Chapter 6

Measuring and Managing Customer Relationships

After completing this chapter, you will be able to:

1. Assign marketing, selling, distribution, and administrative costs to customers.
2. Measure customer profitability.
3. Explain the differences between a low- and a high-cost-to-serve customer.
4. Calculate and interpret the "whale curve" of cumulative customer profitability.
5. Explain why measuring customer profitability is especially important for service companies.
6. Describe the multiple actions that a company can take to transform breakeven and loss customers into profitable ones.
7. Appreciate the value of the pricing waterfall to trace discounts and allowances to individual customers.
8. Align salespersons' incentives to achieving customer profitability and loyalty.
9. Understand why calculating customer lifetime value is valuable to a business.
10. Explain why companies need nonfinancial measures of customer satisfaction and loyalty.

An Unprofitable Customer at Madison Dairy

Jerold Browne, CEO of Madison Dairy, had just received a quarterly report that summarized the profitability of all of the company's customers. He was surprised to see that Verdi, a retail chain of 133 specialty ice cream shops and one of Madison's oldest customers, had become one of Madison's most unprofitable customers. Despite annual sales to Verdi of more than $4 million, Madison had just incurred a quarterly operating loss

of $100,000 with this customer. Browne had known that producing ice cream for Verdi was expensive, with its special recipes, multiple flavors, and direct store delivery to its multiple outlets. Until viewing this report, however, Browne had believed that the higher prices per gallon charged to Verdi exceeded the extra costs of these special services. He could now see that the small lot production and labeling, frequent deliveries of less-than-truckload quantities to multiple locations, and the high degree of follow-up calls to respond to the customer's service requests had led to a highly unprofitable customer. He wondered how he should break the news to Mr. Rancantore, the chain's owner, who took such pride in having founded a successful retail chain.

In Chapter 5, we illustrated how to use activity-based costing to assign factory expenses, such as indirect labor and machinery, to individual products. But an organization's expenses are not limited to its factories. Companies, in addition to the costs of producing their products and services, also incur **marketing, selling, distribution, and administrative (MSDA) expenses**. Most of these expenses are independent of the volume and mix of products that the company produces, so that they cannot be traced through causal relationships to products (as we did in Chapter 5). Many of these expenses are incurred to market and sell products to customers through multiple distribution channels. And, like the different demands by products for factory resources, customers and channels differ considerably in their use of MSDA resources.

For example, consider a mutual fund company that markets products, such as retirement investment programs, directly to companies and also markets investment and retirement programs to millions of retail customers. The cost of reaching company clients is much lower than the cost of marketing, selling, and supporting its millions of small retail customers. In addition the size of a typical company relationship is many times larger than an individual customer's retail account. Companies need to understand the cost of selling through various channels to diverse customer segments. In this chapter, we show how to extend activity-based costing to trace MSDA expenses directly to customer orders and to individual customers.

This chapter's focus on customers also links us back to the Balanced Scorecard strategy framework introduced in Chapter 2. The costing concepts introduced in Chapters 3, 4, and 5 enable companies to calculate financial metrics related to product and process costs. Metrics such as gross margins and product-line profitability can appear in the financial perspective of the Balanced Scorecard (BSC), while the process perspective can include metrics related to the costs of production and purchasing processes. But if the only information that managers have about customers is their financial performance, then they may take actions that improve financial performance in the short-term but damage long-term customer relationships. Managers, therefore, need both financial and nonfinancial metrics to manage their performance with customers. In this chapter, we introduce nonfinancial customer metrics that can appear in the BSC's customer perspective. We will describe some common customer metrics, such as customer satisfaction, loyalty, and willingness to recommend, that many companies select for their Balanced Scorecard's customer perspective and that serve as leading indicators of future revenue and profit performance in the financial perspective.

Many companies today are already quantifying their customer relationships by using nonfinancial metrics on satisfaction and loyalty, but they do not trace MSDA

costs to customers to facilitate an accurate measurement of customer profitability. Although the nonfinancial customer metrics are certainly valuable, as we will discuss later in the chapter, an excessive focus on improving customer performance with only these metrics can lead to deteriorating financial performance. Companies, in order to achieve high customer satisfaction and loyalty scores, may offer special features, highly customized products and services, and highly responsive customer service. This careful attention creates satisfaction and loyalty. But at what price? Companies run the risk of going beyond being customer focused to being customer obsessed, and when asked by customers to "Jump," they simply reply, "How high?"

To balance the pressure to meet and exceed customer expectations, companies should also be measuring the cost to serve each customer and the profits earned, customer by customer. Measures such as percentage of unprofitable customers and dollars or Euros lost in unprofitable customer relationships provide valuable balancing metrics for a company's strategy and its Balanced Scorecard. The ability to accurately calculate such metrics represents an important role for activity-based costing in a company's BSC.

Measuring Customer Profitability: Extending the Madison Dairy Case

We illustrate the assignment of marketing, selling, distribution, and administrative expenses to customers by considering another division of Madison Dairy, one that produces and sells many dairy products (including yogurt, sour cream, milk, and ice cream) to large wholesalers, distributors, and retailers. Currently, the division has annual revenues of $3,000,000; its MSDA expenses are about $900,000, or 30% of revenues. The division has two important customers, Carver and Delta, with approximately the same sales revenue. In the past, Gene Dempsey, the division's controller, allocated MSDA expenses to customers as a percentage of sales revenue leading to the following customer profitability statement for the two customers:

	Carver	Delta
Sales	$320,000	$315,000
Cost of goods sold	190,000	195,000
Gross margin	$130,000	$120,000
MSDA expenses at 30% of sales	96,000	94,500
Operating profit	$34,000	$25,500
Profit percentage	10.6%	8.1%

Both customers seemed highly profitable for the company. Dempsey, however, did not believe that these two customers were equally profitable. He knew that the account manager for Delta spent a huge amount of time on that account. The customer required a great deal of hand-holding and was continually inquiring whether Madison could modify products to meet its specific needs. Many technical resources, in addition to marketing resources, were required to service the Delta account. Delta also tended to place many small orders for special products, required expedited delivery, and tended to pay slowly, increasing the demands on Madison's ordering, invoicing, and accounts receivable processes. Carver, on the other hand, ordered only a few products and in large quantities, placed its orders predictably and with long lead times, and required little sales and technical support. Dempsey believed that Carver was a much more profitable customer for Madison than the financial statements were currently reporting.

Dempsey launched an activity-based cost study of the company's MSDA costs. He formed a multifunctional project team that included representatives from the marketing, sales, technical, and administrative departments. The team developed capacity cost rates for all of the resources in these support departments (such as the accounts receivable department). It then estimated the time demands on the various resources to obtain and process customer orders, to distribute the orders to customers, and to service each customer. This enabled them to assign the $900,000 in MSDA expenses down to every customer. The picture of relative profitability of Carver and Delta shifted dramatically, as shown here:

ABC Customer Profitability Analysis

	Carver	Delta
Sales	$320,000	$315,000
Cost of goods sold	190,000	195,000
Gross margin	$130,000	$120,000
Gross margin percentage	40.6%	38.1%
Marketing and technical support	7,000	54,000
Travel to customers	1,200	7,200
Service customers	4,000	42,000
Handle customer orders	1,400	26,900
Ship to customers	12,600	42,000
Total MSDA activity expenses	26,200	172,100
Operating profit	$103,800	$(52,100)
Profit percentage	32.4%	(16.5%)

As Dempsey suspected, Carver Company was far more profitable than calculated in his previous report, which had allocated MSDA costs as a fixed percentage of revenues. Carver's ordering and support activities placed few demands on the company's MSDA resources, so almost all of the gross margin earned on the products sold to it dropped to the operating margin bottom line. Delta Company, in contrast, was now seen to be Madison's most unprofitable customer. While Dempsey and other managers at Madison intuitively sensed that Carver was a more profitable customer than Delta, none had had any idea of the magnitude of the difference.

We summarize some of the differences in high- and low-cost-to-serve customers in Exhibit 6-1.

Exhibit 6-1
Characteristics of High- and Low-Cost-to-Serve Customers

High Cost-to-Serve Customers	Low Cost-to-Serve Customers
• Order custom products	• Order standard products
• Small order quantities	• High order quantities
• Unpredictable order arrivals	• Predictable order arrivals
• Customized delivery	• Standard delivery
• Change delivery requirements	• No changes in delivery requirements
• Manual processing; high order error rates	• Electronic processing (EDI) with zero defects
• Large amounts of pre-sales support (marketing, technical, and sales resources)	• Little to no pre-sales support (standard pricing and ordering)
• Large amounts of post-sales support (installation, training, warranty, field service)	• No post-sales support
• Pay slowly (have high accounts receivable from customer)	• Pay on time (low accounts receivable)

As we will learn later in the chapter, companies can still make money with high-cost-to-serve customers, and lose money with low-cost-to-serve customers, but the information on the MSDA costs incurred for each customer is vital for effective management of the customer relationship.

Reporting and Displaying Customer Profitability

One of the most important empirical regularities in business and economics is the 80–20 rule, originally formulated about 100 years ago by an Italian economist, Vilfredo Pareto. As originally stated, Pareto found that 80% of a region's land was owned by 20% of the population. It was subsequently extended to show that 80% of a region's income or wealth was earned or held by the top 20%. For our purposes, Pareto's interesting discovery applies to products and customers as well (see the distribution shown in Exhibit 6-2). When companies rank products and customers from the highest volume to the lowest, they generally find that their top-selling 20% of products or customers generate 80% of total sales. Interestingly, the 80–20 curve also produces a 40–1 rule. By studying Exhibit 6-2, you can see that the lowest volume 40% of products and customers generates only 1% of total sales.

Although the 80–20 law applies well to sales revenues, it does not apply to profits. A graph of cumulative profits versus customers, constructed from an ABC customer profitability analysis, generally has a very different shape, which we call a **whale curve**. Exhibit 6-3 shows a typical whale curve of cumulative customer profitability. In this exhibit, customers are ranked on the horizontal axis from most profitable to least profitable (or most unprofitable). The whale curve of cumulative profitability in Exhibit 6-3 shows that the most profitable 20% of customers generated about 180% of total profits; this is the peak, or hump of the whale above sea level. The middle 60% of customers about break even, and the least profitable 20% of customers lose 80% of total

Exhibit 6-2
Product and Customer Diversity: Pareto's 80–20 (or 40–1) Rule

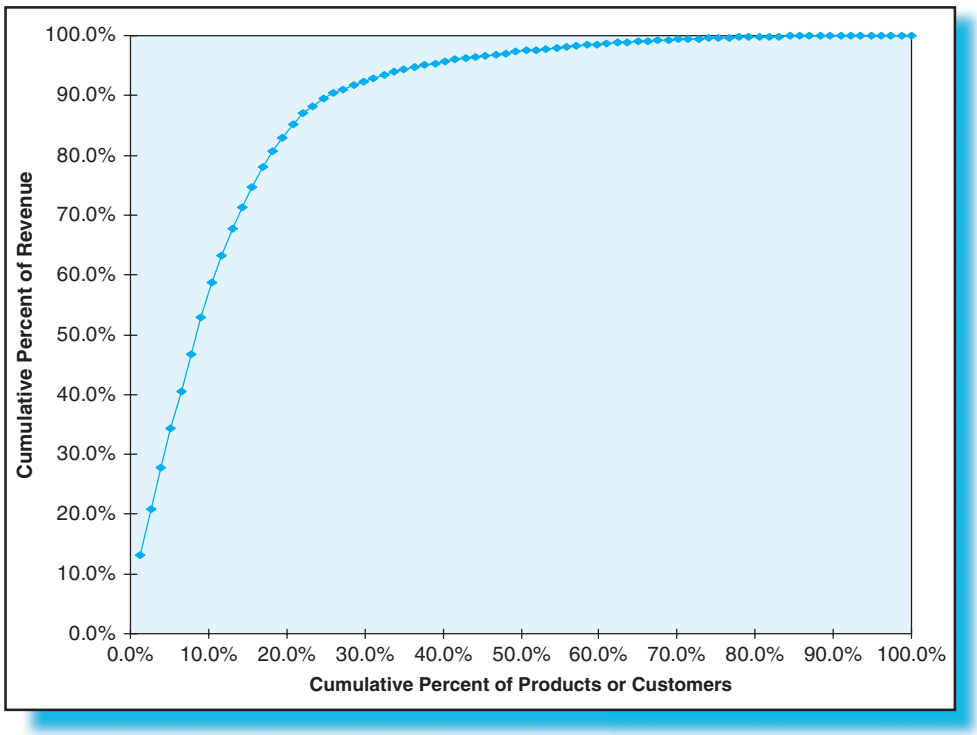
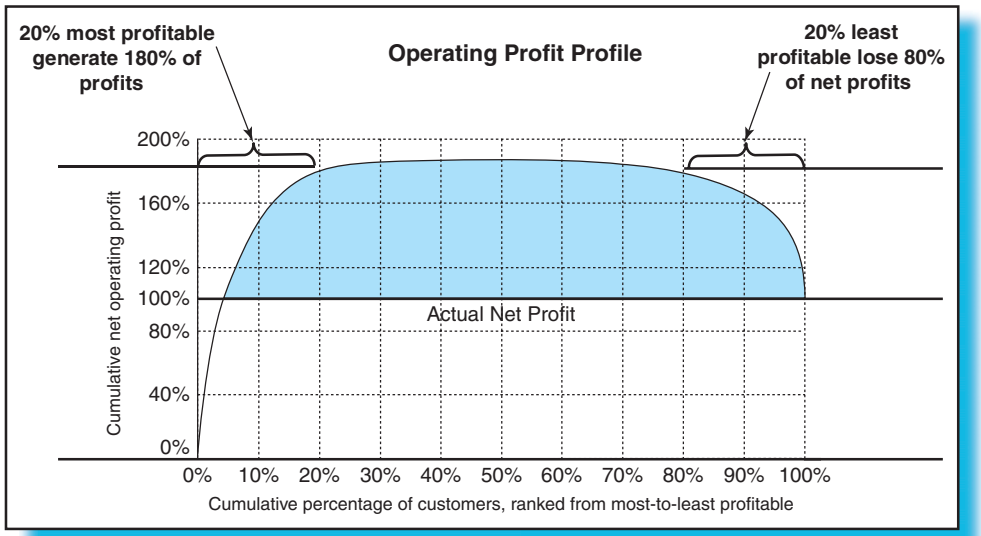


Exhibit 6-3
A Typical "Whale Curve" of Cumulative Customer Profitability



profits, leaving the company with its 100% of total profits ("sea level" in the whale curve represents the company's actual reported profits). The hump (or maximum height) of a cumulative profitability curve generally hits 150% to 250% of total profits, and this height is usually achieved by the most profitable 20% to 40% of customers.

Another interesting finding on most company's whale curves is that some of the largest customers, such as Delta for Madison Dairy, fall on the far right-hand side of the curve. They are among the company's most unprofitable. In retrospect, this finding should not be unexpected. A company cannot lose a large amount of money with a small customer because it does not do enough business with it to incur large losses. Only a large customer, demanding high discounts from list price and also making many demands on a company's technical, sales, distribution, and administrative resources, can be highly unprofitable. Large customers are typically a company's most profitable or its most unprofitable. They are rarely in the middle of the whale curve.

High-profit customers, such as Carver, appear in the left section of the profitability whale curve (Exhibit 6-3). Companies can celebrate the high margins that they earn on products and services sold to such customers. These customers should be cherished and protected. Because they could be vulnerable to competitive inroads, the managers of companies serving such customers should be prepared to offer discounts, incentives, and special services to retain the loyalty of these valuable customers, particularly were a competitor to begin selling to this customer.

Customers like Delta appear on the right tail of the whale curve, dragging the company's profitability down to sea level with their low margins and high cost to serve. The high cost of serving such customers can be caused by their unpredictable order patterns, small order quantities for customized products, nonstandard logistics and delivery requirements, and large demands on technical and sales personnel. One telecommunications equipment company, after doing such a customer profitability study, learned that for 20 percent of the orders in the previous year, the up-front cost of getting the order (the marketing, sales, and technical resources used to win the order) exceeded the size of the order. Even if the company could have produced, delivered, and installed the product at zero cost, it would still have lost money on the order. The opportunity for a company to identify its unprofitable customers and then transform them into profitable ones is perhaps the most powerful benefit that a company's managers can receive from an ABC system.

IN PRACTICE

Building a Whale Curve of Customer Profitability

A whale curve of customer (or product) profitability is easy to construct once you have calculated each customer's profit (or loss). Start with a two-column spreadsheet with the customer's name or identification code in column A and its profit or loss in column B. The spreadsheet should have as many rows as you have customers; let's assume a company has 2,000 customers (and, therefore, 2,000 active spreadsheet rows). Use the spreadsheet's *Data Sort* command to rank the customers from most to least profitable, based on the data in column B. After running this command, the highest profit customer should be in row 1, the next highest in row 2, and the least profitable—or most unprofitable—customer in row 2,000. Copy the profit of the most profitable customer into column C of row 1. The entry in column C of all other rows is the cumulative profit from all previous customers (in the cell above) plus the profit of the current customer, which appears in column B of that row. For example, the equation for cell C10 (row 10, column C) would be "= C9 + B10."

After copying this equation into rows 2 through 2,000 (the last row), the entry in C2000 should be the total operating profit of the company (the sum of profits earned from all 2,000 customers). In column D, calculate the ratio of the entry in column C divided by the entry in cell C2000; the equation in cell D10 would be "= C10/C$2000." The $ sign in front of the row 2000 entry ensures that every entry in column D is divided by the bottom cell entry, the company's total operating profit. Format column D so that entries appear as "%" rather than a decimal. Column D contains the cumulative profitability by number of customers.

The number in cell D10 represents the percentage of total profits earned by the most profitable 10 customers in the company. The entries in column D increase through all of the profitable customers, and then decrease back down to 100% (which should be the entry in cell D2000) as you start to add in the unprofitable customers. In column E, compute the cumulative percentage of customers by dividing each customer's rank by 2000. For the most profitable customer, this is 1/2000. For each subsequent customer, add 1/2000 to the cumulative total. Use the spreadsheet's graphing capabilities to produce a curve where the *y* axis represents the entries in column D and the *x* axis represents the entries in column E. The height of the whale's hump represents the profits earned by all of the profitable customers (generally 150% to 250%), and the decline in the curve from the hump back to sea level (which represents 100% of profits) is the amount lost by the unprofitable customers).

An unprofitable banking customer receives extensive customer service but maintains low balances and conducts many manual transactions per month.
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Customer Costs in Service Companies

Service companies must focus, even more than manufacturing companies, on customer costs and profitability because the variation in demand for organizational resources is much more customer driven than in manufacturing organizations.

How much technical and personal service a customer requires affects the profitability of the transaction. Alamy Images Royalty Free

A manufacturing company producing standard products can calculate the cost of producing the products without regard to how their customers use them; the manufacturing costs are *customer independent*. Only the costs of marketing, selling, order handling, delivery, and service of the products might be customer specific. For service companies, in contrast, customer behavior determines the quantity of demands for organizational resources that produce and deliver the service to customers.

To illustrate, consider a standard product from a service company, such as a checking account in a bank. It is relatively straightforward, using ABC methods, to calculate all of the costs associated with a checking account. These can be easily matched with the product's revenues, such as interest earned on monthly balances and the fees charged to customers for services. The analysis will reveal whether such a product is, on average, profitable or unprofitable. But such an average look at the product will hide the enormous variation in profitability across all customers using this product. One customer may maintain a high cash balance in his checking account; make very few deposits, withdrawals, balance inquiries, or service requests; and use only electronic channels (i.e., automatic teller machines and the Internet). Another customer may manage her checking account balance very closely, keeping only the minimum amount on hand, and use her account heavily by making many small withdrawals and deposits via manual transactions with bank tellers. The second customer's checking account may be highly unprofitable under current pricing arrangements. Customer balances or sales volume are poor proxies for profitability. Small-balance customers can be quite profitable and large-balance customers can be highly unprofitable.

As another example, customers of a telecommunications company can order a basic service unit in several different ways—through a phone call, a letter, or a visit to a local retail outlet. The customer may order two phone lines at once or just one; engineers may have to appear to install the new line, or they may make a change at the local switching center. The customer may make only one request or several and can pay either by direct debit over the Internet, by a telephone banking transfer, by a mailed check, or in person. The cost of each option is quite different. Therefore, measuring revenues and costs at the customer level provides the company with far more relevant and useful information than at the product level.

Increasing Customer Profitability

Manufacturing and service companies alike have many options to transform their breakeven or loss customers into profitable ones:

- Improve the processes used to produce, sell, deliver, and service the customer.
- Deploy menu-based pricing to allow the customer to select the features and services it wishes to receive and pay for.
- Enhance the customer relationship to improve margins and lower the cost to serve that customer.
- Use more discipline in granting discounts and allowances.

Process Improvements

Managers should first examine their internal operations to see where they can improve their own processes to lower the costs of serving customers. If most customers are migrating to smaller order sizes, companies should strive to reduce the costs of processes such as setup and order handling so that customer preferences can be accommodated without raising overall prices. For example, Madison Dairy could strive to become more efficient in handling orders by encouraging customers to access a purchasing web page and place their orders over the Internet. This would substantially lower the cost of processing large quantities of small orders. If customers have a preference for suppliers offering high variety, manufacturing companies can try to customize their products at the latest possible stage, as well as use information technology to enhance the linkages from design to manufacturing so that greater variety and customization can be offered without cost penalties.

Activity-Based Pricing

Pricing is the most powerful tool a company can use to transform unprofitable customers into profitable ones. **Activity-based pricing** establishes a base price for producing and delivering a standard quantity for each standard product. In addition to this base price, the company provides a menu of options, with associated prices, for any special services requested by the customer. The prices for special services on the menu can be set simply to recover the activity-based cost to serve, allowing the customer to choose from the menu the features and services it wishes while also allowing the company to recover its cost of providing those features and services to that customer. Alternatively, the company may choose to earn a margin on special services by pricing such services above the costs of providing the service. Pricing surcharges could be imposed when designing and producing special variants for a customer's particular needs. Discounts would be offered when a customer's ordering pattern lowers the company's cost of supplying it.

Activity-based pricing, therefore, prices orders, not products. When managers base prices on valid cost information, customers shift their ordering, shipping, and distribution patterns in ways that lower total supply chain costs to the benefit of both suppliers and customers.

Managing Relationships

Companies can transform unprofitable customers into profitable ones by **managing customer relationships**, which includes persuading them to use a greater scope of the company's products and services. The margins from increased purchases contribute to covering customer-related costs that do not increase proportionately with volume,

such as the cost of the salesperson assigned to the account. Companies can establish minimum order sizes from unprofitable customers, so that the margins from higher volumes more than cover the costs of processing an order and setting up a production run for the customer.

Customers of service companies often have more than one relationship with them. Consider a commercial bank with a basic entry-level product: commercial loans. The interest spread on such loans—the difference between the bank's effective borrowing rate and the rate it charges the customers—may be insufficient to cover the bank's cost of making and sustaining the loan because of intense competition and the customer's low use of the lending relationship. However, the bank may make enough profit on other services that the customer uses—for example, investment banking services and corporate money management—that in aggregate the customer is a highly profitable one. Alternatively, however, a small borrower who uses no other commercial banking or investment banking services may be quite unprofitable. In this case, the bank could ask the customer to expand its use of the loan facility (that is, borrow more) and use other and more profitable services offered by the bank's services.

A customer of a telecommunications company may have, in addition to a basic landline phone account, a high-speed data line, an Internet line, a television cable connection, a maintenance and service contract, and equipment rentals. Therefore, before taking drastic action with a customer who has an unprofitable basic landline phone account, the company's managers should understand all of the relationships it has with the customer and act on the basis of total relationship profitability, not just on the basis of the profitability of a single product.

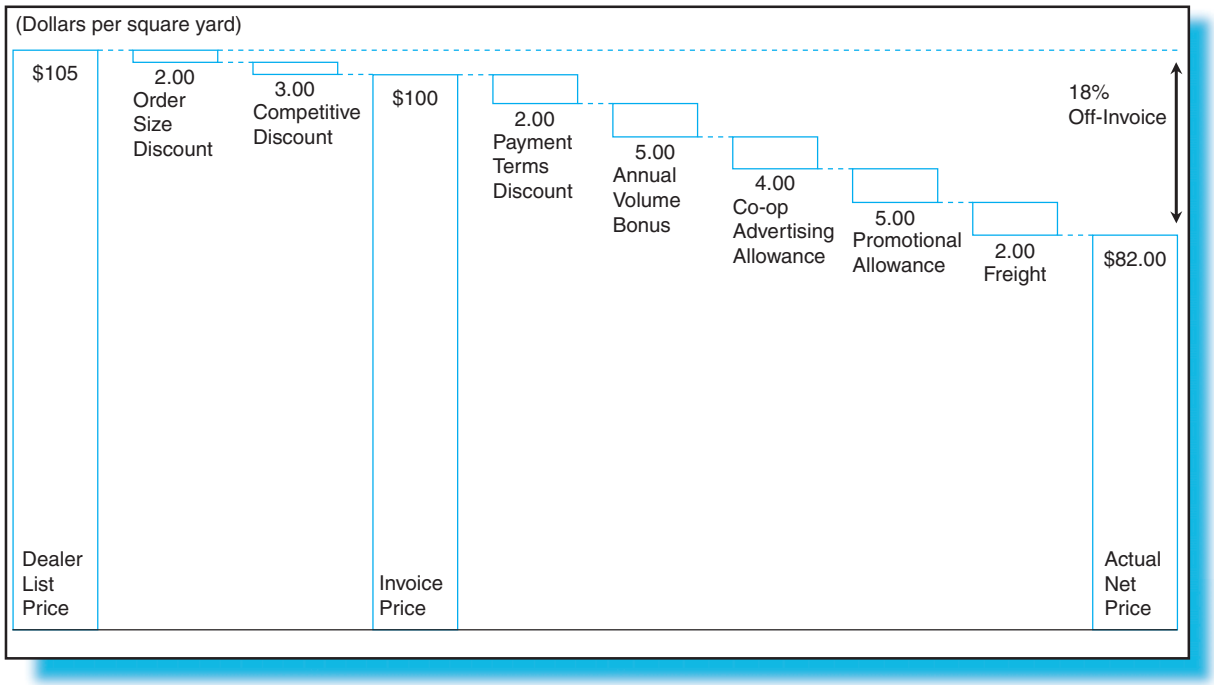
As one example of how a commercial bank dealt with an unprofitable customer, the loan officer tried to fire an unprofitable corporate customer, who had only a single banking relationship and did not use its banking facility intensively. The officer shared the economics of the unprofitable relationship with the customer and suggested that it seek other financial institutions for its borrowing needs. The customer, however, wanted to retain its relationship with the bank and offered to find ways to increase the bank's profitability on this account. The CFO offered to travel to New York for periodic meetings, rather than have the loan officer visit its Midwestern headquarters. He also offered to use more of the bank's products and services so that the relationship could be transformed into a profitable one for the bank.

Some customers may be unprofitable only because it is the start of the relationship with the company. The company may have incurred high costs to acquire the customer, and the customer's initial purchases of products or services may have been insufficient to cover its acquisition and maintenance costs. No action is required at this point. The company expects and hopes that the customer's purchases of products and services will increase and soon become profitable, including recovering any losses incurred in the start-up years. Companies can afford to be more tolerant of newly acquired unprofitable customers than they can of unprofitable customers they have served for 10 or more years. Later in this chapter, we will discuss customer lifetime profitability, a more formal way of managing newly acquired unprofitable customers.

The Pricing Waterfall

Beyond the factors already discussed, heavy discounting and granting of special allowances can also lead to breakeven or highly unprofitable customers. Before confronting a customer with an explicit price increase, the company should examine the many ways it has already reduced the effective price the customer actually pays. Exhibit 6-4 shows how a producer of kitchen appliances had offered multiple discounts and allowances to one of its largest customers, a major home improvement

Exhibit 6-4
Pricing Waterfall Chart



retail chain. This chart is commonly referred to as the **pricing waterfall** because of the multiple revenue leaks from list price caused by special allowances and discounts granted to obtain the order and build customer loyalty. In this exhibit, the list price started out at $105. The salesperson offered a 2% volume discount since the retailer had ordered at least 10 units of the product. He offered another nearly 3% discount from list price to match what the retailer claimed was an attractive offer from a competitor, bringing the invoice price down to $100 per unit. These discounts, however, were only the start of several other deductions from list price.

The company gives all of its retail customers a 2% discount ($2) if they pay the invoice in full within 10 days. Separately, to encourage large purchases throughout the year, the company offered an annual volume bonus of up to 5% based on the retailer's total annual purchases. Retailers also received cooperative advertising allowances of up to 4% for featuring the company's products in its print advertisements. The sale of this batch of products occurred near the end of a calendar quarter when the company was trying to encourage additional sales, so it offered a 5% promotional allowance for purchasing units that could be shipped before the end of the quarter. Finally, the company had agreed to pay the freight for transporting the appliances to the retailer's distribution center. The freight cost amounted to $2 per unit, or an additional 2% deduction from the invoiced price.

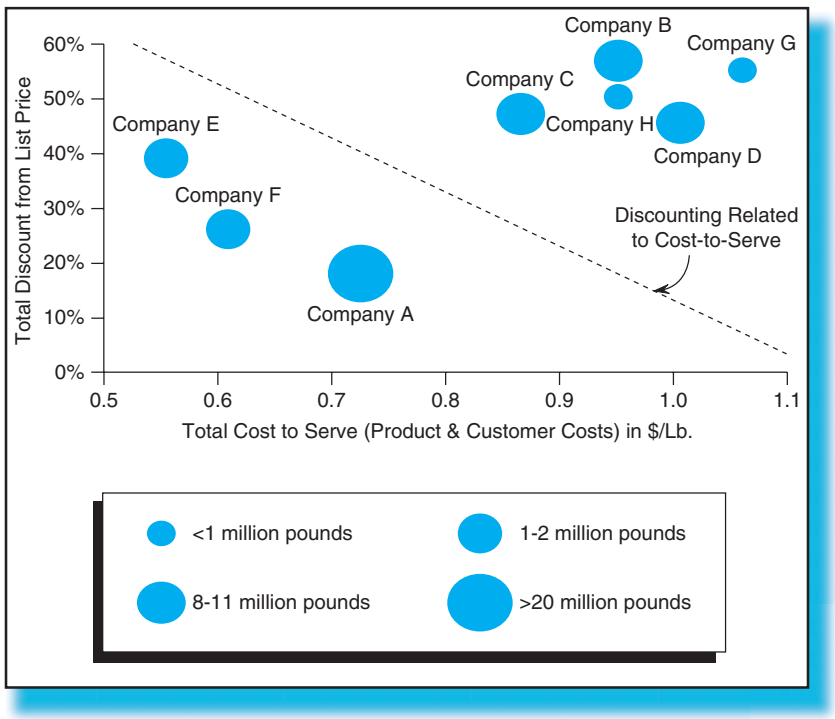
Each of these discounts and allowances seemed like a small concession in order to get the order, encourage a high volume of sales, and receive payment promptly. The discounts were granted by different organizational units: The salesperson had the discretion to offer a discount to get the order in the face of competitive pressure, the finance department granted discounts to encourage prompt payment and also receive a signal when customers are in some financial difficulty and do not take advantage of the attractive purchase discount, the company's CEO wanted to generate sales in the

last week of the reporting quarter, and the marketing department wanted to motivate a high volume of revenues from the customer for the entire year. Yet Exhibit 6-4 reveals that the total quantity of discounts and allowances on this one order produced a total revenue leak of $23 (nearly 23%) from the original list price.

Companies, like the one illustrated above, fail to see all of the revenue leaks from list price because they record the discounts and allowances in different systems and make the revenue deductions at different times of the year. For example, the prompt payment discount may be recorded by the finance department in an aggregate income statement account (sales deductions); the finance department also lumps all freight costs into a general financial statement account labeled as transportation expenses. It does not link either the purchase discount or the freight expense back to a customer or an individual order. The volume discount may be refunded to the customer only once it has accumulated sufficient volume to qualify, and it is not linked back to the individual transactions that qualified for the volume discount. With discounts and allowances recorded into different accounts and at different times, no manager sees the complete picture shown in Exhibit 6-4 and consequently no one realizes how much revenue loss occurs with individual orders and customers.

One company, attempting to understand better its discounting policies, produced the chart shown in Exhibit 6-5. This exhibit showed that the quantity of discounts provided to customers in the previous year bore no relationship to the volume or the cost-to-serve individual customers. The downward sloping diagonal line suggests a plausible discounting policy in which low-cost-to-serve customers can receive discounts from list price, whereas high-cost-to-serve customers would receive little to no discounting. Yet the many companies above this diagonal line show that large discounts (some as high as 60%) had been granted to customers who had high service costs, while many customers who had low service costs (below the diagonal) received few discounts. In addition, many of the high-cost-to-serve customers receiving large discounts were not the highest volume customers either (as shown by the smaller size

Exhibit 6-5
One Company's Discounting Policy Was Unrelated to Its Cost to Serve Individual Customers



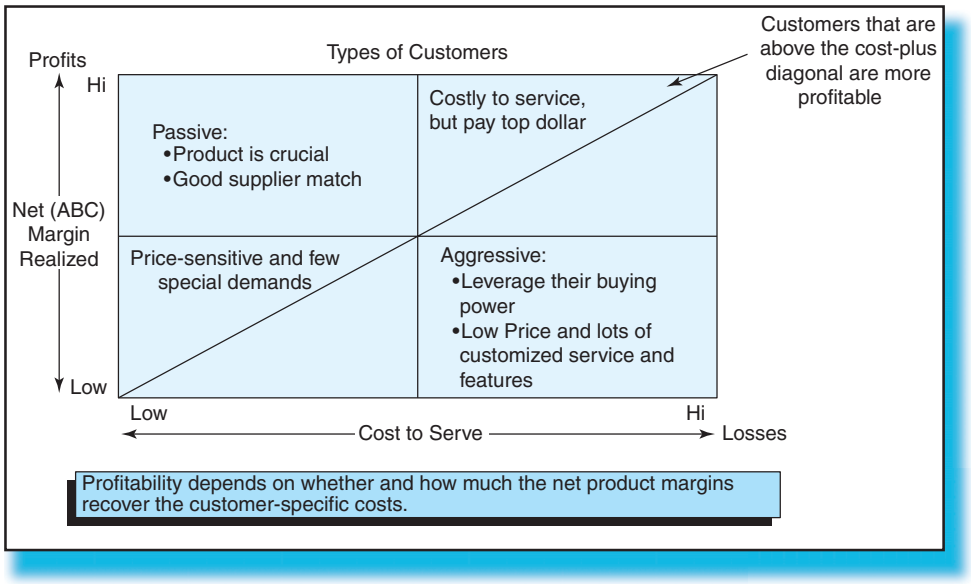
of their circles on this exhibit). This is an example of a company with little apparent discipline or economic rationality in its discounting policies.

To remedy this problem, companies are now extending their activity-based costing systems to trace all revenue deductions, as well as promotional costs and allowances, to individual orders and customers so that they can calculate actual, realized profit or loss, customer by customer. Exhibit 6-6 shows how one company calculates an operating income statement for every customer. It performs this calculation every quarter for every customer so that it can see the actual profit and loss of each customer,

Exhibit 6-6
Comprehensive Customer Operating Income Statement

		Customer A	% of Sales
Sales	**Total Revenues**	**1,518**	**104.8%**
	Less: Sales Adjustments		
	Sales Returns & Allowances	1	0.1%
	Sales Discounts	27	1.9%
	Service Discounts	0	0.0%
	Display Discounts	0	0.0%
	Customer Specific Program	21	1.5%
	Rebates	9	0.6%
	Restocking Fees	1	0.1%
	Returns	9	0.6%
	Other Deductions	2	0.1%
	Total Sales Adjustments	70	4.8%
Net Sales		**1,448**	100.0%
Production Costs			
	Materials	680	47.0%
	Support	30	2.1%
	Preparation	78	5.4%
	Drawing and Annealing	182	12.6%
	Finishing	205	14.2%
	Volume Related Costs	35	2.4%
	Storage (Raw Materials)	14	1.0%
	Carrying Costs	7	0.5%
	Freight (Inbound)	17	1.2%
Total Production Costs		**1,248**	86.2%
Gross Profit		200	13.8%
Other Expenses			
	Distribution	52	3.6%
	Commissions	69	4.8%
	Marketing	44	3.0%
	Sales Support	27	1.9%
Total Selling Expenses		**192**	13.3%
	Sales Service	10	0.7%
	Corporate & IT	15	1.0%
	Administration	107	7.4%
Total Administrative Expenses		**132**	9.1%
Operating Income		**(124)**	–8.6%

Exhibit 6-7
Mapping Customer Profitability



including all revenue deductions and allowances. In this company, a salesperson, clutching a well-annotated package of all of his customers' operating income statements, walked up to a senior finance officer to thank him for the quarterly summary: "This is my Bible; it's how I manage and run my business."

Exhibit 6-7 shows one additional way to summarize the net contribution from each customer. A customer's position in this diagram is determined by two parameters, the x and y coordinates. The y or vertical position is determined by the gross margins from all products sold to the customer. The gross margin equals the net revenues received (after deducting all discounts and allowances in the pricing waterfall) less all costs of producing the products purchased by the customer during the period. The costs come from the company's activity-based costing system so they represent the cost of the actual demands on the company's resources to develop and produce the products purchased by the customer. The x or horizontal position represents the sum of all MSDA costs associated with serving the customer and processing and fulfilling its orders. Customers above the diagonal line are profitable. Those below are unprofitable; that is, the gross margins from the products and services sold do not cover all the costs required to market, sell, distribute to, and service the customer.

Exhibit 6-7 shows that companies can make profits with customers in multiple ways. For customers in the upper right-hand corner, a company can afford to spend a great deal on transportation, technical support, and service because of the high gross margins on the products and services sold to this customer. In the lower left-hand quadrant, a company can make money with even a highly discounted customer, such as Wal-Mart or a "big box" retailer, as long as the cost of servicing that customer is low. Looking back at Exhibit 6-1, Wal-Mart has many of the characteristics of a low-cost-to-serve customer: It purchases a limited variety of products in large quantities, with predictable orders, standard deliveries to its distribution centers, and pays within 30 days. So even though Wal-Mart demands the lowest prices from its suppliers, it can still be a supplier's most profitable customer because of its large purchasing volume and low cost to serve.

Companies love having customers in the upper left-hand quadrant of Exhibit 6-7. These customers are price insensitive, demand few discounts, and are low cost to serve. Such customers should be cherished and nurtured, including dedicating customer service teams to them and being prepared to compete aggressively to retain

their business should a competitor attempt to sell to them. The problems occur with customers in the lower right-hand quadrant of Exhibit 6-7. These are typically large customers who leverage their size to demand big discounts and lots of customized services and technical support. These are the customers on the right-hand edge of a company's whale curve of cumulative customer profitability. If a company has such highly unprofitable customers, it must attempt the full range of actions to transform them in the northwest direction on the diagram, toward the breakeven point and possibly even profitability. These actions include menu-based pricing, product mix rationalization, elimination of discounts and allowances, and moving to larger orders and more standard packaging and distribution. Only if all such actions fail to restore the profitability of the customer would a company consider "firing" a customer by encouraging it to purchase its product or service from an alternative supplier.

Salesperson Incentives

The actions described above—repricing, relating discounts and allowances to cost to serve and order profits, increasing minimum order sizes, purchasing a broader scope of products and services—attempt to repair the damage from unprofitable customers. Even better would be avoiding unprofitable customers in the first place. Many breakeven or unprofitable customer relationships occur because salespeople have incentives to generate sales not profits. A typical salesperson's compensation plan sets minimum quotas and commissions based on sales revenue, and it ties bonuses and rewards (including luxurious vacation trips) to achieving sales revenues above a stretch target. Such **salesperson incentives** and compensation arrangements encourage salespeople to close deals and generate revenues without regard to the cost of fulfilling the special arrangements negotiated in the deal and the impact of discounts and allowances granted to close the deal.

In one office products company, a salesperson signed the largest contract in the company's history with a prominent customer. The contract was won, however, by committing the company to delivering every item to the desk of the person requesting a resupply of any item—whether a single pad of writing paper, a small package of pens, or a ream of paper for a desktop printer. When all of the costs of this contract were eventually collected and attributed to this customer relationship, the company discovered that the salesperson had created the company's most unprofitable customer.

Companies base salespeople's compensation and rewards on revenues because it is a simple measure, generally easy to calculate (though often missing the subsequent discounts and allowances booked against the contract), and consistent with the salesperson's mission to generate sales. Another reason is that, until the recent development of activity-based costing, companies lacked the ability to trace MSDA costs, as well as the actual product margins, to individual customers. So lacking a valid, calculable measure of customer profitability, companies focused on generating revenues but not profits from their customers.

Companies can now use their time-driven activity-based costing system to create customer-specific profit and loss statements even when they have thousands or, for some financial service companies, millions of customers. This ability has also been enabled by greatly expanded computing power and new enterprise resource planning (ERP) and customer relationship management (CRM) software systems that can electronically capture all of the features of sales and production orders. Companies now use the information to base salesperson incentives on order and customer profits, not just sales. Salespeople can still accept breakeven or loss orders in order to penetrate a new account or to keep an overall highly profitable and loyal customer happy. But

they accept this transaction for future benefit, understanding that these unprofitable orders may not contribute to their sales quota and definitely will not be eligible for a selling commission. The capability of management accounting today to calculate order and customer profitability provides management with an important new tool to align salespersons' incentives with improvements in the company's financial performance.

Life-Cycle Profitability

Many service companies invest considerable resources in marketing campaigns to attract new customers. If the company does not know about the characteristics of what makes a profitable customer, such companies may spend a great deal of money to attract many unprofitable customers. By knowing the characteristics of profitable customers, companies can direct their marketing efforts to specific segments that are most likely to yield profitable customers.

Because of the high acquisition costs and the time required to establish a broad and deep relationship (such as across multiple product offerings), even attractive new customers may be initially unprofitable. The high cost of acquisition in the initial year of the relationships could cause the customer to fall into the unprofitable quadrant in Exhibit 6-7. Companies need to distinguish the economics of their newly acquired customers from those who have been customers for many years. Thus, in addition to recognizing cross-sectional variation of demands by customers—across multiple products and services—companies must also forecast the longitudinal variation of customers over time to calculate their total life-cycle profitability.

As a specific example, consider a company that has just spent $5 million on a campaign to acquire new customers. The campaign yielded 5,000 new customers, or an average cost of $1,000 per customer acquired.

- Customer A purchased products and services that generated a net margin of $300 per year (after deducting all production, and MSDA costs attributable to the relationship). Customer A, however, left for a competitor after three years.
- Customer B purchased products and services yielding a net margin of $275 per year, and defected after five years.

The company's accounting system recorded that Customer A was more profitable than B because of the $25 higher annual profits per year that it generated. The system, however, failed to see that the three years of $300 net margin did not repay the initial $1,000 acquisition cost so that A was actually a loss customer over its lifetime with the company. Customer B, in contrast, generated sufficient net margin over its five years of relationship to cover its initial acquisition cost.[1]

If you are familiar with algebra and net present value techniques, you can study the equation below, which is a general formulation for calculating **customer lifetime value (CLV)**.

$$\text{CLV} = \sum_{t=1}^{t=n} \frac{(M_t - c_t) \times (\text{retention rate}_t)^{t-1}}{(1+i)^t} - \text{Initial acquisition cost}$$

[1] To do this calculation correctly, the company should calculate the discounted present value of the cash flows from Customer B to determine whether the five years of $275 net margin not only repaid the initial $1,000 acquisition cost but also the time value of the money invested in this customer at the start of the relationship. Calculating discounted present values is not covered in this textbook—you will learn this technique in your first finance course. If you are already familiar with the technique, you can verify that Customer B is profitable for companies whose cost of capital is less than 11.6%.

where

M_t = Margin (revenue less cost) from customer in year t
c_t = Any additional costs-to-serve (and retain) customer in year t
i = Cost of capital (e.g., 10%)

If M_t, c_t, and r_t are about the same each year, and n is large:

$$\text{CLV} \approx \frac{M - c}{i + (1 - r)} - \text{Acquisition cost}$$

(r = retention rate period to period)

The equation assumes that the company can estimate the probability of retaining a customer from one year to the next, which it calls the retention rate, r. The customer's profit each year is its margin, M, calculated as total net revenues (after deducting discounts, promotions, and allowances) less all the costs to produce, market, distribute, and sell to the customer, less any additional promotions, c, to retain the customer each year. The discounted net cash flows from the customer for all of the years that it remains a customer are compared to the initial acquisition cost to obtain the total value to the company from the lifetime relationship with this customer.

Many service companies (banks, mobile telecommunication companies, Internet service providers) spend a great deal of money to acquire new customers, particularly young customers attending colleges, even though their profits in the year of acquisition and for several years afterwards are negative or, at best, slightly positive. The service companies make such investments because they want to become the lifetime provider to these customers as they obtain good jobs and become successful in their careers. If a company is following such a customer lifetime value strategy, then it should be tracking, for each of its customers, how much it spent to acquire the customer, and then the profits earned each year in the relationship. The critical parameters for calculating customer lifetime value are:

- Initial acquisition cost.
- Profits or losses earned each year.
- Any additional costs incurred to retain the customer each year.
- The duration of the relationship.

Some banks have highly sophisticated analytic systems that allow them to estimate these parameters based on the demographic characteristics of a potential or newly acquired customer. The analytics help guide the bank's promotion strategies and campaigns to attract customers with the highest expected lifetime value. For example, RBC Financial Group in Canada uses an analytic model of a customer's future profitability based on age, tenure with the bank, number of products and services already used at the bank, and the customer's potential to purchase additional products and services, grow account balances, and generate fee-based income.[2] The bank assigns a personal account representative to its estimated high lifetime value customers, ensures that their phone calls get picked up quickly, and provides them with ready access to credit at attractive terms.

Another financial institution that calculates lifetime profitability for all of its customers produced the table shown in Exhibit 6-8 to illustrate the success of its marketing programs. At first glance (the top row in the exhibit), the bank appears to have

[2] V. G. Narayanan, "Customer Profitability and Customer Relationship Management at RBC Financial Group," HBS No. 102-043 (Boston: Harvard Business School Publishing, 2002).

Exhibit 6-8
Summary of Annual Change in a Retail Bank's Customer Acquisition and Retention

Category	Lost	Gained	Difference
Number of households (HH)	45,310	40,249	(5,061)
Loans and deposits per HH	$39,051	$77,883	$38,832
Revenue per HH per month	$61	$108	$47
Services per HH	1.8	2.5	0.7
Percent HH with only one service	52%	33%	+19%

had a disappointing year because it had a net loss of more than 5,000 customers. But the subsequent lines show that this was desirable attrition since the newly acquired customers had larger account balances, higher revenues per account, and used more banking services than the departing customers. The bank's marketing director said, "The quality of the new households in all measurable respects is better compared to the lost households." This is a good example of a company that is consciously trying to attract and retain customers with high lifetime profitability.

Measuring Customer Performance with Nonfinancial Metrics

The material covered so far in this chapter focuses only on financial measurements (e.g., cost to serve, discounts and allowances, profitability), related to a company's customer relationships. As the section on lifetime customer profitability helps us realize, short-term metrics of customer cost and profitability may cause a company to take actions that work well to improve customer profitability metrics but put at risk the company's long-term relationship with the customer. Harking back to the Balanced Scorecard discussion in Chapter 2, a company cannot measure and manage its customer relationships with financial metrics alone, even valuable and accurate metrics such as profitability. Companies need to supplement their financial measurements with nonfinancial measures of their customer relationship.

Customer Satisfaction

Most companies today attempt to calculate some metrics on **customer satisfaction**. The company, or an independent market research company, sends a survey to a recent purchaser or user of the company's products and services.[3] The survey, from a company such as Madison Dairy, starts by asking a general question such as this:

	5. Very Satisfied	4. Somewhat Satisfied	3. Neither Satisfied or Dissatisfied	2. Somewhat Dissatisfied	1. Very Dissatisfied
Based on your recent purchasing [or service] experience, how satisfied are with you with Madison Dairy?					

[3] A template for constructing a customer satisfaction survey can be found at http://www.loyaltyrules.com/loyaltyrules/acid_test_customer.html (accessed August 19, 2010).

The survey would then continue asking for responses, on a similar five-point scale (from Very Satisfied to Very Dissatisfied), to specific aspects of the purchase or service experience, such as the quality of the product or service, the ease of ordering, the friendliness and responsiveness of Madison's sales, technical, and administrative personnel, and the responsiveness of the company to customer complaints and concerns.

Writing a customer survey may seem simple but getting valid responses from a high percentage of customers requires specialized expertise. Companies generally use three approaches: mail surveys, telephone interviews, and personal interviews. These techniques range in cost from low to high, respectively, but response rates and valuable insights also range from low to high across them. Specialized marketing research firms offer companies expertise in psychology, market research, statistics, and interviewing techniques, as well as considerable numbers of personnel and computing power capable of conducting customer satisfaction surveys and summarizing and interpreting the results for the sponsoring company.

Some customer satisfaction surveys become public information. J.D. Power and Associates conducts satisfaction surveys of consumers who recently purchased a new automobile. J.D. Power's annual rankings of automotive customers' satisfaction are eagerly anticipated and publicized, and can have a strong influence on which brands will be purchased in the subsequent year. In 2010, Toyota dropped 15 places in the J.D. Power rankings, from 6th to 21st, largely because of widely publicized recalls due to problems with brakes, sudden acceleration, and poorly fitted floor mats. Because of the success of its automotive ratings and rankings, J.D. Power now offers customer satisfaction ratings of boats, home appliances, credit cards, retail banks, homebuilders, insurance companies, telecom providers, airlines, airports, hotels, and rental car agencies. The American Customer Satisfaction Index (ACSI) measures customer satisfaction annually for more than 200 companies in 45 industries. Several studies have found significant correlations between a company's ACSI score and its future stock price, suggesting that a change in a company's customer satisfaction score is a leading indicator of its future financial performance.

Customer Loyalty

Although customer satisfaction scores are important, experts now agree that it is a mistake for a company to use the satisfaction score as its only customer metric. A customer's satisfaction is an attitude or belief stemming from a feeling that the product or service has generally delivered on the customer's expectation of performance. But attitudes and beliefs are not actions; a customer's attitude toward a product or a company does not readily translate into the desired behavior of repeated and increased purchases of the product or service, or **customer loyalty**. An influential study in the 1990s[4] found that in highly competitive industries, characterized by low differentiation among products, many substitutes, and low cost of switching (automobiles and personal computers are examples), only customers who give the company the highest satisfaction score (a 5 in a 5-point scale, or 9 or 10 on a 10-point scale) are likely to repurchase the company's product or service. Customers that report they are "somewhat" or "generally" satisfied may defect to a competitor that offers a lower price or incrementally better features.

Loyal customers are valuable for several reasons:

1. Loyal customers have a greater likelihood to repurchase, and the costs to retain them are generally much lower than the cost to acquire an entirely new customer.

[4] T. O. Jones and E. Sasser, "Why Satisfied Customers Defect," *Harvard Business Review* (November–December 1995): 88–99.

2. Loyal customers can persuade others, through word of mouth, to become new customers; they can become references for potential future customers.
3. Loyal customers are less likely to defect when a competitor offers a similar product at the same or slightly lower price.
4. Loyal customers are often willing to pay a price premium to retain a known and trusted relationship with a key supplier.
5. Loyal customers are willing to collaborate with the supplier to improve performance and develop new products.

Companies can measure *loyalty* directly by actual repeat purchasing behavior. Companies that can readily identify all of their customers—for example, industrial companies, distributors and wholesalers, newspaper and magazine publishers, computer on-line service companies, banks, credit card companies, and long-distance telephone suppliers—can readily measure customer retention from period to period. Beyond just retaining customers, many companies will want to measure customer loyalty by the percentage growth of business with existing customers and account share, which represents a company's percentage of a customer's spending in its product or service category. For example, a clothing retailer might estimate the percentage of a consumer's wardrobe that it supplies, a bank can measure the percentage of a customer's wealth that it manages, and a food company, the percentage of a consumer's stomach that it fills.

When companies cannot easily identify individual customers to measure their retention and repeat purchasing behavior, they often invest in loyalty programs that provide incentives to customers to reveal themselves when they are making a purchase. Companies, as diverse as gambling casinos (Harrah's, for example) and retailers (such as Staples), now give customers discounts or cash and service rebates to reward their frequent purchases and repeat business. Loyalty metrics can include percentage of customers from a previous period who make at least one purchase in the current period and the period-to-period growth in business with a targeted customer.

One scholar has proposed that companies view their customer satisfaction and loyalty along a five-stage hierarchy[5]:

1. Satisfied customers, as measured by how well a customer's expectations have been met or exceeded in an individual transaction or long-term relationship.
2. Loyal customers, as measured by the customer devoting an increasing "**share of wallet**" for repeat purchases from the same supplier.
3. Committed customers, those who not only purchase frequently from the supplier but also tell others about the supplier's great products and service.
4. Apostle customers, committed customers who have credibility and authority when they recommend the supplier to friends, neighbors, and colleagues. For example, respected and opinion-leading surgeons have great credibility when they attest to their satisfaction with a new medical instrument.
5. Customer "owners," who take responsibility for the continuing success of the supplier's product or service. For example, some of Southwest Airlines' most loyal customers are willing to interview prospective flight attendants to help select the ones they would most want to serve them. Procter & Gamble has established an interactive site so that its loyal customers can provide feedback on existing products and suggestions for improving them or for entirely new products.

A company should strive to have more of its customers in categories 3, 4, and 5 above, since their willingness to recommend the company to others and to collaborate

[5] J. Heskett, "Beyond Customer Loyalty," *Managing Service Quality*, Vol. 12, No. 6 (2002): 355–357.

with it to continually improve product features and service makes them far more valuable, with a much higher customer lifetime value, than customers who are merely satisfied with the most recent transaction. To measure whether their customers have moved beyond "loyalty" to commitment, apostle, and ownership behavior, many companies are now using a new metric, the net promoter score.

The Net Promoter Score

With so much attention focused on satisfying customers and measuring how well a company is performing on customer satisfaction metrics, consumers are getting bombarded with more and more requests for surveys, and many of these have become too long and complicated to fill out or respond to during phone surveys. Some researchers, despite the claims by ACSI and other customer surveys organizations, find low correlations between customer satisfaction scores and future revenue growth. Fred Reichheld, a leading strategy consultant, has concluded from his extensive research that retention rate, a traditional customer loyalty metric, is a poor indicator of a customer's loyalty. Customers often remain with their current supplier because of inertia, high switching costs, or the current lack of an alternative supplier. For example, in the 1990s, Internet service provider AOL had a high market share and low attrition rates. But when telecommunication companies began to offer low-cost, reliable, and fast Internet access, many AOL customers defected rapidly to alternative suppliers. AOL had failed to create true loyalty among its customer base. Similarly, US Airways had a high market share at the Philadelphia airport, but when Southwest Airlines chose Philadelphia as its new hub, many of US Airways long-time customers switched their loyalty immediately to the lower price, more reliable airline. US Airways had not built true loyalty among its large customer base and when a credible alternative arose, it was much too late for US Airways to make up for the lost opportunity.

Reichheld claims that the variable most strongly correlated with future growth and profits is a customer's *willingness to recommend*. He referred to the response to the question "How likely is it that you would recommend [Company xyz] to a friend or colleague?" as the single best question a company can ask about its customers' loyalty.[6] Reichheld and colleagues developed the following 10-point scale for customers to respond to this question as follows:

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Extremely unlikely				Neutral					Extremely likely

They labeled the customers who gave the company a 9 or 10 score as the "promoters." They called those who gave a 7 or 8 score the "passively satisfied," and those who gave a 1 to 6 score the "detractors." The evidence suggested that customers who were "promoters" were the only truly loyal customers, and that "detractors" could harm the company's reputation and brand value. Based on this work, many companies now calculate a **net promoter score (NPS)** defined as the percentage of customers who are promoters (score of 9 or 10) less the percentage that are detractors (score of 1 through 6). An airline's net promoter score could, by itself, explain variation in a company's growth rate over a three-year period. No airline could grow revenues without increasing its percentage of promoters over detractors. The median NPS, across 400 companies in

[6] F. Reichheld, "The One Number You Need to Grow," *Harvard Business Review* (December 2003), 46–54; F. Reichheld, *The Ultimate Question: Driving Good Profits and True Growth* (Boston: Harvard Business Press, 2008).

28 industries based on 130,000 customer survey responses during 1999–2002, was only 16% and quite a few companies had negative NPSs. Since 2002, the average NPS of surveyed companies has dropped below 10%. Intuit (the producer of Quicken software), eBay, Amazon.com, and the specialty insurance company USAA have among the highest NPSs. The power of the net promoter score is that for customers to make a recommendation to a friend and colleague, the company must satisfy them along two dimensions: (1) The product or service must offer superior value for the money and they feel good about the relationship they have with the company and (2) they are confident that the company will treat their friends and colleagues well should problems emerge. After its founding, Quicken grew rapidly to several hundred million dollars of sales with only a handful of actual salespeople. Its thousands of customers served voluntarily and spontaneously as salespeople when they told their friends, neighbors, and colleagues about the functionality and ease of use of their new electronic checking program.

Earlier in the chapter, we discussed how using activity-based costing to calculate the profitability of individual orders and customers enables a company to shift its sales force incentives from revenues to profits. Many companies are also using customer satisfaction metrics and the net promoter score to reward sales and service personnel. If you are ever asked by the salesperson who sold you an automobile or the service manager who oversaw the service performed under the company's warranty if there was anything preventing you from giving them the highest score on a telephone or Internet survey that might be done in the next week, you can be confident that their bonus depends on having provided you with a high degree of satisfaction with the transaction. One hotel placed a card on the nightstand next to the bed asking the visitor to talk with the hotel manager if there was some aspect of their stay that would cause them not to score the hotel stay as anything less than a 9 or 10 on a survey. While such "coaching" of customers is not desirable, the use of customer satisfaction and loyalty metrics in compensating a sales and service worker certainly gets the attention of front-line employees to be highly focused on creating a great customer experience.

Epilogue to Madison Dairy

Jerold Browne, CEO of Madison Dairy, set up a lunch meeting with Mr. Rancantore, the owner of the Verdi retail chain of specialty ice cream stores. After a pleasant meal, Rancantore inquired about the purpose of the meeting. Browne explained that Madison had just installed a new customer profitability system and he saw, for the first time, that the company was incurring large losses producing and delivering products to Verdi and servicing the multiple requests from Verdi's store managers. But Browne told the owner not to be overly concerned since he would propose several options to correct this problem.

Browne described option 1, continue business as usual, with some small modifications for delivery and service responsiveness, but add an 11% price increase that would cover the extra costs Madison incurred in meeting Verdi's special requests. Rancantore, unsure about whether he could absorb such a large price change, blinked several times and asked what other options were available.

Browne indicated that the second option would be to keep prices exactly where they were but that instead of producing products using Verdi's special recipes, ingredients, and labels, Madison would supply the chain with product made under its own brand, which it was already producing in large quantities for its many supermarket customers. It would use its standard packaging and weekly deliveries. The savings from using products and labels already produced in large quantities would enable Verdi to become a profitable customer of Madison's without any price increase.

Rancantore blinked several more times, as he visualized his differentiation advantage disappearing if he offered his customers the same products that they could buy cheaper in supermarkets. He asked about any other options.

Browne replied quickly that Verdi always had the option of finding another supplier willing to meet Verdi's special demands at the current price, but that for Madison to remain as a supplier, Mr. Rancantore would have to choose between the first two options. Several days later, Rancantore called back to say he would accept the price increase. He wanted to retain the quality, unique flavors, and services that Madison provided, and felt that his customers were loyal and likely willing to continue to buy even as he passed on some of the price increase to them. Browne was pleased both with the process and the outcome. Rather than continue to suffer losses with an important customer, or be forced to abandon the customer, he had been able to have a constructive conversation, based on the actual facts on the profitability of the relationship, and offer two alternatives that the customer could choose from in order to retain Madison as its supplier. The data gave Browne the insights about where he could achieve the savings to offset the potential loss of $4 million in annual revenues if he lost the customer's account, and this insight gave him the ability to adopt a strong position in the negotiations.

Summary

The long-term sustainable success of a company will be determined by how well a company performs for and with its customers. Historically, however, management accounting information had focused on measures of product and process performance and paid little attention to how well the company was doing with its customers. In effect, these companies operated in a "field of dreams"-type product-focused mentality: If we build it, customers will come and buy it. This may have worked up through the 1970s, when the world was limited by available productive capacity. But as companies in countries around the world recovered from the destruction of World War II, a shift in power occurred from producers to customers. While operating efficiency remains a high priority for almost all companies, companies today need an intense focus on their targeted customers. They need to understand what their customers' expectations are for their products and services and measure whether they are meeting and exceeding these expectations. Customer satisfaction, loyalty, account share, and willingness to recommend a company's products are important metrics that companies should be continually capturing and analyzing.

Companies must strive, however, not only for happy, loyal customers, but also for profitable customers. Measuring accurately the gross margins earned by selling to individual customers and also tracing the discounts, allowances, and MSDA costs associated with each customer enable a company to see which are its most profitable and unprofitable customer relationships. This information then becomes the basis of targeted actions—process improvement, activity-based pricing, disciplined discounts and allowances, enhanced relationships—that transform breakeven and unprofitable customers into profitable ones. The information on the highly profitable customers enables the company to focus special attention and services to retain and grow the business with these excellent accounts. The ability to measure and manage customer relationships is indeed one of the primary benefits derived from excellent management accounting information.

Key Terms

activity-based pricing, 226
customer lifetime value (CLV), 233
customer loyalty, 236
customer satisfaction, 235
managing customer relationships, 226
marketing, selling, distribution, and administrative (MSDA) expenses, 219
net promoter score (NPS), 238
pricing waterfall, 228
salesperson incentives, 232
share of wallet, 237
whale curve, 222

Assignment Materials

Questions

6-1 Why are nonfinancial measures alone insufficient for managing relationships with customers? **(LO 5)**

6-2 Provide several examples of the differences between high- and low-cost-to-serve customers. **(LO 3)**

6-3 "Companies should avoid high cost-to-serve customers because they are unprofitable." Do you agree with this statement? Explain. **(LO 2, 3)**

6-4 What is the 80–20 rule as applied to sales revenues? **(LO 2, 3)**

6-5 What is the typical shape of a graph of cumulative profits versus percentage of customers ranked from most profitable to least profitable? **(LO 4)**

6-6 Why must service companies, even more so than manufacturing companies, focus on customer costs and profitability? **(LO 5)**

6-7 Provide an example of how customers may use a specific company's resources or services very differently. **(LO 3)**

6-8 What are four broad groups of actions that managers might use to transform unprofitable customers into profitable ones? **(LO 6)**

6-9 What does a pricing waterfall chart depict? **(LO 7)**

6-10 How might the structure of salespersons' incentives or compensation plans contribute to unprofitable customer relationships? **(LO 8)**

6-11 What insights can life-cycle profitability analysis provide about customer profitability and the desirability of various customer groups? **(LO 9)**

6-12 "The only nonfinancial measure for customer relationships that our company should focus on is customer satisfaction." Do you agree with this statement? Explain. **(LO 10)**

6-13 Provide three reasons why customer loyalty provides benefits to companies. **(LO 10)**

6-14 Why might customer retention rate be a poor measure of customer loyalty? **(LO 10)**

6-15 List and describe the five stages of a hierarchy for categorizing customer satisfaction and loyalty. Which companies that you know or deal with as a consumer create the highest form of loyalty for you? **((LO 9)**

6-16 What is the net promoter score and why is it recommended for use by companies? **(LO 10)**

Exercises

LO 1

6-17 ***Assigning MSDA expenses to customers*** Tetra Company's cost system assigns MSDA expenses to customers using a rate of 33% of sales revenue. The new controller has discovered that Tetra's customers differ greatly in their ordering patterns and interaction with Tetra's sales force. Because the controller believes Tetra's cost system does not accurately assign MSDA expenses to customers, she developed an activity-based costing system to assign these expenses to customers. She then identified the following MSDA costs for two customers, Ashton and Brown:

	Ashton	Brown
Sales representative travel	$9,000	$42,000
Service customers	15,000	110,000
Handle customer orders	1,000	12,000
Ship to customers	24,000	72,000

The following additional information is available:

	Ashton	Brown
Sales	$430,000	$350,000
Cost of goods sold	220,000	155,000

Required

(a) Using the current cost system's approach of assigning MSDA expenses to customers using a rate of 33% of sales revenue, determine the operating profit associated with Ashton and with Brown.

(b) Using the activity-based costing information provided, determine the operating profit associated with Ashton and with Brown.

(c) Which of the two methods produces more accurate assignments of MSDA expenses to customers? Explain.

LO 1.3

6-18 ***Activity-based costing of order entry costs*** Hampstead Company's order entry department has 20 order entry operators. The cost associated with these 20 operators (salaries, fringe benefits, and supervision, as well as occupancy and equipment costs) is $873,600 per year. After taking into account vacations and holidays, Hampstead calculated that each operator worked about 1,920 hours per year. Allowing for breaks, training, and other time off, each operator provided about 1,560 hours of productive work each year. Hampstead uses time-driven activity-based costing for its order entry operations.

Required

(a) What is the rate per hour for each order entry employee for Hampstead's activity-based costing system?

(b) On average, it takes an order entry employee about 0.1 hour to enter the basic customer information for a manual customer order. In addition, manual orders require an operator to spend an additional 0.02 hour to enter each line item on the order. An operator spends an average of 0.06 hour to check the information on an electronic order, but no further entries are needed for specific line items. What is the order entry cost associated with each of the following two orders?

(1) A manual order with 10 line items

(2) An electronic order with 10 line items.

LO 4

6-19 ***Whale curve*** Wright Company, a new systems consulting company, is concerned about the profitability of its customers during the past year. The company has prepared the following data:

Customer	Profit	Customer	Profit
1	$221,000	14	83,000
2	–40,000	15	–179,000
3	–143,000	16	14,000
4	217,000	17	50,000
5	22,000	18	–191,000
6	9,000	19	–90,000
7	101,000	20	30,000
8	–200,000	21	–10,000
9	259,000	22	87,000
10	96,000	23	–158,000
11	208,000	24	–100,000
12	233,000	25	75,000
13	264,000		

Required

(a) Prepare a whale curve, as described in this chapter.
(b) What percentage of total profits did the most profitable 20% of the customers generate?
(c) What percentage of total profits did the least profitable 20% of the customers lose for the company?

LO 2, 6, 7 **6-20** ***Increasing customer profitability*** For each of the categories below, provide a specific example of how a company might transform its breakeven or loss customers into profitable ones:
a. Process improvements
b. Activity-based (menu-based) pricing
c. Managed customer relationships
d. Disciplined discounts and allowances.

LO 7 **6-21** ***Pricing waterfall*** Refer to the pricing waterfall chart in Exhibit 6-4.

Required

(a) What circumstances result in firms often failing to be aware of all of the discounts and allowances granted on a customer order?
(b) Once a firm becomes aware of pricing waterfalls leading to undesirably large sales discounts, what steps might the firm take to manage discounts with more discipline?

LO 7 **6-22** ***Benefits of managing discounts*** Saunders Company has recently become aware of the large total discounts on its orders and would like to know the impact on profit. The company computed its operating profit as follows:

Net sales after discounts	$200,000
Variable costs	80,000
Contribution margin	$120,000
Fixed costs	70,000
Operating profit	$50,000

Required

(a) Suppose Saunders could reduce its sales discounts to produce a 10% increase in net revenues but no changes in variable or fixed costs. By what percent would operating profits increase? How does this percentage compare to the percentage increase in net sales revenue?
(b) Refer to the original information in this problem. Suppose Saunders' salespeople discount sales another 2%, with no change in variable or fixed costs. By what percent would operating profits decrease? How does this percentage compare to the percentage increase in sales discounts?
(c) Consider the ratio of operating profit to sales. How does this ratio relate to the percentage change in operating profit, for a given percentage change in the net sales revenue?

LO 1, 2, 8 **6-23** ***Salespersons' incentives, customer profitability*** In response to how the sales incentives might be contributing to falling profits despite growing sales, Chan Company's controller has produced the following information on last year's sales to two customers that purchased a variety of products from the company:

	Customers	
	Carlson	Donner
Sales	$450,000	$400,000
Cost of goods sold	180,000	80,000
MSDA expenses, excluding sales commissions	320,000	65,000

Required

(a) Which customer is more profitable for the company?
(b) Compare a sales incentive scheme that pays 2% of sales revenue to an incentive scheme that pays 4% of customer profit. How will each scheme affect salespersons' desire to increase sales to each customer?

LO 9 **6-24** ***Customer lifetime value calculation*** Compute the customer lifetime value for Customer 421 based on the data below for the first six years of the customer relationship. Costs (c_t) were incurred to promote customer retention to a rate of 0.8 in years 1 through 6.

	Customer 421
Initial acquisition cost	$600
n = number of years retained	6
r = retention rate for each of the n years retained	0.8
Cost of capital	0.1
M_t = margin from customer in year t	
M_1	$250
M_2	300
M_3	325
M_4	350
M_5	375
M_6	400
c_1	60
c_2	50
c_3	50
c_4	50
c_5	40
c_6	40

LO 10 **6-25** ***Net promoter score calculation*** Stan's, a department store chain, has conducted a survey to collect data on customer satisfaction and perception of its merchandise and service. Data for responses to the question "How likely is it that you would recommend Stan's to a friend or colleague?" appear below.

Score	Number of Responses
10	641
9	1,265
8	1,254
7	228
6	548
5	493
4	357
3	63
2	42
1	109
Total	5,000

Required

What is Stan's net promoter score?

Problems

LO 1, 2, 5

6-26 ***Customer profitability*** A credit card company has classified its customers into the following types for customer profitability analysis:

1. Applies for credit card in response to a low introductory interest rate; transfers balance to new account, but when the low introductory rate expires, the customer transfers the balance to an account with a different credit card company that has offered a low introductory rate.
2. Charges a large dollar volume of purchases; pays balance in full and on time each month.
3. Carries a high balance; pays only the minimum required payment but pays regularly with occasional late payment.
4. Carries a high balance; pays at least the minimum required payment but does not pay in full and always pays on time.
5. Carries a low balance; pays at least the minimum required payment but does not pay in full and always pays on time.
6. Does not use the account but does not close the account.

The following facts pertain to the credit card company's operations:

- Merchants pay the credit card company a percentage of the dollar sales on each credit card transaction.
- Customers pay no interest on charges for purchases if the balance is paid in full and on time each month.
- The credit card company charges a late fee if the customer's payment is late.
- The credit card company incurs costs to send statements to inactive customers.

Required

Given the preceding information, which customer types would you expect to be the most desirable or profitable, the next most profitable, and so on for the credit card company on a long-term basis? Explain your ranking.

LO 1, 2, 3, 5, 6

6-27 ***Customer profitability analysis, original activity-based costing*** Kronecker Company, a growing mail-order clothing and accessory company, is concerned about its growing MSDA expenses. It therefore examined its customer ordering patterns for the past year and identified four different types of customers, as illustrated in the following table. Kronecker sends catalogs and flyers to all its customers several times a year. Orders are taken by mail or over the phone. Kronecker maintains a toll-free number for customers to use when placing orders over the phone. Kronecker prides itself on the personal attention it provides shoppers who order over the phone. All purchases are paid for by check or credit card. Kronecker has a very generous return policy if customers are not satisfied with the merchandise received. Customers must pay return shipping charges, but their purchase price is then fully refunded.

	Customer Type 1	Customer Type 2	Customer Type 3	Customer Type 4
Initial sales	$1,000	$1,000	$2,500	$3,000
Number of items returned	0	4	2	24
Dollar value of items returned	0	$200	$500	$1,500
Number of orders per year	1	6	4	12
Number of phone orders per year	1	0	0	12
Time spent on phone placing orders	0.25 hour	0	0	1 hour
Number of overnight deliveries	1	0	0	12
Number of regular deliveries	0	6	4	0

Prices are set so that cost of goods sold is on average about 75% of the sales price. Customers pay actual shipping charges, but extra processing is required for overnight deliveries. Kronecker has developed the following activity cost driver rates for its support costs:

Activity	Activity Cost Driver Rate
Process mail orders	$5 per order
Process phone orders	$80 per hour
Process returns	$5 per item returned
Process overnight delivery requests	$4 per request
Maintain customer relations (send catalogs and respond to customer comments or complaints)	$50 per year

Required

(a) Using activity-based costing, determine the yearly profit associated with each of the four customers described.
(b) Comment on which customers are most profitable and why.
(c) What advice do you have for Kronecker regarding managing customer relationships with the different types of customers represented?

LO 2, 4 **6-28** ***The 80–20 rule and whale curve*** Write an essay to explain how the 80–20 graph for sales revenues would be prepared and describe typical findings with respect to proportions of products and customers generating percentages of sales. Also, describe how a whale curve is prepared and typical findings with respect to proportions of customers generating percentages of cumulative customer profitability.

LO 7 **6-29** ***Pricing waterfall*** Randolph Company's product mix has become more diverse over the past few years. Consequently the company undertook an activity-based costing initiative to develop accurate costs for production, as well as marketing, selling, distribution, and administration. The company set list prices that would provide a profit regardless of whether the customer orders were complex or routine. Nevertheless, profits have been falling. The company's management team decided to examine discounts that had been granted to determine whether these are the reason for poor profit performance.

Management was surprised to learn that customers were taking advantage of a large number of possible discounts or allowances, including the following:

1. Volume discount if 20 or more units are ordered	2%
2. Pay in full in 15 days	3%
3. Cooperative advertising allowance for featuring the company's products in its advertisements	4%
4. Take a large shipment before the end of the quarter in advance of an expected seasonal increase in demand	5%
5. Online ordering discount	2%
6. Rebate on sales during specific promotional periods	2%

The management team believed that some discounting was necessary to acquire and retain large customers. On deeper investigation, they learned that some of their smaller customers, who were often the most cost conscious, took advantage of every discount or allowance offered. To compare discounts or allowances taken, they compared Customer 1 and Customer 2.

Customer 1 is a long-time customer with sales of $200,000 at list prices. This customer takes advantage of each discount or allowance listed in the preceding table. Moreover, this customer has been a loyal customer since Randolph Company's inception. In appreciation, Randolph's sales representative offers free freight, which amounts to 3% of the customer's list-price purchases from Randolph.

Customer 2 is a more recently acquired customer with sales of $1,000,000 at list prices. This customer only takes advantage of items 1, 3, and 5 in the preceding table.

Required

(a) Compute the total sales discount percentage for Customer 1 and for Customer 2.
(b) Why might Randolph Company's management team have been unaware of the potentially large total discounts offered to its customers?
(c) What advice do you have for Randolph Company regarding managing its discounts and allowances?

LO 9

6-30 ***Customer lifetime value calculations*** KEM Company has begun studying customer lifetime value for its customers and has prepared the information below for selected customers. For simplicity, management has assumed that for a given customer, the retention rate is the same every year until the customer departs. For Customer 4, costs (c_t) were incurred to promote customer retention in years 1 and 2.

	Customers			
	1	2	3	4
Initial acquisition cost	$1,000	$1,000	$1,000	$1,000
n = number of years retained	5	3	5	5
r = retention rate for each of the n years retained	1	1	0.9	1
Cost of capital	0.1	0.1	0.1	0.1
M_t = margin from customer in year t				
M_1	$275	$300	$275	$275
M_2	275	300	275	275
M_3	275	300	275	300
M_4	275	—	275	300
M_5	275	—	275	300
c_t = additional costs-to-serve and retain customer in year t				
c_1	$0	$0	$0	$50
c_2	0	0	0	25
c_3	0	0	0	0
c_4	0	—	0	0
c_5	0	—	0	0

Required

(a) Compute the customer lifetime value for each customer for the stated number of years.
(b) Discuss the reasons for differences in customer lifetime value between Customers 1 and 2, Customers 1 and 3, Customers 1 and 4, and Customers 3 and 4.

(c) Compute the customer lifetime value for Customers 1, 2, and 3 assuming that n is very large and the numbers in the table remain about the same each year.

(d) How does information on a customer's estimated lifetime value help a company manage its customer acquisition and loyalty programs?

LO 10 **6-31** ***Net promoter score*** In which industries would you expect the net promoter score to have the greatest predictive power for repeat purchases and growth? The least predictive power for repeat purchases and growth?

Cases

LO 1, 2, 3, 6, 8 **6-32** ***Pricing, customer profitability, managing customer relationships*** Read the *Wall Street Journal* article "Survival Strategies: After Cost Cutting, Companies Turn toward Price Increases" by Timothy Aeppel (September 18, 2002, p. A1). The article reports "an all-out search for new ways to charge more money without raising prices."

Required

(a) How did Jergens, Inc., use an activity-based costing approach to justify the price for an order of odd-size metal locating fasteners?

(b) What issues arose in Goodyear Tire & Rubber's pricing to distributors? What was Goodyear's response?

(c) What was the outcome of Emerson Electric's decision to depart from cost-based pricing? How can a product costing system contribute to undercosting a low-volume or customized product?

(d) How did Wildeck influence customers to purchase products and services that are more profitable to Wildeck? How did Wildeck respond to a competitor's lower priced storage-rack protector? What role should a cost system play in such decisions?

(e) Why was Union Pacific not concerned if it lost its less profitable customers? Will dropping unprofitable customers always lead to an immediate increase in profit?

LO 1, 2, 3, 5, 6, 9 **6-33** ***Time-driven activity-based costing, activity-based management*** Midwest Office Products[7]

John Malone, general manager of Midwest Office Products (MOP), was concerned about the financial results for calendar year 2003. Despite a sales increase from the prior year, the company had just suffered the first loss in its history (see summary income statement in Exhibit 6-9).

Exhibit 6-9
Midwest Office Products: Income Statement, January–December 2003

Sales	$42,700,000	122.0%
Cost of items purchased	35,000,000	100.0%
Gross margin	7,700,000	22.0%
Personnel expense (warehouse, truck drivers)	2,570,000	7.3%
Warehouse expenses (excluding personnel)	2,000,000	5.7%
Freight	450,000	1.3%
Delivery truck expenses	200,000	0.6%
Order entry expenses	840,000	2.4%
General and selling expenses	1,600,000	4.6%
Interest expense	120,000	0.3%
Net income before taxes	($80,000)	(0.2)%

Source: Robert S. Kaplan.

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Midwest Office Products was a regional distributor of office supplies to institutions and commercial businesses. It offered a comprehensive product line ranging from simple writing implements (such as pens, pencils, and markers) and fasteners to specialty paper for modern high-speed copiers and printers. MOP had an excellent reputation for customer service and responsiveness.

Warehouse personnel at MOP's distribution center unloaded truckload shipments of products from manufacturers, and moved the cartons into designated storage locations until customers requested the items. Each day, after customer orders had been received, MOP personnel drove forklift trucks around the warehouse to accumulate the cartons of items and prepare them for shipment.

MOP ordered supplies from many different manufacturers. It priced products to its end-use customers by first marking up the purchased product cost by 16% to cover the cost of warehousing, order processing, and freight; then it added another 6% markup to cover the general, selling, and administrative expenses, plus an allowance for profit. The markups were determined at the start of each year, based on actual expenses in prior years and general industry and competitive trends. Midwest adjusted the actual price quoted to a customer based on long-term relationships and competitive situations, but pricing was generally independent of the specific level of service required by that customer, except for desktop deliveries.

Typically, MOP shipped products to its customers using commercial truckers. Recently, MOP had introduced a desktop delivery option in which Midwest personnel personally delivered supplies directly to individual locations at the customer's site. Midwest had leased four trucks and hired four drivers for the desktop delivery service. Midwest charged a price premium (up to an additional 5% markup) for the convenience and savings such direct delivery orders provided to customers. The company believed that the desktop delivery option would improve margins and create more loyal customers in its highly competitive office supplies distribution business.

Midwest had introduced electronic data interchange (EDI) in 1999, and a new Internet site in 2000, which allowed customer orders to arrive automatically so that clerks would not have to enter data manually. Several customers had switched to this electronic service because of the convenience to them. Yet Midwest's costs continued to rise. Malone was concerned that even after introducing innovations such as desktop delivery and electronic order entry, the company could not earn a profit. He wondered about what actions he should take to regain profitability.

Distribution Center: Activity Analysis

Malone turned to his controller, Melissa Dunhill, and director of operations, Tim Cunningham, for help. Tim suggested:

> If we can figure out, without going overboard of course, what exactly goes on in our distribution center, maybe we can get a clearer picture about what it costs to process orders and serve our customers.

Distribution center manager, Wilbur Smith, spoke with Melissa and Tim about the operations at the center:

> All we do is store the cartons, process the orders, and get them ready to ship to customers, either by commercial freight or using the desktop delivery option.

Wilbur described some details of these activities:

> The amount of warehouse space we need and the people to move cartons in and out of storage and get them ready for shipment just depends on the number of cartons. All items have about the same inventory turnover so space and handling costs are proportional to the number of cartons that go through the facility.
>
> We use commercial freight for normal shipments, and the cost is based more on volume than on anything else. Each carton we ship by commercial carrier costs about the same, regardless of the weight or distance. Of course, any carton that we deliver ourselves, through our new desktop delivery service, avoids the commercial shipping charges but does use our trucks and drivers.

The team talked with one of the truck drivers doing desktop deliveries:

An average delivery takes about three hours. But delivery times can be as short as 30 minutes for nearby customers, and up to eight hours for delivery to a distant customer. We also spend different times once we arrive at a customer's site. Some customers have only a single dropoff point, while others require us to deliver individual cartons to different locations at their site.

Melissa and Tim next checked on the expenses of entering and validating customer order data at the distribution center. The order entry expenses included the data processing system, the data entry operators, and supervisors. They spoke with Hazel Nutley, a data entry operator at Midwest for 17 years.

All I do is key in the orders, line by line by line. I start by entering the customer ID and validating our customer information. Beyond that, the only thing that really matters is how many order lines I have to enter. Each line item on the order has to be entered separately. Of course, any order that comes in through the EDI system or Internet page sets up automatically without any intervention from me. I just do a quick check to make sure the customer hasn't made an obvious error, and that everything looks correct. This validity check takes about the same time for all electronic orders; it doesn't depend on the number of items ordered.

Melissa and Tim collected information from company databases and learned the following:

- The distribution centers processed 80,000 cartons in 2003. Of these, 75,000 cartons were shipped by commercial freight. The remaining 5,000 cartons were shipped under the desktop delivery option. Midwest made 2,000 desktop deliveries during the year (the average desktop delivery was for 2.5 cartons).
- People felt that handling, processing, and shipping 80,000 cartons per year was about the capacity that could be handled with existing people and space resources.
- The total compensation for truck drivers was $250,000 per year. Each driver worked about 1,500 hours per year doing the desktop delivery service. This was also the maximum time available from each truck, after subtracting maintenance and repair time.
- Midwest employed 16 order entry operators. The $840,000 of order entry costs in Midwest's income statement included the salaries, fringe benefits, supervision, occupancy, and equipment costs for the operators.
- With vacations and holidays, each operator worked about 1,750 hours per year. But allowing for breaks, training, and other time off, the order entry supervisor believed that operators provided about 1,500 hours per year of productive work.
- Operators required about 9 minutes (0.15 hour) to enter the basic information on a manual customer order. Beyond this basic setup time for a manual order, operators took an additional 4.5 minutes (0.075 hour) to enter each line item on the order. The operators spent an average of 6 minutes (0.10 hour) to verify the information on an electronic order.
- Some customers paid their invoices within 30 days, while others took 90 to 120 days to pay. Midwest had recently taken out a working capital loan to help finance its growing accounts receivables balance. The current interest rate on this loan was 1% per month on the average loan balance.

Understanding Order Costs and Profitability

Melissa looked through recent orders and found five that seemed representative of those received during the past year (see Exhibit 6-10). The orders all involved cartons containing merchandise costing about $500 to acquire from manufacturers to which the normal 22% markup had been realized. Orders requiring direct delivery had an additional 4% to 5% surcharge. Although each of these orders had been priced in the standard way for cost recovery and profit margins, Melissa wondered what profits Midwest Office Products had really earned on each of these orders.

Exhibit 6-10
Midwest Office Products: Five Orders

Order	1	2	3	4	5
Price	$610	$634	$6,100	$6,340	$6,100
Acquisition cost	500	500	5,000	5,000	5,000
Number of cartons in order	1	1	10	10	10
Number of cartons shipped commercially	1	0	10	0	10
Desktop delivery time (hours)	—	4	—	4	—
Manual order	No	Yes	No	Yes	Yes
Number of line items in order	1	1	10	10	10
Electronic order	Yes	No	Yes	No	No
Payment period (months)	1	4	1	4	4

Source: Robert S. Kaplan.

Required

(a) Based on the interviews and the data in the case, estimate the following:
(1) The cost of processing cartons through the facility
(2) The cost of entering electronic and manual customer orders
(3) The cost of shipping cartons on commercial carriers
(4) The cost per hour for desktop deliveries.

(b) Using this capacity cost rate information, calculate the cost and profitability of the five orders in Exhibit 6-10. What explains the variation in profitability across the five orders?

(c) On the basis of your analysis, what actions should John Malone take to improve Midwest's profitability? Include suggestions for managing customer profitability.

(d) Suppose that currently, Midwest processes 40,000 manual orders per year, with a total of 200,000 line items entered, and 30,000 electronic orders.

(1) How much unused practical capacity does the company have?
(2) If the company's efforts to encourage customers who order manually to change to electronic ordering results in 20,000 manual orders per year (100,000 line items entered) and 50,000 electronic orders, how many order entry operators will the company require? If order entry resource costs can be reduced in proportion to the number of employees, what will be the cost savings from the changes?
(3) Returning to the original information in part d, if the company's process improvement efforts result in a 20% reduction in time to perform each of the three order entry activities, how many order entry operators will the company require? If order entry resource costs can be reduced in proportion to the number of employees, what will be the cost savings from the process improvements?