments once customer profitability information has been obtained. This will be discussed further in the section on strategy integration.

CALCULATING CUSTOMER PROFITABILITY

The final area to be covered during the foundation basics phase is the method of calculating customer profitability and how various accounting issues are handled. Customer profitability is typically measured as net revenue less customer costs, overhead, and taxes.

Net revenue is the cost object's total revenue less returns, allowances, or other adjustments. Customer costs are the summation of activity costs that are assigned to the customer as the cost object. If ABC is used, then each cost object's cost is the activity driver rate times the quantity or other measure of the activity driver consumed by the cost object.

EXHIBIT 7. CUSTOMER PROFITABILITY REPORT

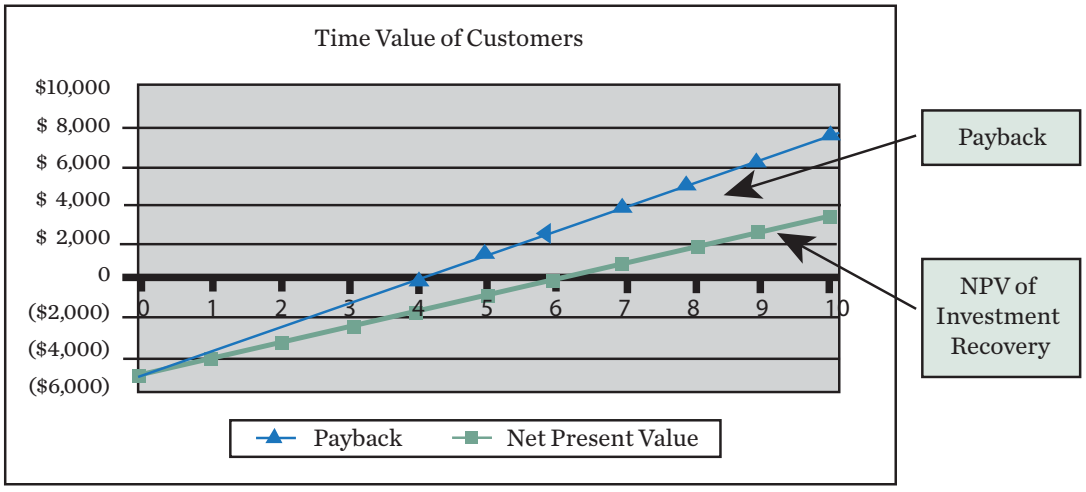
CUSTOMER ID/CUSTOMER SEGMENT	AMOUNT	PERCENT OF NET REVENUE
Net Revenue	$ 10,000	100%
Product Costs	4,500	45%
Customer Gross Margin	$ 5,500	55%
Costs to Serve*	1,200	12%
Customer (or Segment) Margin	$ 3,300	33%
Corporate Sustaining Costs	2,000	20%
Pre-Tax Customer Profit	$ 1,300	13%
Income Taxes (40%)	520	5.2%
Customer Profit	$ 780	7.8%

*Costs to Serve include sales, order filling, customer support & service, and other customer identifiable costs.

EXHIBIT 8. CUSTOMER LIFETIME VALUE

YEAR	INVESTMENT RECOVERY	PAYBACK	PV OF INVESTMENT RECOVERY	NET PRESENT VALUE
0	($5,000)	($5,000)	($5,000)	($5,000)
1	900	(4,100)	833	(4,167)
2	1,000	(3,100)	857	(3,309)
3	1,200	(1,900)	953	(2,357)
4	1,300	(600)	956	(1,401)
5*	1,400	800	953	(448)
6*	1,400	2,200	882	434
7**	1,500	3,700	875	1,309
8	1,500	5,200	810	2,120
9	1,500	6,700	750	2,870
10	1,500	8,200	695	3,565

*At years 5–6 investment is repaid.
**At year 7 target return is achieved.



It takes time to recover the investment in acquiring new customers.

Costs are discussed below in Section V: Customer Costs. In general, costs assigned to cost objects include product costs and any costs to service the customers. The difference between net revenue and product or service line costs is the cost object's gross margin. The costs to serve appear below the product gross margin line, and include costs of such activities as order getting, order filling, and customer support and service. The costs to serve are assigned to the customer as the cost object and then subtracted from the cost object's gross margin to obtain customer margin.

Customer margin contributes to corporate sustaining costs (or corporate overhead). Income before taxes is thus equal to customer margin less corporate-sustaining overhead. Income before taxes less taxes provides customer net income or profit. **Exhibit 7, Customer Profitability Report**, provides an example of such a report.

RETURN ON CAPITAL CONSIDERATIONS

While customer profitability provides valuable and oftentimes never-before-available information, only goes so far. Ultimately, what is most important is the return on the capital invested to achieve those profits. Linking customer profits with capital can be done in several ways, such as return on investment (ROI), return on equity (ROE), residual income (RI), or some variant of these approaches.

Linking customer profits and capital requires an assignment of capital to the cost object. This can fundamentally be done in two ways. One way is to assign capital based on capital usage or capacity utilization. Adjustments are then made to the capital charge to reflect higher customer risk by using a rate higher than the average cost of capital and conversely to reflect lower customer risk by using a rate lower than the average cost of capital. The types of customer risks to consider will vary by industry.

A second approach, commonly used by financial institutions, is to assign—beyond capital usage—more capital for riskier investments or customers and less capital for less-risky investments or customers. In this case the cost of capital rate is held constant and not adjusted for risk; risk is accounted for in the amount of capital assigned to each cost object or customer.

A partial application of RI in manufacturing is to calculate only the cost of direct investments in assets related to the customer—e.g., imputed capital cost on inventories and accounts receivable. A complete application of RI would require assigning direct and indirect investments in assets financed through long-term capital.

Cost object return on capital, however measured, can be plotted on a whale curve similar to Exhibits 1 and 2 in order to gain insights into managing customer profitability. Using ROI or RI adds to the tools of managing customer profitability by accounting for the cost of capital needed to serve the customer or customer segment. A full discussion of attributing capital and measuring ROI and RI lies beyond the scope of this SMA.

CUSTOMER LIFETIME VALUE (CLV)

Customer profitability results and return on capital measures will, by definition, cover a specific time period, such as a month, a quarter, or a year. Snapshot views of any dynamic system can be misleading. As such, trends of customer profitability results over several time periods provide more meaningful information and should be designed into the report library requirements.

Measuring customer profitability over an expected tenure is known as Customer Lifetime Value (CLV). Pfeifer, Haskin, and Conroy (2005) refer to CLV as the discounted future cash flows related to a customer. When a decision is made to acquire a customer, such as through a proposed marketing campaign, a company should project the discounted future cash flows resulting from making the acquiring investment. It should continuously monitor the changes in customer value that result from the ongoing interactions or lack thereof between the customer and the company. A discount factor such as the cost of capital can be used to discount the projected future cash flows over the customer's expected tenure with the company. Depending on the risk of the investment made in a specific customer or customer segment, the discount rate can be adjusted higher or lower to reflect that risk. If the relationship between specific customers and the company is uncertain, probabilistic models can be used to estimate the discounted CLV of these customers.

Exhibit 8, Customer Lifetime Value, shows an example of an investment in a customer. The cumulative cash flows are negative at the time of making the investment. As the customer contributes revenues and incurs product costs and costs to serve, however, the difference results in customer margin as the measure of customer profit. The investment will be recovered when the customer margin or profit equals the customer investment. Beyond that point, the customer value is positive.

OTHER ACCOUNTING ISSUES

In addition to the costing issues that will arise, thorny accounting issues should be addressed during the foundation basics phase to avoid later discord and manipulation. Two thorny accounting issues that create heated debate in the financial services industry are:

- Unsuccessful sales efforts. A loan officer may approve six loans out of the 10 loan applications he takes in a day. The time spent on reviewing and declining the four unapproved applications represents unsuccessful sales efforts—time and effort expended where no product is sold nor customer created. In another example, credit card direct mail campaigns can cost tens of thousands of dollars, yet a response rate of 5% is considered stellar. The 95% of direct mail pieces that resulted in no credit card applications are unsuccessful sales efforts. Unsuccessful sales costs can be spread among the sales that were successful—in this case unsuccessful sales being part of the cost of successful sales. Another approach spreads the unsuccessful sales costs across all accounts of that product type—in this case unsuccessful sales being a cost of offering that product to the marketplace. (This approach is often preferred by marketing executives since it reduces the cost driver rate for the sales activity.) The best approach for the company should be selected early to avoid misunderstanding, maneuvering, or gaming the system.
- Controllable versus uncontrollable costs. Not all costs are controllable by a department's manager. How much control does a branch manager have on the storefront rental expense from a contract negotiated by the bank's facilities group five years ago? The branch manager will argue that customer profitability should exclude facilities costs because they are uncontrollable. This is refuted on the grounds that the purpose of the CPM system is to measure customer profitability and all costs should be included—controllable and uncontrollable (corporate-sustaining costs being the possible exception). This choice elevates the purpose of managing customer profitability over that of employee performance measurement, although the two are not necessarily incompatible.

V. CUSTOMER COSTS

To know customer profitability, one must know customer costs. How customer costs are measured is critical for the effective application and use of CPM.

THE TROUBLE WITH CONVENTIONAL COSTING

Conventional cost accounting systems, with their focus on product or service line, cost centers, and functional cost classifications are neither adequate nor helpful for CPM purposes. These cost systems generally derive directly from the general ledger (GL) where some form of unit-based allocation of GL costs to the cost object is made (e.g., by number of employees, by number of PCs maintained). The GL data tracks only cost occurrence—"what was spent" rather than why it was spent (activity specification) or how activity resources are consumed by cost objects. These systems do not provide costs based on customer or customer segment behavior.

Conventional cost allocation methods imply that all customers or customer segments are homogeneous. When support costs (indirect or shared, commonly called overhead) are assigned on the basis of a unit-based common denominator, such as units, revenues, or number of customers, support costs are averaged and do not reflect the resource consumption patterns by individual customers or customer segments. This typically results in a misallocation of costs. Unless all customers or customer segments are homogeneous in their pattern of consumption of manufacturing and nonmanufacturing support costs, some cause-effect cost assignment system such as activity-based costing (ABC) should be employed. Before exploring this topic, it is first important to identify the different types of costs involved in CPM.

THE TYPES OF COSTS

Customer costs consist of all costs necessary to provide the product or service line to the customer, not only to the point of sale and delivery but over the entire life cycle of the product or service line. These costs include costs that add value for the customer, such as product or service-line costs and the costs to serve. They also include costs that do not add value for the customer but are necessary for the business.

1) Product costs
    a. Direct material and direct labor, if applicable. These include the typical product or service-line costs, often referred to as direct costs.
    b. Manufacturing or service-line support costs. These support costs include indirect costs, which are typically assigned as product costs using unit-based allocation schemes (e.g., labor hours), but preferably assigned using cause-and-effect relationships (e.g., activity-based costing).

2) Costs to serve

   a. Marketing, selling, and distribution costs, typically assigned using unit-based allocation schemes (e.g., sales or product costs), but preferably assigned using cause-and-effect relationships (e.g., activity-based costing). These costs also include order-getting and order-filling activities.

   b. Post-sale service, such as warranty or covered repair costs, and in some cases disposal costs, typically assigned using unit-based allocation schemes (e.g., sales or product costs), but preferably using cause-and-effect relationships (e.g., activity-based costing).

3) Business (or corporate) sustaining costs

   Not all costs are related to customer product costs or costs to serve (Cokins 2006). For example, the cost of landscaping, accounting, IT services, patents amortization, and executive salaries are not incurred for a customer or customer segment but are incurred to sustain the business. These costs may or may not be assigned to customers. Caution should be used in interpreting the results if they are assigned to customers, however, there is likely no cause-and-effect relationship. On the other hand, not including these costs means that decisions based on customer profits may in fact translate into business or corporate losses.

Customer costs are the sum of the customer's product costs and the customer's costs to serve. Ideally these customer costs are assigned on the basis of cause and effect—e.g., using activity-based costing or some variation. Each activity cost is based on its activity cost driver rate and the customer-related consumption of that activity. As mentioned above, whether or not to include business-sustaining costs is situational. Regardless, the resulting information should be interpreted in light of whether business sustaining costs are included in customer costs or not. Refer to **Exhibit 7, Customer Profitability Report**, for an example of a multistage customer profitability statement.

COSTING SYSTEM

There are at least three cost system options. The first is unit-based traditional costing, which assumes that products, customers, and other cost objects are homogeneous in their consumption of activity resources. Since homogeneity is not a valid assumption, the second option is to use activity-based costing (ABC). Because ABC implementation requires time and resources, Kaplan (2004) suggested the use of a simplified approach: time-driven activity-based costing (TDABC). We advocate a form of causal cost assignment, which largely means ABC or TDABC. A brief comparison of these methods is provided below. A full discussion of the application of ABC lies outside the scope of this SMA. (See the IMA's Statement on Management Accounting titled "Implementing Activity-Based Costing," 2006.)

CONVENTIONAL COSTING

Direct product and customer costs do not raise questions about the utility of their assignment to customers or customer segments as the cost object. The same cannot be said for assigning indirect product or shared customer costs.

Unit-based conventional costing systems assign functional costs (e.g., salaries or insurance) on the basis of unit-based cost drivers (e.g., direct labor hours, dollars of customer revenue) that assume homogeneous consumption of indirect or shared costs by cost objects (e.g., products, customers). The most profound criticism of conventional costing relates to not assigning support costs to cost objects on the basis of their consumption of activity resources, resulting in simplified but often misleading results.

A CPM system attempts to capture the different resource consumption patterns of different customers or customer segments so that management is better able to manage the profitability of each customer or customer group. In the absence of such measurement, management is unlikely to manage customer profitability appropriately, as conventional costing systems ignore the consumption patterns of activities by cost objects.

ACTIVITY-BASED COSTING (ABC)

Activity-based costing (ABC) provides an answer to such criticism. In ABC, activities must be identified, activity cost pools established, cost drivers selected, and cost driver rates developed. The cost driver rates are then applied to different customers or customer segments in order to assess their profitability.

ABC requires first that activities be identified, and the costs of resources consumed by those activities are assigned using resource drivers. This first step requires converting the general ledger functional accounts into activity costs. The costs of support activities may be assigned to higher-level activities based on their consumption of such support activities. (See multistage ABC

in Cokins 2008). Costs of activities that are consumed homogeneously by all products or service lines are also combined into activity cost pools.

At this stage, organizations can see the cost of each activity, which often raises issues related to managing activities to minimize their costs. Activity-based management (ABM) requires reevaluating, re-examining, and re-designing processes and activities for better cost management. While ABM enhances corporate profitability and supports the objectives of CPM, it is not directly an integral part of CPM.

After identifying the activities and their costs, the next step is to select appropriate cost drivers from available transaction data for each activity or activity pool. An estimate is then made of the quantity or capacity of each cost driver for a period of time (usually a year).

Cost driver rates are developed by dividing activity costs or activity cost pools by the estimated cost driver quantity. The cost driver rates are then applied to cost objects, such as products, channels, customers, or other cost objects (usually decision points), by multiplying the quantity of the cost driver consumed of each activity by the cost object times that activity's cost driver rate. The sum of activity costs thus assigned to a cost object represents the cost object's total product and customer costs.

Customer costs in this way include the sum of all assigned product or service-line activity costs for the product or service line purchased by the customer or customer segment (product costs), as well as the costs to serve the customer or customer segment using cost driver rates. Corporate-sustaining costs may also be assigned to customers or customer segments, but linking such costs to customers is necessarily arbitrary.

It should be noted that ABC is not necessarily bound by the GL. For example, inventory carrying activities generate costs that are not recognized as expenses in GAAP, such as imputed interest, cost of capital charge, or replacement cost depreciation. Such costs may be included in ABC for management purposes.

ABC often requires survey information to assign resource costs to activities and to assign activity costs to cost objects. Such survey information may not be accurate and may often need to be updated as operations or activities change. There are different levels of precision that are attainable in applying ABC. The most accurate information may require too many cost drivers with complicated data to be developed and captured in the costing system. A high level of precision, therefore, may be too costly to attain. A balance should be struck for the optimum level of precision, taking both accuracy and costs into consideration.

TIME-DRIVEN ACTIVITY-BASED COSTING (TDABC)

Because several applications of ABC in the quest for cost accuracy became cumbersome and costly to develop, Kaplan and Anderson (2003) developed a simplified application of ABC they call Time-Driven ABC (TDABC). Two major advantages of this simplified approach are (1) avoiding extensive surveys, re-surveys, and survey subjectivity, and (2) highlighting capacity utilization or lack thereof. Two parameters are necessary to apply TDABC. The first is the practical capacity of a resource determined in units of time, and the second is the time required to perform a unit of each identifiable activity. The cost of the resource is divided by the capacity of that resource to determine the cost per unit of time. This is then assigned to cost driver rates by multiplying the cost per unit of time of the resource by the amount of time a unit of activity takes to perform. The cost driver rate is then applied to the cost object based on the quantity of cost driver units consumed by the cost object.

As a special case of ABC, TDABC is relatively new and the evidence seems to support its advantages. But evidence about its disadvantages is also beginning to emerge. For example, direct observation of the time to perform a unit of activity may be affected by the observation process itself, by sampling error, or by defining when the unit of activity begins and ends. It is also unclear that time is the driving force of many resources (Adkins 2008). For further discussion on ABC, see IMA's Statement on Management Accounting, "Implementing Activity-Based Costing" (2006).

The choice of a costing system is critical to CPM, and the tradeoffs in the choice between conventional unit-based costing, ABC, and TDABC will depend on the circumstances of the organization. It is important to recognize that there exist different forms, adaptations, and simplifications of ABC to provide satisfactory cost information at a reasonable cost. Pursuing precise cost information dramatically increases the cost of developing and maintaining an ABC system. We tend to favor ABC due to its focus on cost assignments based on causality. Arbitrary cost allocations that do not attribute causality may be marginally beneficial, but they can also lead to misguided decisions.

COST DRIVER TYPES, QUALITY, AND DATA AVAILABILITY

There are three general types of cost drivers. Cost drivers may be based on transactions (counts), duration (time), or intensity (direct tracing). For example, the setup activity costs may be assigned using the number of setups if setups are similar between products (transactions or counts), using the number of setup hours if setups vary by product in the time they consume (duration), or by tracking the size of the setup crew required, the length of time it takes to complete a setup, and the actual shop supplies required (intensity).

The quality of selected cost drivers is critical in CPM. For example, customers that place large but infrequent orders might be assigned more than their proportionate share of the costs to serve if costs are assigned on the basis of sales volume or sales dollars, making them appear less profitable and hiding the lack of profitability of customers that place small and frequent orders and drive up the costs to serve.

The application of ABC requires that activity cost driver data be available or can be developed and maintained. For many organizations the activity cost driver data at the customer level, particularly for the costs to serve, is not directly available, although it may have been captured in transaction data and can be sourced by the CPM system.

ISSUES WITH USING ABC COSTS IN CPM

There are a number of issues related to using ABC or a variant in CPM applications. These are addressed below.

a. **Cooperation Between Finance and Other Departments.** One issue in developing CPM is that the finance function and customer-level management must communicate clearly so that cost information aimed at measuring resource consumption is captured correctly in the system. This requires more cooperation between finance and other functions than is typically observed in many organizations. If the company is currently using ABC, the application may have to be modified to include all customer-related costs and to apply ABC costs to customers as the cost objects. If the company is not using ABC, then its subsequent design must be driven by the requirements of the CPM system.

b. **Accuracy of Costs.** Cost accuracy results from accurate cost classification, activity definition, activity cost pool determination, cost driver selection, data collection, and cost object assignment. A successful installation of CPM requires an accurate and functional costing system, preferably based on ABC or some variant.

   In developing customer cost information, it is important to keep in mind that complexity is costly, not only in the development of the cost information, but also in maintaining the cost driver information. A balance must be struck between information accuracy and complexity. As many implementers have discovered, attaining a high level of accuracy in costing may not only challenge the comprehension of those who use the system, but it also increases the cost of developing and maintaining the system.

c. **Capitalization and Amortization.** GAAP accounting currently requires the expensing of costs considered period costs, such as marketing and R&D costs. A question arises in costing for CPM purposes of whether such costs are capitalized as assets and amortized over a reasonable period of time. Other candidates for capitalization and amortization include unsuccessful sales efforts and large marketing campaigns. Whether a company decides to expense or capitalize these expenses in the CPM system will depend on its particular circumstances; regardless, these decisions should be made during the foundation basics phase when the focus is on the best CPM system for the company.

d. **Arbitrary Cost Allocations.** It is important to recognize that some cost assignment is arbitrary in nature. Even when ABC is used, some cost assignment may still be arbitrary—namely facility and business sustaining costs. Examples include: 1) facility sustaining costs in manufacturing, which are typically assigned as product costs; 2) facility sustaining costs of marketing, sales, distribution, and post-sale services, which are typically assigned as costs to serve; and 3) business-sustaining costs of research and development, landscaping, corporate headquarters, and senior executives' salaries. While the cost assignment for some of these costs using ABC can be arbitrary, it is important to realize that conventional costing results in arbitrary cost assignments, not only of facility and business-sustaining costs,but also of most other indirect and shared costs. In ABC, the allocation of facility and business-sustaining costs is necessarily more arbitrary than activity costs based on causality.

e. **Cost Controllability.** One question that typically arises in the implementation of a CPM system is this: What is the system's primary purpose (a question addressed in the decision phase)? Some stakeholders may prefer that the system focus on measuring employee performance rather than customer profitability. This SMA is concerned with customer profitability management, and employee performance is certainly related to CPM. But the primary focus of a CPM system should be on having the best available information to manage customer profitability. The issue of cost controllability arises in connection with employee performance measurement.

   This would require some modification or adaptation of CPM information that is focused on controllability and employee performance measurement. Separating costs as controllable or uncontrollable is tricky and difficult to capture in the costing system, as controllability is dependent on managerial hierarchy and time horizon. It is less difficult to deal with the controllability issue in the reporting system than it is in the costing system. For example, it is possible to deal with this issue in a multiple performance indicator system such as the balanced scorecard rather than embedding controllability as a primary criterion for the CPM costing system.

f. **ABC Provides Full Absorption Costs.** ABC is often implemented as a full-absorption costing system that ignores the difference between fixed and variable costs in assigning costs to the cost object. In CPM, this full cost is only partial, as customer costs may or may not include business sustaining costs.

   The reasons for the full-costing focus of ABC are twofold. First, cost trends in recent decades are toward cost structures that are heavily loaded with fixed costs. To assign costs to cost objects, fixed costs cannot be ignored, and the case is no less compelling for customer activity-based costing. Second, the traditional approach toward managing fixed costs is through long-term decisions that change the levels of fixed costs.

   Supporters of ABC claim that fixed costs must be managed through the management of capacity. Any unutilized capacity cost should be highlighted so that management can either improve profitable capacity utilization or decrease the level of capacity. In effect, capacity costs are considered to be somewhat flexible, and that view contributes to corporate agility that is necessary for survival in a dynamic economic environment. If not, management is likely to accept the current level of fixed costs as uncontrollable in the short term, thus deterring managers from searching for alternative options to utilize or to decrease capacity.

   On the other hand, it is important to realize that long-term performance measures, such as customer profitability using ABC, can only provide signals for management about long-term profitability. Any decision that might be considered as a result of these signals requires an entirely different analysis related to the differential effect of the decision on cash flows and company profitability. Customer profitability indicators tell management where to look but not what to do. For example, to delete an unprofitable customer based on ABC may result in decreasing rather than improving profits, since some of the fixed costs may not be avoidable, at least in the short term.

g. **The Cost Behavior Dilemma.** Fixed costs are typically included in ABC assigned customer costs, and the resulting customer profit does not represent the effect on company profits if a similar customer is added or this customer is lost to the company. This raises the question of whether customer profitability should be measured in two ways: full-absorption ABC and variable-costing ABC. In other words, the idea is to use variable costing in addition to full-absorption costing.

   The behavior of resource costs is challenging as it relates to the ability to adjust capacity of any resource. This adjustability criterion depends on the planning horizon and the ease or difficulty in adjusting capacity (resource cost stickiness). In addition, decision making is future-oriented while cost accumulation and assignment using any costing system are necessarily historical. Any decision related to adding or dropping a customer or customer segment, or modifying a customer relationship, necessarily requires special decision analysis related to the differential effects of that decision.

   The application of ABC is sufficiently complex and challenging. To develop two sets of ABC costs, variable and full, is cumbersome. Even if both systems were developed, the results of each system will only provide signals but will not directly help in decisions related to customers without further analysis that focuses on those specific decisions.

Accordingly, developing a dual ABC system is a possibility that should only be considered in light of the resulting complexity and cost. Regardless of the choice of a full ABC only, a variable ABC only, or a dual ABC system, the results should be viewed as providing signals that require further decision-specific analysis to evaluate any proposed action.

h. **Reconciliation of Cost Information with the General Ledger.** Customer cost information is derived from cost driver quantities and cost driver consumption. Such information is derived from activity cost pool information, which in turn is derived from the general ledger (GL) or directly from GL subsystems that feed the GL (e.g., accounts payable, payroll). The customer costs assigned to all customers or customer segments should reconcile with activity cost pools, which in turn should reconcile with the GL accounts or their expense transaction sources of functionally classified expenses. Customer costs for a time period, in total, should be the same as the GL functional costs unless the ABC system includes imputed costs not recognized in the financial accounting system.

i. **Unutilized Capacity.** In applying activity-based costing, there are two main approaches related to the selection of capacity to use in the development of cost drivers: ABC and TDABC. Early applications of ABC tended to ignore unutilized capacity. These applications estimated usage or expected capacity utilization as the denominator in developing activity driver rates. The cost of unutilized capacity was thus not isolated, and activity driver rates were usually higher than if the cost of unutilized capacity was isolated. While it is possible to use practical capacity of each cost driver in determining each activity cost driver rate, which would isolate the cost of unutilized capacity, supporters of time-driven ABC tout their approach not only because of its alleged simplicity but also because it isolates the cost of unutilized capacity and assigns only the costs associated with utilized capacity in the activity driver rates.

   Supporters of time-driven ABC claim that it is simpler to use than traditional ABC and that it avoids the subjectivity of extensive surveys. Both traditional ABC and TDABC can use practical capacity in determining cost driver rates. Incorporating practical capacity does add a layer of complexity, as well as an element of subjectivity—and possibly attempts to game the system. Nonetheless, incorporating practical capacity has the dual benefit of keeping cost driver rates constant; as the denominator, the practical capacity level of each cost driver does not frequently change. It also isolates the cost of unutilized or unused capacity, which can be helpful in managing capacity costs by evaluating alternatives for the utilization of unused capacity or for the reduction of capacity.

   It should be noted that practical capacity usage is not unique to TDABC and can be used in connection with any application of ABC. All that would be required in ABC is to use practical capacity, instead of expected usage, of each cost driver in the denominator in determining the activity cost driver rate. This would have the effect of showing the unused capacity of each cost driver and the cost of unused capacity of each activity. Thus the argument for TDABC reduces fundamentally to its simplicity.

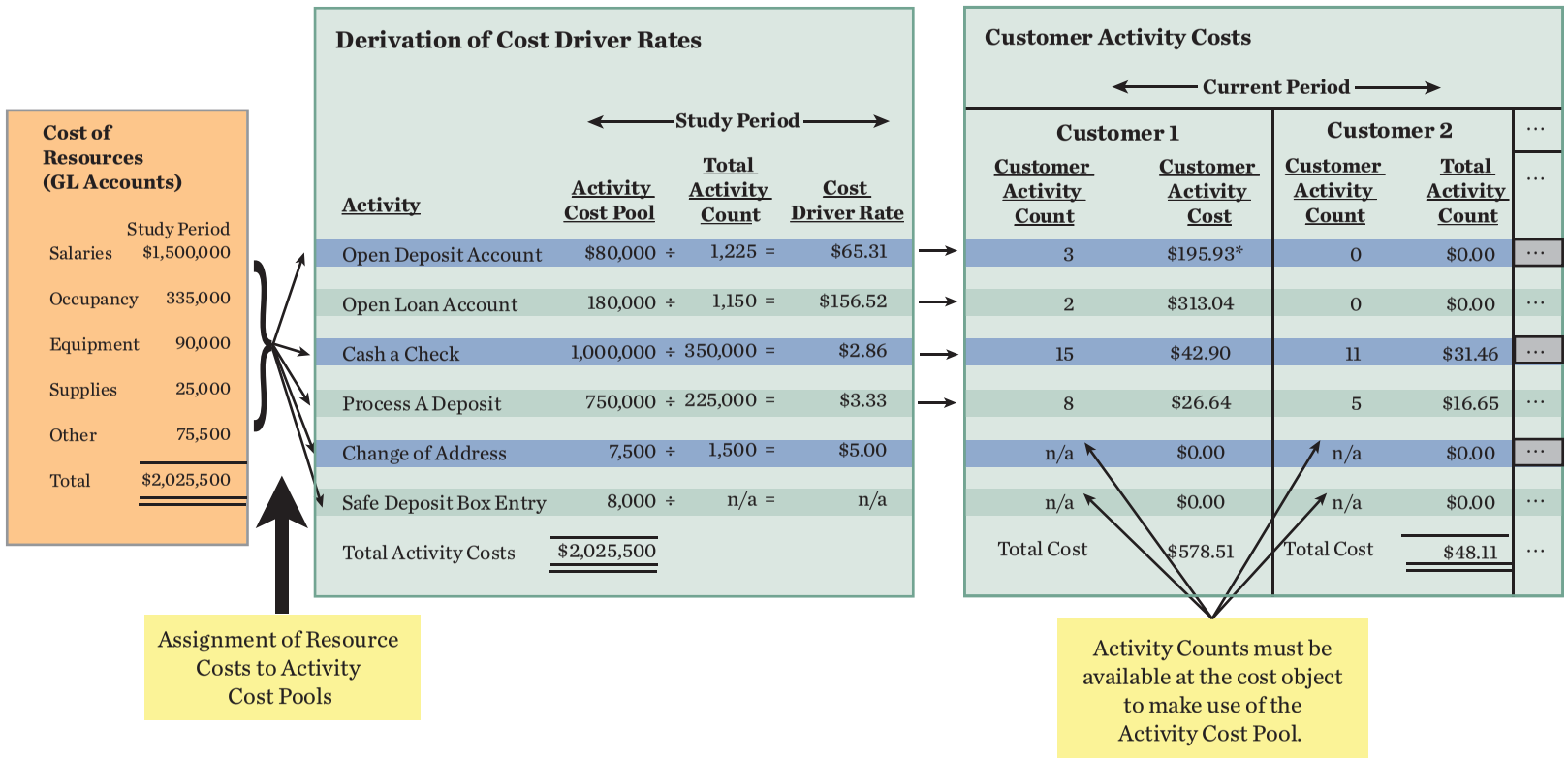
   Regardless of whether practical capacity is incorporated in ABC or not, it is clear that costing issues dominate in the measurement of customer profitability. The careful development of the costing system and its maintenance are critical in customer profitability measurement and management. It is no exaggeration to describe costing as the Achilles' heel of CPM.

VI. TRANSACTION DATA

The two preceding sections discuss the foundation basics and costing for a CPM system, both of which are highly dependent on the availability of transaction data. In the foundation basics, the cost object is established, but measuring the profitability of the cost object requires transaction data be available for it. Likewise, other foundation basics, such as the product and the channel, are dependent on the availability of transaction counts (cost driver quantity) for those items. Regardless of the desirability of a particular cost object, that cost object cannot be used without transaction data to support it.

For example, in the banking industry an important component of customer account profitability is the number of times an account holder cashes a check. Developing activity driver rates for cashing checks requires data at two levels: (1) how many total checks were cashed to use as the denominator in the ABC cost calculations—practical capacity could be used instead; and (2) how many checks were cashed by each customer account (the cost object) to apply in calculating customer account profitability.

EXHIBIT 9. COST WHAT YOU CAN SOURCE



* 3 x $65.31 = $195.93

Knowing how many total checks were cashed enables the calculation of cost driver rates, but this is of little value if the number of checks cashed is not available for each and every customer account (the cost object).

DATA SOURCES

The sources of the transaction data used in the CPM system will vary by industry and come from disparate computer systems within each company. Some data will come from the financial systems, such as general ledger data. Other data, such as transaction driver data, will come from core application systems such as sales and ERP systems. Some companies are fortunate enough to have built a data warehouse depository, which may contain much of the needed data and provides one-stop data shopping.

The elemental concept that transaction data must be available for an activity driver can be expressed in the maxim, *"Cost what you can source, and source what you can cost."* This says to include an activity cost only when its driver data can be sourced for the cost object, and not to source driver data for the cost object when there are no related activity cost pools from which to develop cost driver rates.

It is not uncommon to find situations where activity cost pools can be built, but activity driver usage data (the number of times an activity is performed) is not available for the cost object. For example, it may be observed that an employee spends 5% of her time answering customer questions, but the core application systems cannot tell which customers asked questions and which did not; the activity driver data is not available for the cost object. In this case, the activity cost pool will require another approach, such as combining it with a more general customer-sustaining activity cost pool. The result is the activity cost pool, although disproportionately consumed by a subset of customers, is charged to all customers using the more general activity driver.

Exhibit 9, Cost What You Can Source, provides a graphical representation for a bank or credit union of tracing the cost of resources from functionally classified general ledger costs to activities, forming activity cost pools, that are then traced to the individual cost objects using cost driver rates. The cost driver rates are multiplied by the activity usage counts to yield costs for individual customer accounts (the cost object).

ADD DEMOGRAPHIC DATA

The analytical robustness of the CPM system is enhanced with the addition of cost object data that is not cost- or revenue-related. Customer demographic data, for example, can provide information such as age, address, Zip Code, income group, and purchasing preferences. Other data may be internally generated, such as the length of the customer's relationship with the company, the customer's sales representative, and the customer's payment history.

Once profitability is determined for the cost object, then profitability can be viewed not only for the cost object (e.g., customer account), but also by the demographic data added. For example, one can analyze customer profitability by age group or generation, or by the length of a customer's relationship, if this data is sourced for the cost object. Demographic data is another take on the concept of multidimentional profitability discussed earlier (refer to **Exhibit 4, The Multidimensional Views of Profitability**).

Accurate, repeatable, and timely sourcing of transaction and other data to the CPM database is difficult and requires great diligence to design, implement, and maintain. Sourcing data poses one of the greatest risks of failure to a CPM system. See Appendix 2, Technical Considerations for the Management Accountant, for additional information on sourcing and maintaining data in a CPM system.

VII. SYSTEM OPTIONS

The selection of the information system infrastructure needed to support the CPM system will be dependent on the decisions made in the highly interrelated foundation basics, costing, and data phases. Once the groundwork has been laid for these three phases, then selection of the information system infrastructure can begin.

SELECTION OF THE DATABASE ENGINES

In general, there are two separate calculation engines needed for CPM: one for costing, which calculates the cost driver rates; the other for cost object profitability, which applies those cost driver rates to the cost object. Some commercial products combine the cost system and the profitability system into one CPM database infrastructure, but most often the costing and profitability systems are two separate modules or application systems.

There are three basic choices when selecting a CPM application system, whether for costing, profitability, or both:

1. Develop in-house
2. Purchase
3. Outsource

Developing an in-house application provides maximum opportunities to custom design the CPM system. Customization comes at a cost, however, including significant management accounting and information technology resources and long implementation timelines. Further, internally developed applications often become outdated as they have difficulty keeping up with the technology of commercially developed off-the-shelf products. A large bank a few years ago developed its own costing system in-house at great expense, only to abandon it three years later for lack of features available in commercial products.

Although purchasing a commercial off-the-shelf software application will reduce the ability to customize, it will also reduce the cost and time to implement a CPM system. Even with a purchased application, though, it will not start generating cost driver rates and customer profitability the day it is installed. These applications are more like Excel when first opened: a blank worksheet. It is left to the purchasing company to input all the necessary data, establish their relationships, write the formulas that perform the calculations, and generate the company's cost driver rates and customer profitability. Advanced commercial CPM systems do some of this internally; nonetheless, products, channels, relationships, transaction usage data, and model specifics must be established by the purchaser.

The third system option is an outsourced or hosted solution. Often referred to as an Application Service Provider (ASP) or Software as a Service (SaaS), the approach entails providing company data to a third-party vendor, which runs the costing and/or profitability system on its computers and returns output tables and reports to the company. A hosted solution provides the fewest opportunities for customization, but it also provides the lowest initial costs and fastest time to implement. Ongoing periodic payments are generally required as the monthly or quarterly profitability reports are produced and delivered. Data security and customer privacy require special attention with a hosted profitability solution.

OTHER APPLICATION SYSTEM CONSIDERATIONS

Information systems and databases external to the CPM system will be called upon regardless of the system option chosen. These external systems may already exist or may need to be developed. Two basic types of external systems are those that: (1) provide information to the costing or CPM systems and (2) receive information from the costing or CPM systems.

First, external systems will provide information that is used by the CPM system in calculating activity driver rates and customer profitability. The accounts receivable system would likely provide data to the CPM system, as would an ordering or sales tracking system. Transaction data from core application systems is an example of data sourced from external systems.

The second type of external system is the end-result reporting system used to deliver the calculated costing and customer profitability information to employees. Examples would include summaries on departmental balanced scorecards, the profitability of specific customers reported to sales staff, or data warehouses with query tools for costing or customer profitability analysis. How the costing and customer profitability results are disseminated throughout the organization will have a big impact on the success of the CPM system.

One final system consideration is the ongoing maintenance and occasional upgrades and refinements that the costing and profitability systems will require. Customer profitability systems, whether purchased or internally developed, will have software upgrades requiring installation and testing. Refinements to the system will also be required when processes change that affect the cost driver rates or when data not available before can be sourced. Any refinements or upgrades need to be designed, documented, installed, and tested.

VIII. BUSINESS ALGORITHMS

The formulas and calculations used to generate cost driver rates and cost object profitability are referred to as business algorithms or rules. The business algorithms must be designed, documented, input to the costing and profitability systems, and tested. The model builder tells the application system how to manipulate data to calculate cost driver rates and cost object profitability, much like an Excel user programs formulas into a spreadsheet.

The degree to which the company is involved in the design and implementation of the business algorithms depends on decisions made in the system options phase. The in-house developed system and, to a lesser extent, the

purchased application system provide almost unlimited customization of the business algorithms. The outsourced solution, while providing the purchaser little control over the business algorithms, normally uses industry best practices business algorithms.

To the extent possible, line and back-office employees should be involved in the design of the CPM system; they are sure to know more about how their areas work than do the model builders. Including employees in the design of the CPM system, or at least providing them an understanding, will go a long way in obtaining their buy-in. Employee acceptance will encourage using the customer profitability information in constructive and creative ways that add value to the organization. Section XI, Behavioral Considerations, discusses this subject further.

CUSTOMIZATION AND COSTS

While the in-house developed or purchased CPM application systems provide plenty of opportunity to customize the business algorithms, this customization comes at a cost and produces several unavoidable pitfalls. Situations arise where there is more than one approach to calculating activity driver rates and cost object profitability with the different approaches yielding different results. As a consequence, control of the business algorithms will spawn political infighting over which methodology to use, with each department manager encouraging whichever methodology benefits his department the most. For example, the cost of marketing campaigns may be assigned to current sales or capitalized and amortized; the marketing department will generally favor capitalization since it lowers the cost driver rate of making a sale.

The way to avoid political infighting over business algorithms and accounting methodologies is to make the difficult accounting choices during the foundation basics phase, when the focus is on designing an accurate and strategic CPM system.

CPM SYSTEM DOCUMENTATION

With customization comes the responsibility to document the design, but the human tendency to skimp on documentation is a pitfall that is hard to avoid. The in-house developed and purchased applications will come with reams of documentation on how these applications work. There will be no documentation, however, on the business algorithms yet to be designed and customized for the company. Consider again the similarity with Excel, where the documentation on how Excel works is voluminous, but any spreadsheet designed by an Excel user needs to be documented.

The documentation of the CPM system's design—that is, the business algorithms and the data it uses—is generally left to the management accountants. The calculations built into the costing and profitability systems are complicated, and documentation is the only way to retain system integrity in testing, production, maintenance, upgrades, and understanding. See Appendix 2, Technical Considerations for the Management Accountant, for additional information on documenting the CPM system logic.

The outsourced or hosted CPM system provides limited opportunity to customize the business algorithms, but this limitation has some advantages. Vendors providing outsourced solutions draw their methodologies from best practices that are baked into their offerings, thus minimizing—if not eliminating—political manipulations of the CPM design. This, in turn, reduces implementation time and cost. The result is that outsourced systems can often begin producing customer profitability information in several months versus years for most in-house and purchased systems.

TESTING

The business algorithms must be tested after they have been programmed into the costing and CPM systems. Testing is an implementation cost that is easy to downplay and minimize. This is a mistake, since thoroughly testing all aspects of the CPM system is crucial to its success.

A testing regimen should be built into the CPM system's design and implementation plan, including any change, no matter how trivial. Although every attempt should be made to build quality into the system (e.g., good documentation and data quality checks), testing the results ensures their accuracy and integrity. If a high-quality CPM system has been built, testing will be quick and relatively pain-free. Testing on a hastily built and shortcut-ridden CPM system, on the other hand, will be long and painful.

IX. PROFITABILITY INFORMATION

Once the transaction data sourcing is complete, the business algorithms developed, and the entire CPM system thoroughly tested, then the new system will enter its production phase. In production the CPM system will run periodically, usually monthly or quarterly, and generate customer profitability information and reports.

The periodic production of accurate CPM results depends on the system's sustainability and repeatability. The sustainability of the system is the ability to run the system as scheduled for each period, an important design consideration. For example, manual data collection or manual processes built into an information system can cause delays—and errors—and lead to missed production schedules. Thus the adage, "Automate, automate, automate!"

Repeatability refers to the ability to produce the same results using the same inputs no matter how many times the system is processed. If different results occur when processed with the same inputs, the system is unpredictable and unusable.

Careful thought should be put into how the customer profitability information is distributed. To be useful, CPM reports must communicate to managers the profitability status, the changes, and the profitability potential of a company's customer base. Further, the CPM reports should be understandable, relevant, usable, and actionable. The reports should also provide the ability to drill down and link results with source documents and transaction data.

Well-designed CPM reports can signal the necessity for action, as will be discussed in Section X, Strategic Integration. But CPM reports can go only so far, and each decision will require its own analysis regarding the short- and long-term incremental effects on the corporation.

Since customer profitability information is founded on the activity driver rates developed during the costing phase, these rates should be updated periodically, ideally every 12 to 18 months. Periodic updates ensure that activity driver rates are reliable and less susceptible to error and criticism. Rates should be updated sooner for any significant changes in business processes that could have material impacts on the activity driver rates.

Some sophisticated costing systems available today have the capability to recalculate cost driver rates every month—almost in real time. Although monthly cost driver rates have the benefits of keeping the rates current and absorbing 100% of the month's GL expenses, they have the unfortunate effect of distorting perceptions of customer activities or behaviors. It is better to hold cost driver rates constant over a period of time, say 12 months, so changes in a customer's profitability can easily be translated into the actions taken by the customer. Management accounting tools certainly exist to separate the impact of changes to the cost driver rates versus the customer's activities, but why add the complexity and take the focus off of the customer's actions?

RISKS OF A CPM SYSTEM IN PRODUCTION

The technical risks to managing a CPM system once it moves into production include:

data. The quality and timeliness of cost object data that is sourced from the company's core application and GL systems poses great risks to the CPM system. Procedures should be established that ensure the timely delivery of high-quality data files. Nonetheless, it is unavoidable that data from core application systems will contain missing values, errors, and other noise. A strong data quality control regimen will catch many of these errors, and error traps built into the business algorithms will catch much of the rest.

accuracy of results. The customer profitability results must be accurate and believable to be useful. The only way to ensure result accuracy is to thoroughly test the CPM system and all data sourcing when the system is built and whenever any change is made. Monthly results should also be tested for accuracy, such as comparing monthly CPM totals to independent company-wide results and other quality checks.

timeliness. The customer profitability reports and information must be provided in a timely manner to be meaningful and useful. Unexpected delays are inherent in any information system, but steps can be taken during the design phases to reduce opportunities for setbacks. Manual collection of data or manual running of processes, for example, can cause such setbacks and should be avoided.

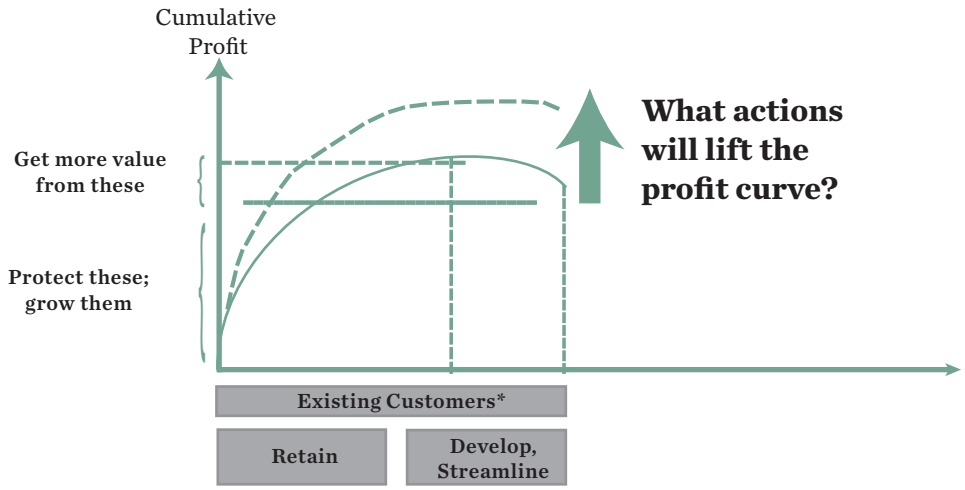
X. STRATEGIC INTEGRATION

FINDING OPPORTUNITIES

Customer profitability information provides customer-level insights not available before. Who are the most profitable customers on which to focus retention efforts? Who are the unprofitable customers, and what can be done to make them profitable? What are the similarities between the most profitable and least profitable customers? What are the differences?

Many companies perform customer surveys, but most of them do not use the information gathered for profitability. Few companies recognize that some loyal customers may be a drain on their profits. According to Norton and Hegate (2005), it is important to put customer understanding at the heart of a company's strategy.

EXHIBIT 10. PROFIT-LIFT FROM EXISTING CUSTOMERS



*Ranked most to least profitable

Measuring customer satisfaction and customer loyalty, however, is not sufficient as an effective strategy without also measuring and managing customer profitability.

The purpose of customer profitability measurement is to identify customers who are profitable (P), customers who approximately breakeven (B), and loss customers who destroy or erode profits (L). The three-way (PBL) classification is only suggestive, as customers or customer segments can be classified in many ways. For example, a company might classify customers based on a matrix of volume and profitability rather than profitability alone (Alger 2003). For illustrative purposes, however, this three-way PBL customer classification is adequate.

IMPLEMENTING STRATEGIES

Once customer profitability is measured and customers are ranked according to their dollar or percentage profitability, those who fall in the P category provide far more than 100% of current profitability. It is these customers that an organization should strive to retain and attract. Actions that might be considered include:

- Find common characteristics or behaviors that make P customers profitable, and leverage those findings into tangible actions to retain them.
- Provide personal attention from salespeople, relationship managers, or their superiors.
- Make price or service concessions to ensure the company remains competitive for these customers.
- Find out what P customers like about the company and promote those features to attract new customers with similar profiles.
- Develop a partnership with P customers by assigning them a high priority in service or pricing.

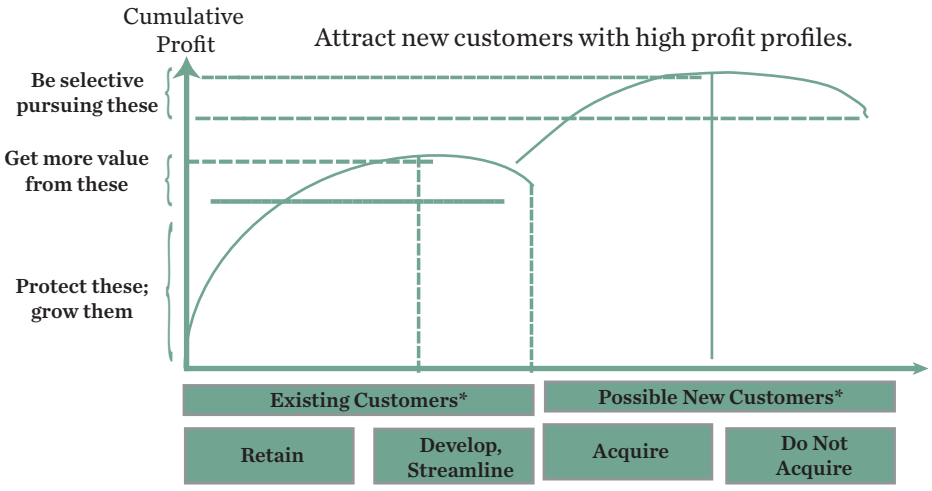
The B customers require a different strategy. The reason these customers break even must first be identified and may be due to one or more of the following:

- Low sales volume
- Low selling prices
- High product costs
- High costs to serve

Since research shows that it is much less expensive to hold onto an existing customer than it is to acquire a new one, it is critical to bring B customers to a profitable level for the company. The following actions would be candidates for consideration:

- Add a surcharge for small orders or for product or service features B customers demand.
- Work with B customers to make them more successful.
- Discount large orders.
- Increase prices.

EXHIBIT 11. PROFIT-LIFT FROM NEW CUSTOMERS



*Ranked most to least profitable

- Improve cost management and efficiencies.
- Encourage customer behavior changes that increase long-term profitability.

When it comes to L customers, the choices are more critical. The first step here is to examine why L customers erode profits. The reasons are many and may be internal or external. Internal reasons why a customer is unprofitable may point to product or service quality issues. When a product or service does not live up to customer expectations, it is likely to consume additional company resources. This internal failure can also signal the potential gradual loss of B and P customers. On the other hand, the reasons why L customers destroy profits may be external to the company and are customer-specific. Options that may be considered include the same actions that are necessary for B customers. If these actions are not feasible or are not expected to be effective for certain customers or customer categories, however, two other actions are possible.

The first is to outsource or sell unprofitable customers, such as a bank selling some of its branches to a competitor. Consideration for this action should focus on the selling price and the reputation of the buyer, although the transaction typically results in a one-time cash flow while the company has lost a future stream of customer contributions. This decision should be treated as a customer divestment decision, and the relevant analysis should utilize cash flow analysis and net present value or internal rate of return.

Another action is to eliminate or fire unprofitable customers. This should be the solution of last resort. Special analysis must be conducted to determine if, in fact, firing these customers is legal, ethical, and will increase profits. It is important to recognize that not all costs assigned to a customer are avoidable and would be eliminated if the L customers were to be fired, such as fixed costs. Similar to selling or outsourcing a customer, the analysis should be done using discounted cash flow analysis to determine if the L customer contributes positively or negatively to customer lifetime value.

Companies should avoid the temptation to fire unprofitable customers for several reasons. Research has shown that it is generally less expensive to turn an L customer into a P or B customer than it is to obtain a new customer (who may herself turn out to be a B or L customer). It is also important not to lay blame on L customers, as losses may result from company actions that do not match revenues with costs for the various product or service features they buy. Indeed, L customers may be doing business with a company because they cannot get the same deal from its competitors.

It is important not to take the ABC costs too literally, since ABC is a full-absorption costing system. Fixed costs assigned to customers sold or fired may not

be eliminated. If, for example, none of the fixed costs were expected to be eliminated as a result of deleting a customer, customer deletion may in fact worsen the company's overall profits as the customer's contribution margin is eliminated but assigned fixed costs and vacated capacity are not. The company may take immediate action to replace the unused capacity vacated by L customers with P customers. Alternatively, the company may decide to eliminate the unused capacity and its costs.

Managing capacity becomes critical as fixed costs continue to increase with new technologies. But the embedded assumption in ABC costs that management can decrease capacity costs should be highlighted. Capacity costs should be evaluated for their responsiveness to management actions involving customer deletions.

Instead of customer deletion, it is preferable and likely more profitable to turn L customers into B or P customers following the considerations listed above.

SUSTAINABLE STRATEGIES

CPM measurements result in a classification of customers based on profitability. These results require that management devise strategies to retain P customers, recruit new P customers, work more closely with B customers to turn them into P customers, and do likewise for L customers. To turn B customers and L customers into P customers requires a thorough examination of pricing, operational processes, and customer behaviors.

The effects of managing customer profitability by improving current customers' profitability can result in the lifting of the whale curve upwards as well as sea-level, as shown in **Exhibit 10, Profit-Lift from Existing Customers**.

Recruiting profitable new customers based on the economic and market characteristics of P customers is another complementary approach to CPM. **Exhibit 11, Profit-Lift from New Customers**, shows the potential effect on the whale curve of recruiting new profitable customers.

STRATEGY IMPLICATIONS

CPM signals do not directly indicate what actions to take. Actions are based on specific differential analyses tailored to the decisions being considered. Most strategic decisions that result directly or indirectly from CPM analysis have pricing, operating, or relationship-management implications (Kaplan and Narayanan 2001). In turn, pricing and operating implications affect customers, company finances, cash flows, and planning and budgeting.

Customer segments based on customer characteristics or behavioral patterns can be examined and contrasted for profitability, which can provide insights into how to manage customer profitability more effectively.

PRICING DECISIONS

To retain P customers, a company may offer product or service features to entrench P-customer loyalty. It may also increase prices for product or service features to B and L customers as a means of reducing costs or increasing revenues. Issues of product or service pricing and bundling are outside the scope of this SMA.

OPERATING DECISIONS

Once decisions are made regarding quality improvements, process improvements, cost management, or pricing, the operating implications in terms of quantity of product or service line, scheduling, delivery, etc. must be incorporated into the operational plans. The benefits of a CPM system can be lost from the lack of integration of operating decisions with strategies. For example, if customer-service activities are to expand to offer extended services to current and potential P customers, the necessary training or hiring must be integrated with the decision to expand such services.

CUSTOMER RELATIONSHIP

Before management invests in growing a company's customer base, it has to identify the types of customers it should target based on estimated profitability profiles (Kaplan and Narayanan 2001). This avoids finding out after the fact that many of the new customers are not profitable.

For existing customers, nurturing and growing P-customer relationships is critical for company profitability. Managing B-customer relationships to make them more profitable by re-pricing, process improvement, changing order size, or expanding sales of other more profitable products are promising approaches to increase profitability. Actions to manage the profitability of L customers may be taken similar to those for B customers unless the company decides to gradually divest itself of L customers or fire them. Even in such cases, it is prudent for the company to maintain the goodwill and reputation in the marketplace.

FINANCIAL DECISIONS

The effects of strategies on operating and pricing decisions eventually translate into revenues, expenses, and cash flows. The effects of these decisions should therefore be considered not only in terms of their operational implications but also their financial implications. New investments or divestment decisions, including investments in new customers or divestments in L customers, must be integrated with the company's capital budgets and the cash flow effects integrated with the cash budget. All decisions resulting from the implementation of CPM should be integrated in the planning, budgeting, and forecasting processes within the company.

INTEGRATION OF CPM WITH PERFORMANCE MEASUREMENT

As a system, CPM must be integrated with the company's strategic performance measurement system (SPMS), e.g., the balanced scorecard (BSC). If not, responsibility is not pinned down for the implementation of CPM strategy or for the integration of CPM goals within the SPMS.

CPM is profit-oriented and thus fits well with the financial perspective of the balanced scorecard. Profits, RI, or ROI will reflect the strategic decisions made as part of the CPM strategy. These measures lag the metrics in the customer perspective. Kaplan (2005), for example, suggests the use of metrics such as the percentage of unprofitable customers or the amount of loss from unprofitable customer relationships. Such customer perspective metrics lag the metrics imbedded in the internal or operational perspective of the balanced scorecard.

A more complete breakdown of the customer metrics would include those specifically related to P customers, B customers, and L customers. These metrics should reflect the goals related to each customer grouping, specific objectives, targets, and initiatives. As these metrics lead financial outcomes, they, in turn, lag the operating metrics in the internal or operational perspective of the balanced scorecard. The operating metrics themselves lag those related to the infrastructure, systems, and learning and growth perspective. This pattern emphasizes how CPM strategy is implemented and its goals achieved.

The BSC and strategy maps should reflect the objectives that management sets as a result of CPM and the focus on the leading indicators of infrastructure and learning and growth. Such metrics would include the development of the CPM system infrastructure, training, and data collection. These will lead to the necessary operational decisions that will reflect their results in service cycle time, customer service, delivery, and operational changes and adjustments. In turn, these will result in improved customer loyalty for P customers and improved understanding of how to make B and L customers more profitable. The customer perspective will lead the profit, EVA, or ROI metrics.

FOSTERING AN ENTERPRISE FOCUS ON CUSTOMERS

Implementing a CPM system will enable the organization to manage its business using customer-based metrics that highlight actual customer activities and behaviors. The objective is to build marketing and retention programs for customers that display profitable characteristics and to look at re-pricing, re-packaging, or other operational or pricing strategies to turn unprofitable customers into profitable customers. Understanding customer profitability provides the foundation on which to build a successful, customer-centric organization.

Most importantly, perhaps, a CPM system fosters understanding throughout the organization of the relationship between customer behavior and customer profitability as well as how customer profitability is impacted by the way the organization responds to customer behavior. Linking the CPM system with the strategic performance management system (SPMS), such as the balanced scorecard, promises to integrate CPM into the mainstream of corporate strategy.

XI. BEHAVIORAL CONSIDERATIONS

Resistance to change is a phenomenon that exists in most organizations, and the introduction of CPM is no exception. Introducing CPM in an organization, like any managerial initiative, requires tact, manager and employee involvement, and strong and effective leadership. Management and employee buy-in and acceptance are prerequisites for a successful CPM implementation. In addition, it is prudent that employees who are likely to be affected by the CPM implementation be included in pre-implementation discussions and analysis. If behavioral issues are not handled properly, a new CPM system may not reap the benefits intended.

GAINING SUPPORT FOR CPM

CPM is intended to change the patterns and ways of thinking about customers within an organization, which means the potential for resistance to change will likely be strong. The uncertainty that people cope with during times of change can be dramatic and may result in opposing, or even sabotaging, the implementation of the CPM

system. Long-held perceptions of which customers or customer segments are profitable may be shattered by a CPM system. People in sales or customer-contact positions are likely to react to the new information with disbelief. Vested interests, if not considered and dealt with in a constructive and positive manner, can lead to employees thwarting the implementation of CPM-based strategies. It is critical that a new CPM system be accompanied by a learning and inquisitive attitude and by minimizing the level of unease related to coping with the inevitable uncertainty that accompanies such change.

Managers at all levels and functions must be trained to interact with the CPM system and to understand its reports and their implications. They must also understand the strategies underlying the company's approach to CPM. Without this understanding and focus, the system will become a white elephant.

New ways to measure and manage customer profitability not only require attention to manager and employee buy-in of the change, they also require that incentives are realigned with what is best for the company in light of the new measurement and management system. A transitional period may be necessary to allow managers and employees to adapt and realign their actions to the new system.

TEAM APPROACH

To ensure CPM strategies are effective, it is important for the company to maintain a cross functional, team-based perspective that focuses on customers, cutting across traditional functional lines within the organization. This perspective is essential not only in designing CPM but also in responding to the information that the CPM system provides.

The team approach required for CPM implementation includes team members from marketing, finance, information technology, and operations. In functional organizations, a matrix approach is often applied with a CPM project leader and team. If the team selected is not sound, the resulting CPM system will reflect more compromises than is beneficial for the company. The CPM project team should not be dominated by any one functional group; all must work together to ensure an effective and successful implementation. Although the cross-functional team will be involved with the technical aspects of the CPM system, management needs to be inextricably involved with overseeing the entire CPM project (Rigby, Reichheld, and Schefter 2002).

The absence of a team approach increases the potential for self-interested interpretations of CPM results, a serious hindrance to effective analysis. Some managers will attempt to use the CPM results to their department's advantage at the expense of the organization's best interests. For example, an operations manager whose activity driver rate for a particular activity is lower than that of a front-line area—due to reduced customer service levels—may argue that all processing of that transaction go through her less-costly department. Again, an understanding of how the CPM system is designed, combined with careful consideration of all proposed decisions, will go a long way in overcoming self-interested gaming behavior.

Implementing CPM requires a thorough analysis of its potential impact on employees and a plan to obtain their genuine support and buy-in. If the implementation is handled internally, managers and employees should be involved from the start to develop this support. Even if a consultant is involved, it is a good idea to ensure the consultant has a plan for how to win the support of managers and employees. Maintaining constant contact between the implementation team and the people who are most likely to be impacted by this change will enhance support and buy-in of the CPM system.

XII. CONCLUSION

Customer profitability management requires measuring customer profitability. The potential for organizations to improve their profits by devising operational and marketing strategies to retain profitable customers, acquire new profitable customers, make breakeven customers more profitable, and eliminate the erosion of profits by loss customers can be realized through CPM.

CPM consumes time and resources. More than half of failed implementations are due, in part, to the lack of understanding by management of the system and its cost and time requirements (Rigby, Reichheld, and Schefter 2002). Once implemented, however, CPM will start the organization on a new path of discovering how the customer and the organization interact. The organization will begin to learn what works and what does not work in profitably delivering value to the customer.

To climb this learning curve, ample training is needed throughout the organization on the concepts of costing and customer profitability management. For the CPM system to have the impact desired, all employees, both front-office and support areas, must understand

how their everyday actions contribute to the profitability of customers.

Only when all employees understand the CPM system and its results will the organization reach that point where employees know how to deliver value to the customer while balancing the interests of the organization through the measure of customer profitability. The company will have evolved into a customer-centric and more profitable organization.

GLOSSARY

Activity Cost Driver – A common denominator that is used to assign an activity cost or activity cost pool to cost objects. Activity cost drivers are found in internal or external transaction data and include such items as number of orders placed, number of returns, setup time, or number of checks cashed. It is the expected capacity or practical capacity of an activity over a specified time period.

Activity Cost Pool – The cost of resources of an activity or group of activities that are consumed in approximately similar proportions by cost objects.

Application Service Provider (ASP), also called Software as a Service (SaaS) – An outsourced or hosted customer profitability system or other type of application. The approach entails providing company data to a third-party vendor, which runs the costing and/or profitability system on its computers and provides output tables and reports.

Business Algorithms or Rules – The calculations that the profitability engine performs to produce customer profitability. Documentation of the business rules or algorithms should include any upstream dependencies, all input fields, filters, lookup tables and joins, the operations performed on the input data, and where the results are stored.

Core Application System – A term for many types of computer information systems, usually but not necessarily mainframe-based, that are used by companies to record all types of original capture information, including transactional data and financial data. The term usually excludes the general ledger financial system, the repository of the company's financial records.

Cost Driver Rate – The activity cost pool divided by the estimated quantity (or capacity) of the cost driver for that activity. It is the rate that is applied to cost objects based on their consumption of the activity.

Cost Object – The object for costing purposes such as products, product lines, services, customers, customer accounts, customer segments, departments, plants, or geographic regions.

Customer – The definition of a customer aries by industry. A customer can be a cash or card transaction, such as with a convenience store; or a customer can be an account that holds each customer's transactions, such as a department store's discount card or a bank's checking account.

Customer Costs – Costs assigned to a customer (or customer segment), including direct product and service-line costs as well as indirect and shared costs; often called costs to serve.

Customer Gross Margin – Net revenue less product or service-line costs assignable to a customer (or customer segment).

Customer Margin – Equals the customer gross margin less the costs to serve, which includes such items as the costs of order getting, order filling, and customer support and service. It is the profit attributable to a customer (or customer segment) before deducting corporate-sustaining costs and income taxes.

Customer Profit – Equals the customer margin less allocated corporate-sustaining costs and income taxes; that is, the NIAT for the customer (or customer segment).

Customer Segment – Combining customers with particular similarities into groups is known as customer segmentation. Each customer segment or group is based on some dimension or quality of interest. For example, a convenience store may segment its customers by time of day, by types of purchases, or by size and frequency of purchases.

Data Dictionary – Core application's system documentation that defines its tables and fields and the relationships between the tables and fields. The data dictionary is the go-to resource when matching ABC cost and profitability data requirements to the data available in a core application system.

Data Warehouse – Centralized location of selected data collected across a company's disparate computer systems. The data within the warehouse is often accessible through easy-to-use query and report tools. If available, it is a convenient source for ABC and profitability data.

Delivery Channel – How customers interact with the company, i.e., the customers' "touch-point." Retail

stores and websites are two types of delivery channels. Note that the cost to sell and serve can vary significantly between channels.

Delivery Channel Migration – Encouraging a company's customers to use or migrate to a less-expensive or preferred delivery channel. A retail company, for example, may consider strategies to encourage its customers to buy through its website rather than its retail stores.

Hierarchy Tables – A hierarchy table is a document showing how subgroups roll up, or are combined, into higher-level groups, which can further be combined into higher-level groupings. Hierarchy tables common to CPM are product, customer, organizational, and activity.

Household – A combination of related customer accounts into one grouping, called a household or relationship. For example, the profitability from a husband's accounts and the profitability from the wife's accounts would be combined for total household profitability.

Multidimensional Profitability – Ability to display profitability for different dimensions from the same profitability database, such as customer profitability, product profitability, LOB profitability, regional profitability, etc. These are different ways of measuring the same thing and from which arises the profitability identity: Total Customer Profitability = Total Product Profitability = Total Organizational Profitability.

Product – Lowest-level product used in the costing and CPM systems. Although the product may seem obvious, it must nonetheless be defined and fixed prior to developing ABC costs. Oftentimes it is practical to roll several like products subject to the same cost driver rates into higher-level costing products to reduce complexity and maintenance costs. If so, a product hierarchy should be developed.

Profitability Calculation Engine – A relational database with custom or user-defined calculations designed to render customer profitability.

Relationship – see Household.

Repeatability – Ability to produce the same results using the same data inputs no matter how many times the CPM system is processed. If different results occur when processed with the same inputs, the CPM system is unusable.

Software As a Service (SAAS) – See Application Service Provider (ASP).

CPM System Sustainability – The ability to run the CPM system as scheduled every period; system design should consider timely delivery of CPM results (e.g., no manual processes).

Time-Driven Activity-Based Costing (TDABC) – The cost of resources consumed is assigned by determining capacity in terms of time and by assigning the cost per unit of time to each unit of activity performed on the basis of the time a unit of activity consumes, which is determined through direct observation and sampling. This approach avoids the extensive use of surveys, common in ABC systems, to allocate the cost of resources to activities. Further, it highlights the cost of unused capacity.

Transaction Data – Nonfinancial data collected at the point of the transaction, often containing identifying characteristics including transaction location, product, and customer account.

Whale Curve – A graph showing cumulative customer profitability; customers are ranked from most profitable to least profitable and profitability is expressed either in amount or percentage of a company's total profit.

REFERENCES

Alger, Mike. June 2003. Managing a Business as a Portfolio of Customers. *Strategic Finance*.

Cokins, Gary. 2003. *Are All Your Customers Profitable to You? SAS White Paper*.

Cokins, Gary. 2006. *Implementing Activity-Based Costing*, IMA Statement on Management Accounting, Institute of Management Accountants.

Cokins, Gary. 2008. *Why Don't Companies Measure Customer Profitability?* SAS Weblog, http://blogs.sas.com/cokins/index.php?/archives/73-Why-Don't-Companies-Measure-Customer-Profitability.html

Epstein, Marc J., Michael Friedl, and Kristi Yuthas. December 2008. Managing Customer Profitability. *Journal of Accountancy*.

Johnson, Lauren Keller. 2006. Best Buy: Putting Customers First – with the BSC. *Balanced Scorecard Report*, Harvard Business School Publishing Corporation.

Kaplan, Robert S. and V.G. Narayanan. May 2001. *Customer Profitability Measurement and Management*. Harvard Business School Publishing Corporation.

Kaplan, Robert S. July–August 2005. Add a Customer Metric to Your Balanced Scorecard. *Balanced Scorecard Report*. Harvard Business School Publishing Corporation.

Kaplan, Robert S. and Steven R. Anderson. November 2004. Time-Driven Activity-Based Costing. *Harvard Business Review*.

Kaplan, Robert S. and Steven R. Anderson. July 2003. *Drive Growth with Customer Profitability Management*. White Paper, Acorn Systems.

Norton, David P. and Sir Richard Heygate. July 2005. Putting Customer Understanding at the Heart of Your Strategy. *Balanced Scorecard Collaborative*, Article Reprint B0507C, Harvard Business School Publishing Corporation.

Pfeifer, P.E., M.E. Haskin, and R.M. Conroy. Spring 2005. Customer Lifetime Value, Customer Profitability, and the Treatment of Acquisition Spending. *Journal of Managerial Issues*.

Rigby, Darrell K., Frederick F. Reichheld, and Phil Schefter. February 2002. Avoid the four perils of CRM. *Harvard Business Review*. Harvard Business School Publishing Corporation.

Searcy, DeWayne L. Winter, 2004. Using Activity-Based Costing to Assess Channel/Customer Profitability. *Management Accounting Quarterly*.

Selden, Larry and Geoffrey Colvin. 2003. *Killer Customers: Tell the Good from the Bad – and Crush Your Competitors*, Penguin Group (USA) Inc. (Previously published in the U.S. as *Angel Customers and Demon Customers: Discover Which Is Which and Turbo-Charge Your Stock*.)

APPENDIX 1. EXAMPLE OF APPLYING THE CPM IMPLEMENTATION FRAMEWORK

The following simple example displays the major elements of the CPM Implementation Framework. This example is taken from the banking and credit union industries.

I. DECISION PHASE

In the decision phase, the value and reasons for pursuing a CPM system are explored, the financial consequences analyzed, and a "go or no-go" decision is made. An important component of this phase is establishing the purpose of the CPM system.

Purpose:

Customer profitability in this example will be used as follows:

1. Use customer profitability to understand customer segment and customer segment behavior
2. Design marketing and pricing programs, customer retention programs, and process changes based on this understanding
3. Measure success of these programs and changes with customer profitability
4. Repeat

Other Considerations:

- Financial and personnel resources required to implement and maintain a CPM system
- Benefits expected and targets to measure success
- System options that meet primary purposes, IT resources, and other constraints

II. FOUNDATION BASICS

In the foundation basics, the cost object is established and the customer, product, and delivery channel are defined. Also determined are the profitability principles and methodologies and how difficult accounting issues will be handled.

In this example a bank offers two products (service lines) and uses four activities with two channels to deliver those products (service lines) to its customers.

Cost Object:

The customer account (e.g., a checking account, a car loan account, a savings account, a mortgage loan account)

Two Products:

- Loan product (such as auto loan)
- Deposit product (such as checking account)

Four Activities:

- Open a deposit or loan account
- Make a deposit to a deposit account
- Make a withdrawal from a deposit account
- Make a payment on a loan account

Two Delivery Channels:

- Branch
- ATM (Automated Teller Machine)

III. TRANSACTION DATA

In the transaction data phase, the cost object data needed is designed and sourced primarily—if not entirely—from existing IT systems. The products, activities, and delivery channels defined above are dependent on whether the data to support them is, or can be made, available. On the other hand, the products, activities, and channels defined above determine the transaction data to seek out and source. The foundation basics and the transaction data are completely interdependent.

Required Transaction and Financial Data for the Cost Object (Customer Account):

- Date account is opened (new account)
- Number of deposits by delivery channel for the account
- Number of withdrawals by delivery channel for the account
- Number of loan payments by delivery channel for the account
- Account balance, account interest, and account fees

See the chart on the following page.

IV. CUSTOMER COSTS

In the costing phase, the general ledger financial data is transformed into cost pools and then cost driver rates using the transaction data provided above for the cost object, products, activities, and delivery channels defined in the foundation basics.

This example uses four steps to develop customer costs:

a. Arrange general ledger expenses into departments where activities occur and resources are consumed.

b. Derive the activity cost pools in each department that will be used to calculate cost driver rates.

c. Divide each department's activity cost pool by its total number of transactions (activity driver) to yield the cost driver rate.

d. Combine the departments' cost driver rates into the total cost driver rate to apply to the cost object.

See the chart on the following page.

COST OBJECT DATA FILE

ACCT NO	PROD	NAME	ACCT BALANCE	INTEREST INCOME OR (EXPENSE)	FEES	OPENED THIS MO. (1 OR 0)	NO. DEPS@ BRANCH	NO. DEPS@ ATM	NO. DEPS@ BRANCH	NO. DEPS@ ATM	NO. PMTS@ BRANCH	NO. PMTS@ ATM
101	Deposit	Customer 1	$ 1,500	$ (4)	$ 15	0	1	3	1	0	n/a	n/a
102	Deposit	Customer 2	$ 15,250	(38)	35	1	3	0	2	0	n/a	n/a
103	Deposit	Customer 2	$ 1,135	(3)	15	0	0	4	0	1	n/a	n/a
201	Loan	Customer 1	$ 10,000	67	–	0	n/a	n/a	n/a	n/a	1	0
202	Loan	Customer 2	$ 35,000	233	–	1	n/a	n/a	n/a	n/a	1	0
...	...	...	...	...	...	...	...	...	...	...	...	...
Total Bank			$99,500,000	$3,325,000	$1,125,000	125	5,120	9,580	4,899	859	2,000	500

a. **Arrange the General Ledger Expenses into Departments.**

CORPORATE ANNUAL GL EXPENSES	BRANCH	ATM	SUPPORT	SUSTAINING	TOTAL BANK
Salaries	$ 250,000	$ 50,000	$ 315,000	$ 200,000	$ 815,000
Facilities	125,000	45,000	125,000	75,000	370,000
Equipment	50,000	25,000	52,000	5,000	132,000
Supplies	25,000	15,000	35,000	2,500	77,500
Other	15,000	5,000	45,000	10,000	75,000
Total Department	$ 465,000	$ 140,000	$ 572,000	$ 292,500	$ 1,469,500

b. **Derive the Department Activity Cost Pools.** Transforming general ledger expenses into useful activity cost pools can take many forms using many approaches. A simple ABC approach is used here, where the department's percentage of resources devoted to each activity is estimated. The example assumes the four activities defined in the foundation basics consume 100% of the bank's expenses except for corporate sustaining expenses.

	BRANCH		ATM		SUPPORT			
ACTIVITY	PERCENT OF RESOURCES	ANNUAL COST POOLS	PERCENT OF RESOURCES	ANNUAL COST POOLS	PERCENT OF RESOURCES	ANNUAL COST POOLS	CORPORATE SUSTAINING	TOTAL BANK
Open Accounts	25%	$ 116,250	n/a		12%	$ 68,640		
W/D @ Branch	35%	162,750	n/a		30%	171,600		
Deps @ Branch	35%	162,750	n/a		30%	171,600		
Pmts @ Branch	5%	23,250	n/a		7%	40,040		
W/D @ ATM	n/a		80%	$ 112,000	15%	85,800		
Deps @ ATM	n/a		15%	21,000	4%	22,880		
Pmts @ ATM	n/a		5%	7,000	2%	11 ,440		
Totals	100%	$ 465,000	100%	$ 140,000	100%	$ 572,000	$292,500	$1,469,500

c. **Divide Each Department's Activity Cost Pools by Its Total Number of Transactions.** The total transactions for an activity performed by all customer accounts are divided into a department's activity cost pool to yield the department's cost driver rate for the activity. Although the total number of transactions performed in a department are used in the calculation, the same activity driver data must be available for each customer account (the cost object), or the cost driver rate is unusable.

	BRANCH			ATM			SUPPORT		
ACTIVITY	ANNUAL COST POOLS	NO. TRANS X 12 MOS	COST DRIVER RATE	ANNUAL COST POOLS	NO. TRANS X 12 MOS	COST DRIVER RATE	ANNUAL COST POOLS	NO. TRANS X 12 MOS	COST DRIVER RATE
Open Accounts	$ 116,250	1,500	$ 77.50				$ 68,640	1,500	$ 45.76
W/D @ Branch	162,750	61,440	2.65				171,600	61,400	2.79
Deps @ Branch	162,750	58,788	2.77				171,600	58,788	2.92
Pmts @ Branch	23,250	24,000	0.97				40,040	24,000	1.67
W/D @ ATM				$ 112,000	114,960	$ 0.97	85,800	114,960	0.75
Deps @ ATM				21,000	10,308	2.04	22,800	10,308	2.22
Pmts @ ATM				7,000	6,000	1.17	11,440	6,000	1.19
Totals	$ 465,000			$ 140,000			$ 572,000		

d. **Combine the Departments' Cost Driver Rates into the Total Cost Driver Rate to Apply to the Cost Object.** To the extent that different departments form the process chain for an activity, the cost driver rates from the departments are combined to arrive at the activity's total cost driver rate.

ACTIVITY	BRANCH	ATM	SUPPORT	TOTAL COST DRIVER RATE
Open Accounts	$ 77.50		$ 45.76	$123.26
W/D @ Branch	2.65		2.79	5.44
Deps @ Branch	2.77		2.92	5.69
Pmts @ Branch	0.97		1.67	2.64
W/D @ ATM		$ 0.97	0.75	1.72
Deps @ ATM		2.04	2.22	4.26
Pmts @ ATM		1.17	1.91	3.07

V. THE BUSINESS ALGORITHMS AND PROFITABILITY INFORMATION

With the completion of the foundation basics, the collection and sourcing of the transaction data, and the derivation of the cost driver rates, the profitability of the customer account (cost object) can now be determined. Before any profitability calculations take place, however, the business algorithms must be developed. Once thoroughly tested, the CPM system will run periodically, usually monthly or quarterly, to generate current customer profitability information and reports.

This example uses a three-step process to determine customer account (cost object) and customer profitability:

a. Calculate the activity costs for each customer account.

b. Calculate the profitability for each customer account.

c. Sum the profitability for each of a customer's accounts into the customer's total profitability.

a. Calculate the Costs for Each Customer Account

		ACCOUNT #101 CUSTOMER 1		ACCT #102 CUSTOMER 2		ACCT #103 CUSTOMER 2		ACCT #201 CUSTOMER 1		ACCT #202 CUSTOMER 1	
	COST DRIVER RATE	NUMBER TRANS-ACTION	MONTHLY COSTS	NUMBER TRANS-ACTION	MONTHLY COSTS	NUMBER TRANS-ACTION	MONTHLY COSTS	NUMBER TRANS-ACTION	MONTHLY COSTS	NUMBER TRANS-ACTION	MONTHLY COSTS
Open Accounts	$123.26	0	$ –	1	$123.26	0	$ –	0	$ –	1	$123.26
W/D @ Branch	5.44	1	5.44	3	16.33	0	–	n/a	n/a	n/a	n/a
Deps @ Branch	5.69	1	5.69	2	11.37	0	–	n/a	n/a	n/a	n/a
Pmts @ Branch	2.64	n/a	n/a	n/a	n/a	n/a	n/a	1	2.64	1	2.64
W/D @ ATM	1.72	3	5.16	0	–	4	6.88	n/a	n/a	n/a	n/a
Deps @ ATM	4.26	0	–	0	–	1	4.26	n/a	n/a	n/a	n/a
Pmts @ ATM	3.07	n/a	n/a	n/a	n/a	n/a	n/a	0	–	0	–
Total Customer Costs*			$16.29		$150.96		$11.14		$ 2.64		$125.90

b. Calculate the Profitability for Each Customer Account

Additional Data Needed for the Profitability Calculations:	
Cost of Funding Loans (Note 1)	6.5% (annual rate)
Earnings Credit on Deposits (Note 1)	6.5% (annual rate)
Loan Loss Provision rate (Note 2)	0.6% (annual rate)
Corporate Overhead Rate (Note 3)	24.9%
Tax Rate	35.0%

PROFITABILITY BY CUSTOMER ACCOUNT

ACCOUNT NUMBER	101	102	103	104	105	201	202	203	204	205
CUSTOMER NAME	CUST 1	CUST 2	CUST 2	CUST 3	CUST 4	CUST 1	CUST 2	CUST 3	CUST 4	CUST 5
PRODUCT	DEPOSIT	DEPOSIT	DEPOSIT	DEPOSIT	DEPOSIT	LOAN	LOAN	LOAN	LOAN	LOAN
Account Balance	$1,500	$ 15,250	$1,135	$ 35,250	$ 215	$10,000	$ 35,000	$ 1,500	$ 500	$ 85,000
Interest Inc or (Exp)	$ (3.75)	$ (38.13)	$ (2.84)	$ (88.13)	$ (0.54)	$ 66.67	$ 233.33	$ 10.00	$ 3.33	$ 566.67
(Funding Cost) or Earnings Credit	8.13	82.60	6.15	190.94	1.16	(54.17)	(189.58)	(8.13)	(2.71)	(460.42)
Loans Loss Provision Exp	–	–	–	–	–	(5.00)	(17.50)	(0.75)	(0.25)	(42.50)
Net Interest Income	**$ 4.38**	**$ 44.48**	**$ 3.31**	**$ 102.81**	**$ 0.63**	**$ 7.50**	**$ 26.25**	**$ 1.13**	**$ 0.38**	**$ 63.75**
Fees	15.00	35.00	15.00	10.00	35.00	–	–	25.00	–	–
Total Revenues	$ 19.38	$ 79.48	$ 18.31	$ 112.81	$ 35.63	$ 7.50	$ 26.25	$ 26.13	$ 0.38	$ 63.75
Total Customer Costs	16.29	150.96	11.14	44.27	17.12	2.64	125.90	3.07	3.07	2.64
Account Margin	$ 3.08	$ (71.48)	$ 7.17	$ 68.54	$ 18.51	$ 4.86	(99.65)	$ 23.05	$ (2.70)	$ 61.11
Corporate Overhead	4.05	37.52	2.77	11.00	4.25	0.66	31.29	0.76	0.76	0.66
Income Before Taxes	$ (0.96)	$ (109.00)	$ 4.40	$ 57.54	$ 14.26	$ 4.21	$(130.93)	$ 22.29	$ (3.46)	$ 60.46
Taxes	(0.34)	(38.15)	1.54	20.14	4.99	1.47	(45.83)	7.80	(1.21)	21.16
Account Profile	$ (0.63)	$ (70.85)	$ 2.86	$ 37.40	$ 9.27	$ 2.73	$ (85.11)	$ 14.49	$ (2.25)	$ 39.30

PROFITABILITY BY CUSTOMER (TOTAL ACCOUNTS BELONGING TO CUSTOMER)

CUSTOMER NAME	CUST 1	CUST 2	CUST 3	CUST 4	CUST 5	CUST 6	CUST 7	CUST 8	CUST 9	CUST 10
Total Revenue	$26.88	$ 150.16	$176.56	$36.00	$ 48.90	$ 31.79	$ 13.83	$86.56	$ 156.68	$45.85
Total Customer Costs	18.93	291.07	46.91	20.19	295.08	36.33	20.55	54.62	332.35	37.65
Account Margin	$ 7.95	$ (140.91)	$129.65	$ 15.81	$ (246.18)	$ (4.54)	$ (6.71)	$ 31.95	$(175.66)	$ 8.19
Corporate Overhead	4.70	72.33	11.66	5.02	73.33	9.03	5.11	13.57	82.59	9.36
Income Before Taxes	$ 3.24	$ (213.24)	$118.00	$ 10.79	$ (319.51)	$(13.56)	$(11.82)	$ 18.37	$(258.26)	$ (1.17)
Taxes	1.14	(74.63)	41.30	3.78	(111.83)	(4.75)	(4.14)	6.43	(90.39)	(0.41)
Customer Profits	$ 2.11	$ (138.61)	$ 76.70	$ 7.02	$ (207.68)	$ (8.82)	$ (7.68)	$ 11.94	$ (167.87)	$ (0.76)

Note 1: Banks and credit unions use a management accounting technique called funds transfer pricing (FTP) to account internally for the capital benefit or capital cost of deposit and loan balances. Banks pay interest on deposit products (interest expense), but the funds so raised have a benefit to the bank and, therefore, earn an internal credit for funds provided. Banks are paid interest on loans extended to their customers (interest income), but the funds so used have a cost to the bank and, therefore, are assigned an internal cost of funds charge. In this simple example, only one funding credit rate and one funding charge rate are used, but in reality these rates will vary by the expected maturity of the account.

Note 2: Loan products are charged a provision for loan loss expense to account for the risk of default, similar to an insurance premium (calculation is loan balance x provision for loan loss rate). In this simple example, only one Loan Loss Provision rate is used, but generally this rate will vary by product risk, the individual customer risk (e.g., credit score), total bank exposure to this customer, and other factors.

Note 3: Derivation of the Corporate Sustaining Rate:

Total Expenses without Corporate Sustaining Expenses:	$1,177,000
Corporate Sustaining Costs:	$ 292,500
Corporate Overhead Rate:	24.9%

VI. STRATEGIC INTEGRATION

Due to the simplified and limited data in this example, arriving at any strategic initiative—such as a customer retention program—would be based on a one-period snapshot of only a few customers. Refer to the discussion of strategic integration in the SMA text for further details.

APPENDIX 2. TECHNICAL CONSIDERATIONS FOR THE MANAGEMENT ACCOUNTANT

Building a CPM information system will require considerable technical support. It is natural to leave the technical aspects of the system to the experts—the information technology team. That would be a mistake. The technical experts know information systems and database structures, but they need to know exactly what to build into the CPM system. For that, they depend on the management accountant.

This appendix discusses some technical considerations for the management accountant building a CPM system. The involvement of the management accountant in these technical concerns will vary by company and whether an internal or outsourced system option is chosen.

SELECTION OF THE COSTING AND PROFITABILITY SYSTEMS

While the IT team will decide the most appropriate technical approach given the company's computing resources and technical abilities, the management accountant will provide the CPM system specifications and requirements—what it is that the system must do. The system specifications and requirements are established in the foundation basics, customer costs, and transaction data phases. The management accountant should ensure that the databases, calculation engines, and hardware chosen by the IT team meet these requirements.

SOURCING DATA

The management accountant should actively assist the IT team in designing the sourcing of data from the core application systems. This includes what data to source, any manipulation or pre-processing of the data prior to loading, where to load the data in the CPM database, and any production requirements (e.g., monthly by the fifth business day).

A critical step is the selection of the database fields in the core application systems (or data warehouse) that will be sourced to the CPM database. The descriptions of core application database fields are stored in data dictionaries, which define the structure of the core application databases and all of their tables and fields. Unfortunately, data dictionaries are cryptic and often out of date, and CPM system specifications are seldom perfect. IT technicians will likely fill in any blanks between the two with their own ideas. Although the IT technicians mean well, active management accountant involvement in this process will avoid erroneous IT assumptions creeping into the CPM design.

A word of caution on the manual collection of sourced data and manual system processes, which should be strongly discouraged. Manual data collection and manipulation is prone to delays and errors—the biggest problem being errors. Automation of all data sourcing and all system processes will go a long way to ensure the CPM system's sustainability and repeatability.

DATA TABLES

At its core, CPM system is a relational database that uses various database tables (or files) and fields (or columns). The structure of every table must be documented, defining the table's fields, field names, type and length of data in each field, and order of the fields. The relationships of the tables within the database must also be defined. This documentation is generally provided by the IT team as part of the system design. The management accountant should become familiar with the system design documentation and ensure it meets the needs defined in the foundation basics, costing, and data phases.

The management accountant will likely provide and maintain the constants in parameter and reference tables. Parameter and reference tables are lookup tables that provide variables and constants to the profitability calculation engine. The funding cost interest rate on accounts receivable balances, for example, would be stored in a parameter table.

PRE-PROCESSING OF DATA

Manipulating cost object data before it is loaded reduces complexity within the CPM calculation engine and speeds processing time. Simple calculations on cost object data in the core application systems as data is extracted should be encouraged whenever possible. Those on the IT team building the data-extract programs may discourage this on the premise that their extract design will be simpler if these calculations occur within the CPM database. Long-term, it's better to perform simple pre-processing calculations in the data-extract programs before data is loaded into the CPM database.

For example, an activity driver with several different types (such as color) may be available in the core application system, but if the business algorithm uses the activity driver's total transaction count and not its count by type (by color), then the activity driver's total transaction count should be calculated and loaded into the CPM database and not counts for each of its myriad types (colors). This reduces the size of the CPM database and eliminates the need for the calculation engine to sum the activity driver's type counts into the activity driver's total transaction count.

SEQUENCING THE BUSINESS ALGORITHMS

The profitability calculation engine must execute the business algorithms in a specified order, referred to as sequencing or scheduling. Larger profitability systems generally use some sort of rule-scheduling software, such as mainframe or mid-range computer scheduling packages. Smaller CPM systems are generally designed for linear execution.

The execution sequence for the business algorithms will be provided to the IT team by the management accountant. It's best to establish the sequencing of the business algorithms as they are designed and documented. Although an incorrect sequencing of the algorithms can be fatal to profitability results, thorough testing of the costing and CPM systems should uncover these mistakes.

Larger profitability systems that use scheduling software are provided an advantage through the flexibility such software offers to rearrange algorithm execution based on production constraints. Sophisticated scheduling software will maintain the dependencies of the business algorithms while it rearranges their execution based on the receipt of core application data or other considerations.

DOCUMENTING BUSINESS ALGORITHMS

The management accountant will carry the burden of documenting the business algorithms and all business logic. The IT team will use established documentation policies and procedures to document the IT side of the CPM system. This will include the relational database design, but it will generally exclude the business algorithms and profitability logic. Consider the similarity with Excel, where the documentation on how Excel works is voluminous. Yet any spreadsheet designed in Excel that will be used by others should have its calculations and formulas documented.

The hundreds of costing and business algorithms are complicated, and their relationships to the sourced data tables and fields add to the complexity. Proper documentation will ensure the soundness of the business algorithms and their sequencing and will provide an invaluable aid for system maintenance, system upgrades, and system testing. An example of documenting business algorithms and their dependencies is provided in **Exhibit 12, Business Rule Documentation**.

SYSTEM MAINTENANCE, UPGRADES, AND REFINEMENTS

Once in production, the CPM system will require ongoing maintenance and occasional upgrades and refinements. The commitment of resources required to keep the CPM system in production should be considered and budgeted during the system's decision phase.

Maintenance of the CPM system requires constant diligence. Changes in core application or GL systems that provide data to the CPM database must be considered and, if necessary, adjustments to the costing and CPM systems made and tested. All CPM hierarchies established in the foundation basics must be kept current, such as the product, delivery channel, and customer hierarchies. Likewise, reference and lookup tables must be kept current and error-free.

Customer profitability and costing systems, whether purchased or internally developed, will have software upgrades requiring installation and testing. Refinements to the system will also be required when processes affecting the profitability calculations change or data not available before can now be sourced. Any refinements must be designed, documented, implemented, and tested.

EXHIBIT 12. BUSINESS RULE DOCUMENTATION

RULE	RULE NAME	RULE DEPENDENCE	METHODOLOGY	TABLE.FIELD	SOURCE
Sales Revenue	SALE_REV	None	+ Online Sales Discounts + Catalog Sales Discounts + Sales Force Discounts = Total Sales Discounts	SALES.SALESTR SALES.SALEONL SALES.SALECAT SALES.SALEFRC CUSTOMER.TOT_SALES	Core App Core App Core App Core App Calculation
Sales Discount	SALE_DISC	None	Store Sales Discounts + Online Sales Discounts + Catalog Sales Discounts + Sales Force Discounts = Total Sales Discounts	SALES.SALESTRDISC SALES.SALEONLDISC SALES.SALECATDISC SALES.SALEFRCDISC CUSTOMER.TOT_DISC	Core App Core App Core App Core App Calculation
Past Due Interest Income	PAST_DUE_ INTINC	None	Past Due Balance x Number of Days Past Due x Past Due Interest Rate Per Day = Past Due Interest Income	SALES.SALESTRDISC SALES.SALEONLDISC SALES.SALECATDISC SALES.SALEFRCDISC CUSTOMER.TOT_DISC	Core App Core App Lookup Calculation
Past Due Funding Cost	PAST_DUE_ INTEXP	PAST_DUE_ INTINC PAST DUE_ INTEXP	Past Due Balance x Number of Days Past Due x Past Due Interest Funding Cost Per Day = Past Due Interest Funding Expense	SALES.PASTDUEBAL SALES.PASTDUEDAYS CONSTANTS.PAST_DUE_ EXP_RATE CUSTOMER_INTEREST_ EXPENSE	Core App Core App Lookup Calculation
Past Due Net Interest	PAST_DUE_ NETINT	SALES_REV SALES_DISC PAST_DUE_ NETINT	Past Due Interest Income – Past Due Interest Funding Program = Past Due Net Interest Income	CUSTOMER_ INTEREST_INCOME CUSTOMER_ INTEREST_EXPENSE CUSTOMER_NET_INTEREST	Calculation Calculation Calculation
Total Revenue	TOTAL_REV		Total Sales – Total Sales Discounts + Past Due Net Interest Income = Total Revenue	CUSTOMER.TOT_SALES CUSTOMER.TOT_DISCOUNT CUSTOMER.NET_INTEREST CUSTOMER.TOT_REV	Calculation Calculation Calculation Calculation

Every record in the database is processed through each bsiness rule before proceeding to the next business rule.