
Managing your Cost-to-Serve

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Companies must understand individual customer profitability and select the services they propose. The increased focus on asset performance makes a focused approach to the market even more important. Managers need tools to understand the cost dynamics of the various customers and channels they serve. This article presents a method that will permit companies to take control of their Cost-to-Serve.

COMPANIES MUST UNDERSTAND HOW TO SERVE THEIR BEST CUSTOMERS AT A SUSTAINABLE ECONOMIC PROFIT

As the industrial economy matures, businesses are being forced to adapt their products to individual customers' requirements, and to provide more and more services in the package they sell their customers. Those that have embraced these trends have been rewarded with superior growth and profitability. The General Electric division that manufactures aircraft engines has grown both hardware sales and overall profitability by taking a full service approach in the support of the products they sell to Airlines. GE will install the engines at the aircraft manufacturer, and will provide maintenance and refurbishing services as the engines are used. They tie-up the spares after-market, and have first-hand knowledge of any technical problems as soon as they become apparent in use. Of course, this strategic approach is obvious in hindsight: GE has few customers (all airlines and aircraft maintenance facilities), a narrow product line (all jet engines still in civilian use), and a captive market (several other worldwide players exist, including England's Rolls Royce and France's SNECMA.)

As compelling as this story, any many like it, is, in this era of segmentation and specialization, being all things to all customers is no longer reasonable. In research reported in Canadian Data Warehouse News in November 1998, 50% of your customers

typically represent up to 95% of your revenue, and close to 100% of your profits. This type of analysis must be extended to include future potential of these customers, and then their attractiveness to your business. Then, the demanding, deal-conscious and fickle customers (the "switchers", or "incorrigibles," sometimes more than half your customer base) should be "fired," before they can waste more of your resources for business that has no future. The loyal, well-informed customers that are ready to pay full price for the value you provide, are to be courted and pampered - they are your core customers. These customers have been called the "Gold-Standard" customers, typically 5%-25% of your current customer base, and they have already adopted your company's value proposition. They also know the power they wield with your organization, even if you do not.

The "potentials" or "patrons" are where your future growth will come from, and may be 30%-40% of your customer base. They buy your products, but can be swayed from "a show me the best price" to "how can you serve me better?" approach to your company and its products. The challenge for Marketing and Sales is to know the difference between a "switcher" and a "potential."

This is a significant challenge in itself, but the current context of product proliferation makes it even more important to get the product mix just right for your "Gold Standard" customers, and to ensure that you are reaching them through

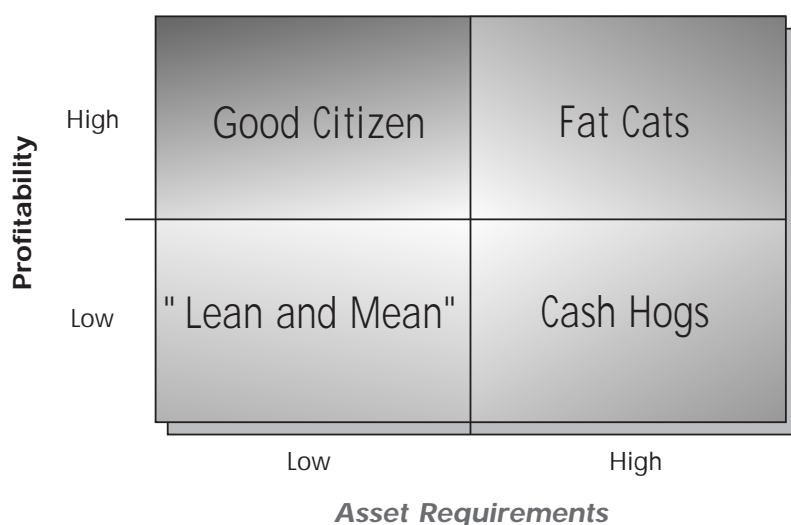
the channel they prefer to use today and in the internet-wired tomorrow. Each of these channels poses specific logistics challenges, and the weakest performers are being weeded out, relegated to a marginal, if any, role in the supply chains of the buyers. Wall Street and the demands for investment performance throw a stark backdrop on an already grim outlook for consumer driven business today. Managers need tools to understand the dynamics of this new world, and to determine how the organization should chart its best way forward.

The case study company sells durable consumer goods and spares through traditional mass merchandisers and grocery channels, but also through a distributor channel. The analysis of a customer specific cost-to-serve model is the ideal tool for tracking total customer-specific spend and identifying action required to ensure the profitability of every customer relationship. Each will receive, and in some cases demand, varying levels of support from the organisation. The top 20 Customers (some 2/3 of sales) were categorized according to their economic value to the business:

(eg volume, breadth of range, promotional prices) are subtracted to a net invoice amount. Most invoicing systems will provide this data directly from standard reports. To this sum, any extra service charges (e.g. special markings, delivery charges, in-store inventory placement, urgent order charges) should be added. Any sales or excise taxes should be excluded from this part of the analysis, but will obviously be considered as part of total receivables.

Trade spending is often not examined very closely on a customer by customer basis, under the assumption that it is the result of a strategic corporate decision applied equally to all customers, according to a very clearly laid out set of company guidelines and policies. The truth is that although such policies are in place, the execution in the marketplace is rarely uniform across the customer base. In fact, looking at trade spend only through the aggregated line items of the company's P&L will mask significant proportional cost differences between customers. The underlying cause of trade spending inequality among customers is the multitude of spend buckets that have evolved and made available to the revenue-motivated sales force competing for the customers' share of business. In reality, this translates into battles between salesmen in your company to get the lion's share of your trade spend for their customer.

The large number of spending options is required to achieve different objectives with customers. For example, merchandising and coop advertising allowances are intended to increase lift through promotional activity; performance spending and listing allowances are also for increasing lift but through increased and improved positioning on the customer's shelves. There are also claims and returns meant to decrease the customer's risk in carrying the company's products and distribution allowances to offset the customer's logistics costs. Some trade spend is in place



The subject of this article will be how to determine the amount of profit and wealth each customer and channel is contributing, and how far from your core value proposition you can afford to go to recruit your future "Gold-Standard" customers. This will enable you to recognize your wealth creators, and how to develop them. The approach is solidly grounded in Activity Based Costing (ABC), and draws on Economic Value Creation (EVC), a recent tool devised to reflect the cost of capital tied up in operations, and to broaden the logic of enterprise profit to include the need for a return on capital employed. The customer specific costs that will be considered will include Sales and Marketing expenses, Logistics and Distribution expenses, and collection expenses, and Financial expenses such as dedicated plant, property and equipment (PPE), inventories, and receivables.

Cash Hogs: low profit with high requirements for financing, rarely customers you want to keep.

Lean & Mean: low profit, but low asset requirements.

Fat Cats: Highly profitable, but requiring heavy financing.

Good Citizens: High profit and low assets tied-up, typically your "Gold Standard" customers.

Sales & Marketing Expenses

These expenses include the trade spend and discounts that are directed to the particular customer, as well as the selling expense incurred to sell to this account. Before this analysis can be performed, it is necessary to determine the net Face-of-Invoice (FOI). Typically, this starts with the catalogue price extended by the quantity invoiced. From this theoretical gross invoice, all invoice deductions and discounts

in response to continuing pressures on prices. Bonus or extra goods and deductions give the sales force the flexibility to negotiate on price. Terms of sale also offer flexibility around price to some extent, but are primarily intended to modify the customer's ordering and payment behaviour. Each customer will pressure the organization differently for spending dollars as their preferences and demands are influenced by their unique strategies, policies, systems and even individual personalities.

Policies and guidelines are designed to control how each available trade dollar is spent, however, there are rarely policies in place for controlling total spending with a given customer! With such a wide array of possible ways to claim money from the organization, customers (often with the help of your company's own sales organization) can be very creative at structuring their business relationship so as to minimise their 'net net' price by bending or breaking the rules governing trade spend.

Trade spend can vary from 5% to 10% of sales in some organizations and therefore demands close attention and customer-specific measurement. The work required to process these expenses will be discussed in later sections.

Merchandising allowances are cash given to customers in return for in-store merchandising performance. This is typically associated with special pre-packs or other programs such as manufacturer's coupons requiring the participation or assistance of the retailer. These allowances are factored into the cost of programs being implemented with the customer and are often tracked and measured only against performance on a program by program basis. Because this money is not specifically assigned to a customer there is a tendency to only view it as a marketing expense. As such it may at best be allocated to customers on their total sales, with no good tracking of the actual activity or effort from the customer on this particular program.

Coop Advertising allowances are paid to participate in customer advertising initiatives. The money is usually in proportion to the number and prominence of the supplier's product(s) in the advertising initiative. Weekly distributed or in-store flyers are the most common form of store advertising however internet banners, radio and TV spots are also used extensively. These allowances may be granted against specific customer initiatives such as the publishing of catalogues, or may be negotiated as a continuing (usually fixed sum) payment in the case of regular ongoing customer initiative such as weekly flyers. All customers will differ in the type, frequency and reach of their advertising initiatives. Customer-specific spending should vary accordingly - just as you would seek a Cost per Thousand (CPT) for your target audience in traditional media advertising. However, it is not sufficient to simply track the spending by customer; the lift or revenue increase generated by the specific advertising vehicles offered by the customer should be measured and evaluated to ensure a positive return for the company's participation.

Performance spending is payment to the customer in return for specified activity around particular items or brands. This activity can take the form of things such as preferred and/or increased in-store positioning, special display locations, end-isles etc. Some retailers levy a premium for preferred in-store locations and by paying a performance bonus, and suppliers are able to secure preferential in-store placement for some or all of their products. This type of spending is often made available to the sales force as a way to assist them in securing optimal 'performance' from the retailers. Significant inequality in the allocation of this money among customer is typical. Tough customer negotiators who become aware of these funds will force the company's sales people to pay for 'performance' that other suppliers may be getting for free. Less aggressive customers will not demand this money, so this is often an easy way for the salesman to sweeten a deal with a tough buyer.

Display Allowance for display stands are developed, manufactured and delivered to get front-of-store presentation of merchandise where a manufacturer is able to increase control of the check-out or other key store areas. These stands or racks are designed to present the manufacturer's products in an optimal way, and to boost sales often through impulse buys. For the purposes of determining customer profitability it is very important to capture and allocate all costs incurred in the development of the stands. The design, build and delivery is usually outsourced to a third party, which makes these variable costs easy to capture and allocate, but there are also creative costs incurred by the manufacturer as well as inventory, storage and management costs associated with these programs. These might be allocated on an overhead cost per display.

Listing Fees: Some large customers, particularly in the grocery industry, require manufacturers to pay a listing fee for each SKU that is put on the retailer's shelves. The rationale is that there are expenses and risks for the retailer to stock new products, and these are plethoric and far from guaranteed success in the marketplace (in 1997, thousands of new products were launched in the US alone - it is estimated that 80% will be discontinued within a year). These fees must be assigned to the customer's profitability model. With suppliers who offer the retailer a large number of SKUs, some of which may be changing regularly due to new packing or promotions, there is the possibility to negotiate lower fees or to secure some 'performance' (see above) from the customer in exchange.

Claims refers to either warranted or unwarranted claims made by customers. Different customer behaviours are reflected in this account. It is not uncommon for retailers to take deductions for discounts that have not been earned (e.g. early payment or minimum volume thresholds) and reflect them in their payment of invoices. This may be "approved" on a case by case basis with the

knowledge of the sales representative, however continuous abuse or never meeting the requirements for the discounts taken, must be highlighted and addressed. These are sometimes used as a pretext to defer payment of invoices, and stretch payment terms. This aspect will be illustrated in a later section.

Returns: Most organizations have a Returns policy designed to add a certain level of guarantee to the products being shipped. The most common form of returns is for damaged or expired goods (if applicable) but under certain agreements it may also include goods unsold over a specific period of time. It is important to look at the patterns and amounts of returns for each major customer. The reason for this is the possibility of abuse by the sales organization or by customers. Although loading is a diminishing activity for most manufacturers, there may still be a tendency, on occasion, to oversell the customer or for the customer to overbuy to reach certain volume thresholds, before a price increase, at the end of a promotion, or at the end of a quarter. This may be reflected in decreased sales for the following period(s) and/or an increase in returns.

Distribution allowance is payment for logistics costs incurred by the customer. These vary greatly between customers and may be given in exchange for anything from warehouse pick-up and transportation costs to cross-docking and store delivery services through the customer's warehouse and fleet. As will be outlined in the discussion of logistics expenses, there is a large discrepancy among the logistics costs for each customer. When looking at customers who do not appear to have very high logistics costs, it is important to note if they are being subsidised by a distribution allowance. Demanding customers may be getting a great deal of logistics support from the logistics function and at the same time claiming distribution allowances.

Bonus or extra goods expenses are in place to cover situations where rather than conceding a price

decrease, the customer is given extra merchandise. This item is a tool used by the sales force to decrease the per-unit price to the customer in order to either move more inventory or to compete on price. This is typically not a large item on the customer's profitability model but should be monitored nonetheless.

Tip: This merchandise should be valued at dock cost of goods, or if the supply is constrained, at the price the company could realize (opportunity cost).

Terms of sale refers to all the discounts applied to an invoiced amount in return for prompt payment. The monitoring of this expense takes place in two areas of the customer profitability model. Firstly the actual discounts taken are measured in the trade spending section where the amount of deductions for prompt payment is tracked for each customer. Secondly, as will be discussed later, monitoring and costing the accounts receivable for each customer will highlight the costs of their payment habits.

Sales Expenses

Many companies do not know the cost of a sales call, and do not measure the success rate, or conversion, of leads to customers, so that their sales expense is effectively a mystery and "necessary evil." It need not be so - it is relatively simple to allocate a salesman's costs (salary and benefits, office, management and support staff) and expenses (car, travel and entertainment, year-end gifts, etc.) to the business managed. The same can be done for inside sales representatives, and for personnel hired to help keep the shelves stocked in the store at the manufacturer's expense. This type of exercise will

Tip: If the salesman spends a lot of time on the road in a distant territory, the time (and expense) driving to the first client of the day should be spread over all clients visited during that trip (on the basis of number of meetings, or total meeting time, for example). This will avoid loading the first client of the day unfairly. Use % of total time to level out the long hours some people in sales will work. Sales & Marketing magazine gives the average cost of a sales call in the U.S. at \$157, with variations of \$119 (transaction) to \$239 (value-added) depending on the type of sales, and \$91 (retail) to \$218 (manufacturing) depending on the type of client, for an average of 15.5 in-person sales per week.

require an estimation of how much time is spent getting to, and meeting, with each customer.

Marketing Expenses

The remaining marketing expenses are often easily allocated by channel if the work is predominantly related to a specific channel (channel market manager and staff, channel program development, trade advertising), or can be allocated on the basis of sales through each channel on case volume, or gross sales (e.g. general advertising).

Logistics and Distribution Expenses

The Supply chain, or the logistics functions of the many companies that deal with product as it is extracted, transformed, manufactured, assembled, configured, delivered, installed and used, controls big costs (as much as 10.7% of 1997 GDP in the U.S.) and ties up a lot of assets (up to 70% of the balance sheet by some estimates). Deploying these properly is a major source of organizational alignment and will drive success of your chosen strategy throughout the company. Many of your suppliers and customers have made the same realization, and have fobbed-off activities they no longer wished to perform (inventory management - VMI, or warehouse operation - JIT/CRP, to name but two,) onto others - often to you! The time is now ripe to determine if you wish to continue to provide these services, and whether you are being adequately remunerated for them.

Order Management/Processing

Customers place varying degree of demands during the lifecycle of the order from the initial order request to answering inquiries after the product has been delivered. Loyal

Customer Profitability Model for customer x	Division A		Division B		Division C	
	\$	%	\$	%	\$	%
Gross Sales	6,747,874		6,470,268		806,912	
Trade Discounts	0		131,499		0	
Returns	2,798		58,951		0	
Cash Discounts (Earned/uneared)	15,961		34,634		7,420	
Net Sales	6,729,404	100,0	6,130,967	100,0	799,492	100,0
Cost of Goods Sold	1,963,438	29,2	2,566,227	41,9	223,333	27,9
Gross Margin	4,765,678	70,8	3,564,741	58,1	576,159	72,1
Trade Spend:						
Off-Invoice Discounts	328,883	4,9	0		15,313	1,9
Contract Pricing	0		0		45,652	5,7
Co-Op Advertising	219,378	3,3	0		44,922	5,6
Performance Spend	41,664	0,6	25,843	0,4	12,916	1,6
Account Specific Floater (Off Invoice)	0		48,346	0,8	0	
Performance Spend	79,353	1,2	64,122	1,0	5,239	0,7
Display Allowance	0		1,822	0,0	0	
Other	0		52,709	0,9	0	
Brand Approved Promotions	54,645	0,8	0		0	
Prepacks/special Packs/Bonus	1,834	0,0	0		0	
Coupons	0		0		8,898	1,1
Display Stands	0		296,872	4,8	0	
Total Trade Spend	725,757	10,8	489,714	8,0	138,340	17,3
Selling Expenses:						
Account Managers	57,500	0,9	95,875	1,6	24,000	3,0
Retail Calls (taking orders @ store)	95,000	1,4	197,500	3,2	0	0,0
Display & Merchandasing	0	0,0	5,395	0,1	0	0,0
Trade Marketing	0	0,0	1,250	0,0	0	0,0
Trade Show Fees	5,179	0,1	5,000	0,1	0	0,0
Total Selling	157,679	2,3	305,020	5,0	24,000	3,0
Sales & Marketing Profitability	3,882,242	57,7	2,770,007	45,2	413,819	51,8

customers (“Gold Standard”) who know your products and organization will rarely hog your support staff’s time, although they do know your weak points and how to get their demands catered to. Customers who are unfamiliar (“potentials”) with your products will need more “handholding” until they have enough experience to cope by themselves. “Anything for a Buck” customers (“switchers”) will often remorselessly and repeatedly tie up your customer service people with their unreasonable demands. These variations of service required will impact the cost, and hence the profitability of each customer. This section will describe the three steps to identify, collect, calculate and monitor the cost of order management on an individual customer or channel basis. Determining the order management activities: the order management team is interviewed to determine what tasks these employees perform. After the results have been collated, a workshop is conducted to cull the 30 or so tasks into a more manageable set of

activities. The workshop environment provides a forum of discussion and negotiation which results in the declaration of a small set, in this case seven, primary activities that are performed by the order management team. The workshop also provides a venue to establish the cost drivers (the trigger that causes each activity to be performed.) The results of the workshop at our case company are identified in Table 1. At this stage, it is important to remain aware of the materiality of both the absolute expense and the variations between different customers/channels. Thus, if the activity does not incur a large expense, you should not spend too much time

Note: This company grants special prices for exceptional competitive situations. These are agreed with the salesman and/or channel market director. When the customer claims this special price, the CSR must check that proper authorization is in the file. If not, it must be sought from Sales and Marketing.

allocating the drivers and unit time required. Likewise, if all customers require a similar effort from your service staff, a simple allocation such as an average cost per order or per account, may be adequate.

Tip: Remember why you are doing this exercise - developers sometimes build activity based costing models that are intended to provide answers to all questions and consequently create a complex, cumbersome model with a labyrinth of assignments that makes updating a daunting task. By not updating the model, you sacrifice the benefit of timely customer profitability analysis, although 80% of the analysis effort has already been spent.

Establishing the cost per unit for each activity means calculating the effort spent on each activity. A survey is made to establish how much time each Customer Service Representatives (CSR) spends on each activity, by customer or by channel. After a short time, two weeks for our case company, the

Primary Activity	Definition	Cost Driver	Cost Category
Order Processing	Receiving and processing an order by a Customer Service Representative (CSR)	Number of order lines per EDI and non-EDI transaction	Customer
Order Changes	Correcting or changing an order after the order has been entered	Number of order changes	Customer
Tenders and Quotes	Processing price quotations for tenders by Commercial Management	Number of quotations	Customer
Credit Checks	Approving, changing and researching credit status of customers	Number of credit holds	Customer
Price Confirmations	Processing price confirmations requested by Commercial Management	Number of price confirmations	Customer
Order Return Processing	Receiving and processing orders for return product	Number of return authorizations	Customer
Processing Claims	Resolving customer deductions and claims from invoices	Number of adjustments	Customer

Table 1: Order Management Activities and Associated Cost Drivers

CSR team will believe that they have a reasonable collection of results that smoothed out any inconsistencies that might skew the study, and now represents the average annual profile of activity. During this same period, the quantities of activity drivers (e.g. order lines processed) are collected. The time spent divided by the units processed gives the average effort per unit. Significant differences in customer support and order management between channels are to be expected, but if these are between individual customers within a channel, it is frequently not necessary to dive into the customer detail. For several activities (in our example 'tenders and quotes', 'credit checks' and 'price confirmations',) it may not even be necessary to distinguish among channels.

The average cost per activity is calculated by multiplying the effort required by a loaded cost per employee minute, including all costs associated with the customer service department including salaries, benefits, and administrative operating costs. For activities which include effort outside the customer service department, for example 'tenders and quotes' and 'credit checks', the loaded cost per employee per minute in the other departments, multiplied by their effort required, is added to the customer service loaded cost per minute.

While even a cursory analysis of the above data provides much room for further analysis, and

probable improvements (a.g. EDI order processing and changes, returns processing...) the thrust of this discussion will remain on obtaining the output - the cost-to-serve each customer.

Calculating the cost per customer: For each of the key customers, in our example the 20 that take 63% of the sales, the team gathers the output quantities for a base period (4 months in our case company) for the cost-to-serve study. This period must be deemed appropriate by the management team such that it provides sufficient information to identify and learn the trends associated with each customer profitability, without any perceptible seasonal distortions. These output quantities for each customer are then multiplied by the unit cost for each activity resulting in the total cost per activity for each customer. These costs are then

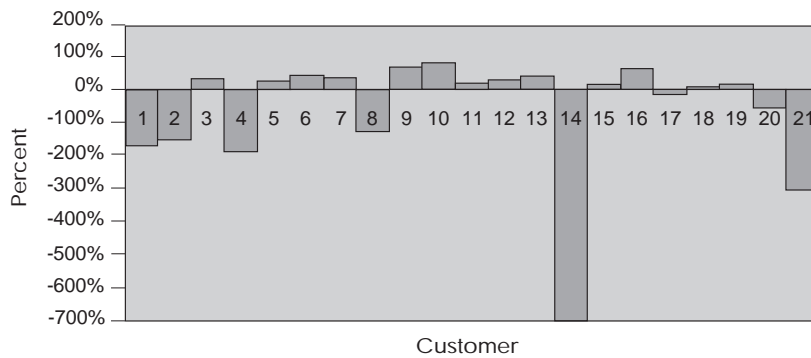
compared to the net sales by customer. The table below illustrates the discrepancy that arises if customer service costs are taken as a simple % of net sales. Several accounts would be unfairly loaded with too much expense (as much as two times more) while a few, most notably "14" would not be seen to be "hogging seven times his fair share." Implicit in this finding is the too common decision-by-default in many companies to let low-service customers subsidize the high-maintenance "howlers."

Physical Distribution

Logistics processes are becoming more complex, in particular as increasing customer demands are being met with specialized programs such as Continuous Replenishment or Vendor Managed Inventory, cross docking, layered and mixed pallets, more frequent

Table 2 : Cost per Unit Output for Order Management

	Channel		
	Retail	Distributors	Spares
Order Processing :			
cost per EDI line	\$ 0,38	\$ 0,62	NA
cost per non EDI line	\$ 0,71	\$ 0,55	\$ 0,67
Order Changes :			
cost per line change	\$ 0,36	\$ 0,67	\$ 1,20
Tenders and Quotes :			
cost per quote	\$ 13,29	\$ 13,29	\$ 13,29
Credit checks :			
cost per credit hold	\$ 5,37	\$ 5,37	\$ 5,37
Price Confirmations :			
cost per price confirmation	\$ 12,75	\$ 12,75	\$ 12,75
Order Return Processing :			
cost per return	\$ 12,66	\$ 5,91	\$ 2,44
Processing Claims :			
cost per claim	\$ 14,23	\$ 11,24	\$ 9,78



Variance between costs assigned by revenue compared to activity drivers

deliveries, special labeling and packaging, and reduced delivery-time windows. Many companies offer these special programs to satisfy their customers without considering what these special programs actually cost. Frequently, Logistics costs are perceived to be too high, and savings garnered through better transportation deals, sharper inventory management and higher warehouse productivity, to name but a few, fail to materialize on the bottom line. Often these savings are being spent on these new programs.

The Logistics and Distribution cost drivers include the following activities and functions:

- Replenishment and Supplier Invoice Processing, inbound product management.
- Distribution Center Receive and Put-Away, inbound product processing.
- Distribution Center Picking and Shipping to the Customer's order.
- Storage Costs, i.e. cost of storing and accounting for inventory.
- Special Packing, to bespoke customer requirements.
- Invoicing and Collection.

- Transportation, from the distribution centre to the customers' premises.

Replenishment and Supplier Payment activities include inventory requirements planning and replenishment, including the processing of supplier invoices. The cost driver for this activity is purchase order lines by channel. The costs associated with replenishing inventory and processing supplier invoices are analyzed by channel as there is no logic to detail by customer. The method used to determine how the resource costs are to be traced to the channel is based on the channel distribution of the top 250 selling products. The number of purchase order lines per product for each item in the top 250 list in the selected period was extracted from the company information systems. The individual products are then assigned to a channel, or channels, and thus a channel weighting is determined based on the purchase order lines, first by product then by channel total. The same logic of the top 250 selling product analysis used to determine the channel weighting according to purchase order lines

will also be used to trace the warehouse storage costs and inventory levels to specific channels when applied to the average inventory by product (see Table 1 Top 250.)

The loaded labor rate is the total loaded labor cost, including benefits and other labor related costs (e.g. company costs of coffee, canteen, etc.) divided by the total number of purchase order lines in the selected period.

A cost per purchase order line for both the Logistics and Accounts Payable departments is calculated by dividing the total costs for the Logistics department and the Accounts Payable department by the number of purchase order lines.

Distribution Center Receive & Put Away activities include receiving product, moving product from receiving point to storage and opening new locations. The cost driver for this activity is again purchase order lines by channel.

Similar to the replenishment and the processing of supplier invoices activities, the receive & put-away activity is channel specific. The total resource cost for this activity is the product of the total number of hours worked in the receive & put-away activity multiplied by the loaded hourly labor rate. The resource cost is then divided by the total purchase order lines to produce a loaded labor cost per purchase order line. The loaded labor cost per purchase order line is multiplied by the specific channel's purchase order lines in order to capture the receive & put-away cost by channel.

Channel	Total 250 Purchases		Total Purchases		Top 250 Purchases		Total Purchases		Top 250 Inventory		Total Inventory		Top 250 Inventory		Total Inventory	Value per Skid
	Value	%	Value	# P.O. lines	%	# P.O. lines	Avg. Value	%	Avg. Value	#Skids	%	#Skids				
Norma	\$9,537,578	30,8%	\$13,126,933	1,503	24,4%	4,775	\$2,641,498	33,2%	\$5,530,811	2,386	40,3%	4,436		\$1,107		
Distributor	\$18,476,685	59,6%	\$25,430,168	4,468	72,4%	14,193	\$4,839,010	60,9%	\$10,131,997	3,225	54,3%	5,996		\$1,500		
Spares	\$1,299,860	4,2%	\$1,789,047	175	20,8%	556	\$381,392	4,8%	\$798,565	210	3,5%	390		\$1,816		
Export	\$1,686,319	5,4%	\$2,320,945	24	0,4%	75	\$83,419	1,0%	\$174,664	95	1,6%	177		\$878		
Total	\$31,000,442	72,7	\$42,667,093	6,170	31,5	19,600	\$7,945,319	47,8	\$16,636,097	5,916	53,8	11,000		\$1,343		

Distribution Center Picking: For the case study company, it was necessary to group the types of orders to be picked into four categories in order to effectively capture the variability amongst the customers as it pertains to the picking & checking of orders. These four categories were:

1. Normal order
2. Normal order on special pallet (CHEP)
3. Distributor order
4. Spare parts order

Interestingly, there was no significant difference between the distribution center costs of the mass merchandisers and grocery channels' orders.

Picking activities include picking goods, checking order, moving goods to loading area, shrink-wrapping skids and loading trailer. A single driver to trace the resource costs to the activity and the activity costs to the customer does not capture the dimensions of the picking activity. Thus, to capture the level of detail necessary, a list of actions is prepared for each type of order to be picked. The list of actions identifies the unique steps involved in picking and checking the particular order. For example, the action list for each order type begins with the action 'pick up orders & read' and finishes with 'close out the paperwork'. Each action identifies the length of time it takes to complete the action as well the variable which drives the action (for instance, the action 'shrink-wrap, weigh and load the trailer' takes approximately 3 minutes and the variable which drives the volume is the number of pallets. The time and driver analysis is determined through discussion and observation with the warehouse personnel (see Tables 2,3, and 4 for model examples for each channel).

It was necessary to determine the percentage of lines picked where the picker had to replenish from an overstock area. This was found to be:

- 15% for a normal order
- 20% for a distributor order (larger quantities per order)
- 5% for a spare parts order

It was necessary to determine the percentage of cases that was picked in full pallets. A sample was analyzed to determine that 60% of cases for distributors are full pallet picks, as are 20% of normal orders. Spares inventory is picked from a mezzanine and from the warehouse racks. Analysis further determined the percentage of lines and cases that are picked from the mezzanine or from the warehouse racks that 60% of auto order lines were picked

Table 2

Normal Order		
Pick up order & read	2'	Order
Get empty pallet	1'	Pallet
Goto pick location	1'	Line
Pick cases	0.1'	Case
Check off, goto new pick location	1'	Line
Drop off pallet	2'	Pallet
Check order	0.25'	Line
Shrink-wrap, weigh & load trailer	3'	Pallet
Close out paperwork	5'	Order

For replenishment, 15% of lines picked require retrieval of new pallet from overstock area

Goto overstock area	1'	Line
Pickup pallet, return & open pallet	1.5'	Line

20% of cases are full pallet picks

$$\text{Picking Time} = (7 * O) + (6 * P) + (2.25 * L) + (0.8 * 0.1 * C) + (0.1 * L) + (0.25 * L) + (3 * P) + (5 * O) + (1 * L) + (1.5 * L)$$

$$= (7 * O) + (6 * P) + (2.625 * L) + (0.08 * C)$$

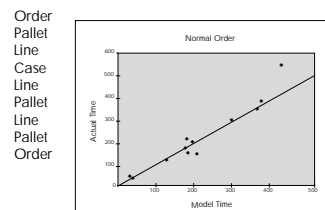


Table 3

Distributor Order		
Pick up order & read	2'	Order
Get empty pallet	1'	Pallet
Goto pick location	1'	Line
Pick cases	0.1' / 0'	Case
Check off, goto new pick location	1'	Line
Drop off pallet	2'	Pallet
Check order	0.25'	Line
Shrink-wrap, weigh & load trailer	3'	Pallet
Close out paperwork	5'	Order

For replenishment, 20% of lines picked require retrieval of new pallet from overstock area

Goto overstock area	1'	Line
Pickup pallet, return & open pallet	1.5'	Line

60% of cases are full pallet picks

$$\text{Picking Time} = (7 * O) + (6 * P) + (2.25 * L) + (0.4 * 0.1 * C) + (0.2 * 2.5 * L)$$

$$= (7 * O) + (6 * P) + (2.75 * L) + (0.04 * C)$$

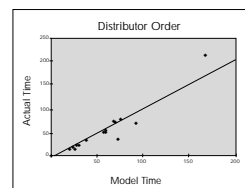


Table 4

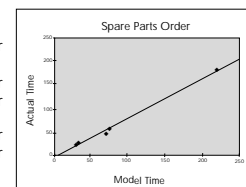
Spare Parts Order		
Mezzanine Picks		
Pick up order & read	1.5'	Order
Get empty boxes	1'	Order
Goto 1st. location	1'	Line
Pick cases/packages	0.1'	Case
Check off, goto new location	0.25'	Line
Take boxes to conveyor	1'	Order
Check order	0.25'	Line
Pack boxes.	2'	Order
Close out paperwork, post & B/L	5'	Order
Warehouse picks		
Get pallet, lead boxes; & take to staging area	5'	Order
Pick up order and read	1.5'	Order
Get empty pallet	1'	Pallet
Goto location	1'	Line
Pick cases	0.1'	Case
Check off, goto new location	1'	Line
Drop off pallet	2'	Pallet
Check order	0.25'	Line
Shrink-wrap, weigh, & load trailer	3'	Pallet
Close out paperwork, post & B/L	5'	Order

For replenishment, 5% of lines picked require retrieval of newpallet from overstock area

Goto overstock area	1'	Line
Pickup pallet, return & open pallet	1.5'	Line

$$\text{Picking Time} = (12 * O) + (0.45 * 6 * P) + (0.6 * 1.25 * L) + (0.4 * 2.25 * L) + ((0.25 * 0.1 * C)) + (0.05 * 2.5 * L)$$

$$= (12 * O) + (2.7 * P) + (1.875 * L) + (0.0625 * C)$$



By providing the number of orders shipped, the number of pallets picked, the number of cases picked and the number of lines picked into the equation, one can determine the total time spent by the picking personnel for each customer. The total time spent on each customer is then multiplied by the hourly loaded labor rate.

By providing the number of orders shipped, the number of pallets picked, the number of cases picked and the number of lines picked into the equation, one can determine the total time spent by the picking personnel for each customer. The total time spent on each customer is then multiplied by the hourly loaded labor rate.

The information systems do not currently capture the number of skids or pallets shipped. Reference was therefore made to the top 250 analysis of inventory, and the average net sales value per skid was calculated by order type. This was used to estimate the number of skids shipped for the above formula. A special value per skid was calculated for one customer as the product mix and allowable pallet configurations suggest that these are significantly lower than the average order.

The *hourly* loaded labor rate is calculated and includes packaging materials. A charge of \$3.50 per pallet is added to accommodate both the rental and transaction charges for CHEP pallets or the cost of purchasing 'disposable' pallets.

Special Packing activities include any sorting, labeling, and repackaging to customer specific requirements. The cost driver for this activity is time spent by customer.

In our case study, a separate department was responsible for these packing activities, and this simplified the capture of these costs. The department's costs are charged to the activities they perform. For example, the majority of their activity is transforming a standard product into another standard product for normal orders (e.g. UPC ticketing.) Thus these costs are included as a standard costs of goods sold.

Loaded salaries for the special packing department are calculated the same way as for the receive & put-away activity. Hours worked for customer specific orders were captured and these hours are totaled by key customer (and by channel) and the totals are multiplied by the warehouse loaded labor rate.

Storage Costs are separated into two categories: Standard Storage where inventory is not dedicated to specific customers, but rather to channels, and Dedicated Storage where inventory is dedicated to a specific customer.

Standard Storage cost is the occupancy cost of stored inventory; costs to include rental, taxes, utilities, security and breakages. The cost driver for this activity is storage cost per palette foot print by channel.

In our case company, a standard charge-out rate is used including rental charges, taxes, utilities and security. Every month the number of skid locations occupied is used to determine the charge for surface. This sum is traced to each channel based on an analysis performed on the amount of skids of the top 250 selling products in inventory using the same distribution logic as that used for the purchase order lines. For instance, if the top 250 selling product analysis indicated that the channel accounted for 40% of the average number of skids in inventory over the selected period, the 40% is multiplied by the period's storage cost to achieve a channel cost for storage (see Table 6).

Included in the detailed storage costs are items such as inventory breakages and insurance costs on the inventory.

Dedicated Storage cost is the occupancy costs that can be tracked to specific customers. Again, the cost driver for this activity is storage cost per foot

print by channel. This method might also be used for Point of Sale promotional materials, or for goods that have been reserved for a specific customer, but cannot yet be delivered.

Invoicing & Collection activities also include the receiving, recording and processing customer payments. The cost driver for this activity is number of invoices by customer.

In addition to the Credit and Collection department's time spent on processing customer claims and assessing the credit status of customers, the department also utilizes part of its time on receiving, recording and processing customer payments.

The time spent by the Credit and Collection department on receiving, recording and processing customer payments is estimated to be approximately 40% of the department's total time. By multiplying the 40% with the department's primary costs, a total resource cost is ready to be divided by the resource driver. In this case, the resource driver is the number of invoices per customer and is readily available from the current accounting system. Thus, a customer total is presented, as well as estimates for the channel total and the company total.

Transportation activities include the physical movement of goods from the distribution center to the customer. The cost driver for this activity is actual costs incurred by freight carrier, by customer as established by a freight auditing service.

Table 6 - Storage Costs - Normal Channel

Storage	\$450,000	←	Storage charge includes rental, taxes, utilities, security, and cleaning
Breakages	\$18,500	←	Inventory Breakages
Insurance	\$1,500		
Total	\$470,000	X 40.3%	Normal channel allocation = \$189,410

↑
Top 250 selling product analysis applied to average inventory by channel

Transportation cost for the specific customer includes the freight invoice and any courier expenses incurred for product delivery to a particular customer. The freight auditing fee of 1.7% is also added to the freight and courier expenses to determine a total transportation cost by customer.

Reconcile to the companies financial statements

At this point in the analysis, it is crucial for the credibility of the entire endeavor to tie totals by channel and for the entire company back to the financial statements that have been used to run the company. Remember to document every assumption and allocation you have made, and this will be a simple exercise.

The Creation of Economic Value

The concept of economic value creation, where profits must exceed the costs of the capital employed, is scarcely new. But its application at the operational level is relatively new. As described in Kaplan and Cooper's book "Cost and Effect" "the integration between ABC and EVA seems natural. Both ABC and EVA were developed to solve a distortion in the financial reporting of a company's economics. ABC corrected the arbitrary allocations of factory overhead to products and the failure to assign other indirect expenses to products and customers. EVA corrected the financial accounting failure of calculating company profits without recognizing the cost of capital as an economic expense." The true strength of compounding these complementary tools is that managers now have a clear understanding of how expenditures and capital resources are linked and how decisions, both operational and strategic, will either create or destroy value on the balance sheet and income statement. In this study, it was determined that the material capital commitments were

accounts receivable, inventory less payables, and warehouse fittings.

The Economic Cost of Capital

In our case company, a cost of capital of 6.5 % per annum or approximately 0.02 % per day was taken. This was the corporate borrowing rate for any marginal

investment, and this was thought to be most appropriate for this analysis.

Tip: For an analysis looking for new channels to distribute through, the internal hurdle rate for new investments might be used.

To calculate the capital charge against the customer specific accounts receivable, we first

Consumer Products EVC - Normal Channel and Customer				
	Customer A	%	Channel Total	%
Gross Sales FOI	\$3,718,000	90.6%	\$14,260,000	89.6%
Net Sales	\$3,370,000		\$12,775,000	
%	26.4%		100.0%	
Standard COGS	\$2,600,000	77.2%	\$9,961,000	78.0%
%	26.1%		100.0%	
Gross Margin	\$770,000	22.8%	\$2,814,000	22.0%
%	27.4%		100.0%	
Sales & Marketing	\$50,550	1.5%	\$640,900	5.0%
Commissions	\$50,550		\$197,526	
Channel Overhead			\$443,374	
Order Administration	\$33,167	1.0%	\$134,276	1.1%
%	24.7%		100.0%	
Order Processing - Non EDI	\$16,876		\$32,254	
Order Processing - EDI	\$0		\$9,440	
Order Processing - outsourced EDI	\$0		\$6,000	
Order Processing - Drop Shipment	\$0		\$0	
Order Changes	\$5,421		\$15,782	
Credit Check	\$0		\$12,800	
Price Confirmations	\$78		\$1,744	
Claims & Debits/Credits - CSR	\$939		\$10,233	
Claims & Debits/Credits - Accounting	\$4,412		\$17,007	
Other Order Admin	\$5,440		\$29,016	
Logistics & Distribution	\$227,852	6.8%	\$1,014,433	7.9%
%	22.5%		100.0%	
Replenishment & AP			\$44,076	
Receive & Put-away			\$24,946	
Storage	\$40,641		\$141,191	
Picking & Checking	\$52,238	1.6%	\$209,898	1.6%
Special packaging	\$349	0.0%	\$8,788	0.1%
Invoicing & Collection	\$1,079	0.0%	\$12,055	0.1%
Transportation	\$133,546	4.0%	\$573,480	4.5%
Customer Total Costs	\$311,569	9.2%		
%	17.41%			
Customer Margin	\$458,431	13.6%		
Channel Total Costs			\$1,789,609	14.0%
Channel Margin			\$1,024,391	8.0%
Asset Charges @ 6.5%/year	\$32,314	1.0%	\$232,316	1.8%
Inventory (less AP)			\$73,816	
Receivables	\$30,117	0.9%	\$150,865	
Warehouse equipment	\$2,198		\$7,635	
Customer EVC	\$426,117	12.6%		
Channel EVC			\$792,075	6.2%

multiple the daily cost of capital by the number of days the customer account is outstanding. The product is then multiplied by the average customer balance, the result is the capital charge to that customer for the company to “finance” the customer’s “working capital.” The capital charge against inventory was derived by taking the average inventory (in this case daily averages were taken over the 4 month reference period, although average month-end inventories would be adequate) which is reduced by the average outstanding trade payables. This net inventory is deployed against a channel’s sales, and using the “Top 250” analysis and allocation logic for the average inventory on hand, is allocated to a channel. This is then valued at standard cost, to give average channel inventory, which is multiplied by the cost of capital to give the capital charge against inventory. The same concepts were applied to the racking equipment and other warehouse fixtures used to store the inventory in the warehouse. In our example, some products had to be modified to a customer’s specific requirements (special packaging and displays), but the agreed order cycle time did not allow this to be done with the customer order in hand, so inventory had to be built in anticipation. The capital cost of this specific, dedicated inventory, and the equipment needed to store it, were charged to this customer.

Finally, an overall Cost to Serve example for the Consumer channel and a specific Consumer customer is attached in Table 7. In this case, the customer EVC was considerably better than the channel EVC (12.6% versus 6.2%). However, it can be seen that when the channel (non-customer allocated) costs are added, the entire channel fails to contribute its cost of capital!

The detail analysis highlights several other lucrative key customers, and a few that are costing the company money to serve, and the detail is illustrated in the chart below, where each key customer’s profitability is plotted against the cost of the assets they tie up. Your most attractive customers will be well above the diagonal 6.5% cost-of capital line. If high asset commitment is risky or otherwise not attractive for your company, then the customers on the left of the chart are most desirable - this might also be illustrated by “charging” a risk premium on the cost-of-capital.

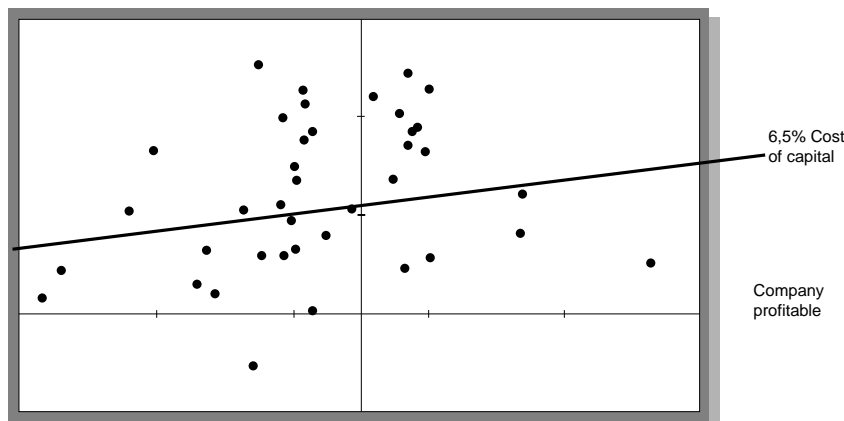
From the discussion above, it is clear that the arrangements that drive the current cost structures in serving your key customers are stable, if not immutable. Weaning a customer from established and long standing service levels is not an easy proposition, and is unlikely to have the full support of the sales force, or even management, if it means potential loss of market share at a key customer. Thus,

actioning the data from such a study is a delicate enterprise, and it will take a long time to bring the worst offenders into a profitable contribution, through gradual changes in the way you do business together. In some cases, a show-down may be necessary, where the commercial arrangements must be completely revised to ensure your company gets a fair deal.

Experience suggests that it is at the outset of a commercial relationship that good, and bad, habits are taken. The greatest learning from this exercise has been the understanding of the cost dynamics of the customer relationship. This new insight was put to work for the company by developing a new business template. From each new customer prospect meeting, core cost driver data was obtained:

- > Expected Sales, used to estimate physical volumes.
- > Expected gross margin used to estimate Cost of Goods Sold by reference to similar product mixes and FOI agreements.
- > Expected discounts, commissions, trade spend, allowances... indicate net sales and deductions.
- > Expected ordering pattern (e.g. weekly) drives number of orders to process.
- > Expected depth of range to be followed will indicate the average number of lines/order.
- > Expected transport costs are estimated with reference to the geographic location of delivery points.
- > Expected terms of Payment will drive the capital charge for AR.

Asset Consumed versus Customer Margin (annual sales)



A model was developed to use this data to estimate the cost-to-serve of this new customer if the business was won.

The cost-to-serve analysis provides unique insights into the true profitability of your key customers. The solid grounding in ABC and EVA also make this an exceptional learning tool to get the marketing, sales, logistics and financial people speaking a common language. These two benefits could be life-saving in the current business environment!