

Profitability and Lifetime Value

At a Glance

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In any business the bottom line objective is profit. This word, however, can have many different meanings and time horizons over which it is measured. Also, it is often a quantity that results from the optimization of other, intermediate criteria, these being quite different in various different activities. An example from general marketing is the choosing of advertising media to maximize *awareness*, then *recall*, and then the real bottom line: *response* (purchase), or *dollar profit from the purchase*.

Each area of direct marketing, from decisions to rent a list, to mail offerings, to qualify leads, to other areas, can be evaluated as if it were an auxiliary business of its own. An equivalent of a profit and loss statement can be generated to determine whether to expand or reduce an activity, or more generally, what the optimal (profit maximizing) choice of level or decision should be.

Some of the specific decision-making frameworks for profit maximization have been discussed in previous chapters. For example, the decision-making process with respect to whether to rent a given list of names, and that of how deep into a segmented list to mail (i.e., the “how deep to dip” decision), were addressed in chapter 5. In this chapter we consider some basic—and also some not so basic, but very important—issues in profitability analysis, both in general and in direct marketing in particular. We begin with a discussion of revenue, profit, and contribution considerations, including a very brief introduction to the concept of

Customer Lifetime Value (CLV) and its role in direct marketing decision making; indeed, its role is, or should be, considerable in *all* forms of marketing. Next we address some cost issues; then we put the two considerations together and discuss “profit and loss” statements for direct marketing offers or campaigns. Finally, we revisit the concept of Customer Lifetime Value, and provide an extensive examination of its determination and application.

Revenue, Profit, and Contribution

Robert Kestnbaum lists four basic growth strategies to generate higher revenue and profits in the long run:¹

1. invest in new customer acquisition
2. invest in new media for presenting offers
3. add products or services to your line
4. expand the number of times customers and prospects are contacted

Each of these strategies can be utilized to achieve specific financial goals:

1. maximize sales
2. maximize profit
3. maximize profit as a percent of sales
4. maximize return on investment (ROI)

Kestnbaum goes on to say that the latter goal is the most meaningful in the long run. One key to achieving this goal is to make certain that no components of revenue, contribution, or profit are overlooked in the process of evaluating this return.

INTRODUCTION TO CUSTOMER LIFETIME VALUE

A core element in determining contribution and profit is to assess the lifetime value of a customer. Lifetime value (let’s say for a new customer) is defined as the net present value of all future contributions to overhead and profit. It depends on a variety of considerations:

1. gross contribution (equal to revenue minus costs of sales)
2. relevant promotional costs
3. length of time over which values are projected
4. retention rate
5. discount rate appropriate for marketing investments

Each of these quantities (or at least 1, 2, and 4) is needed on a yearly or purchase cycle basis.

A major use of the calculation of customer lifetime value is for decision making in the areas of customer reactivation and customer acquisition. Julian Simon indicates how important this calculation is, by asking: “How much is it worth to you to get an additional customer? The calculation of the answer to this question is the most important calculation a mail-order merchant makes.”² Indeed, according to Frederick Reichheld and W. Earl Sasser,

¹Robert Kestnbaum, “Growth Strategies for Direct Marketers,” Direct Marketing Association, Release 110.2, January 1984.

²Julian Simon, *How to Start a Mail-Order Business*, 4th ed. (New York: McGraw-Hill, 1987), 221.

in most cases companies do not know how much it really costs to lose a customer—primarily because today’s accounting systems do not capture the value of a loyal customer.³ Most companies focus on current period costs and revenues, and they ignore expected cash flows over a customer’s lifetime with the company. Theoretically, CLV is the relevant amount to use to determine an upper limit for how much cost should be allocated to customer acquisition.

In the past, direct marketers would mistakenly consider only the initial profits from the current offering to represent the (potential) value of a customer. According to marketing theory, there are cases in which repeat business is not worth worrying about, and the current sale is the only real consideration. The usual example given is sales of encyclopedias. However, in direct marketing, repeat business is often one, if not *the*, major consideration. Most magazine publishers would never attempt to acquire any customers if they did not include repeat business in their calculations of “profit” or “contribution”—as part of the CLV. The profit made in the first year of virtually all magazine subscriptions is less than the one-time cost of setting up the account, plus the cost of the average number of “dry holes” per subscription achieved.

Looking at only the first sale is analogous to using the payback period as the criterion for investment decision making; it is a conservative criterion, one for which the risk is minimal but the opportunity loss is potentially very high. After all, if one decides to incur an acquisition cost only when it is less than the expected profit on the first sale, one will virtually never lose money in the acquisition process. Yet, quite often the decision would then be made not to attempt to acquire a customer when the latter’s expected profit *over time* greatly exceeds the acquisition cost, but the *first-year profit* does not exceed the acquisition cost.

Note that we continue to talk about expected or average value of a customer. This is because usually we cannot be sure of the degree to which an individual new customer will be profitable (or, often, whether he or she will be profitable at all!). Statistical analysis can address the issue of predicting profitability, but it still will be a case of averaging, because two customers with exactly the same “profile” will not exhibit precisely the same purchase behavior. It is well known in the field of statistics that the larger the number of observations (e.g., people) comprising an average, the more reliable the average is.

Because of the need to go through an averaging process with respect to many of the parameters making up customer lifetime value, historical data are required for many previously acquired customers. Because we are usually desirous of projecting cash flows out a moderate or large number of years, we need the historical data that go back this same moderate or large number of years; for example, we cannot estimate what percent of our customers who have been with us for four years will remain with us for another year unless we have data on (or at least a list of) customers from four and five years ago.

Just how does one figure out the (expected) lifetime value of a new customer? We consider a simple example, and, at that, just sketch an outline of the process here. (In the appendix, we provide a detailed discussion of this topic.) Suppose that we assume that the margin is the same for all products we offer. This allows us to focus on total dollar sales, and multiply by a constant to determine contribution or profit. (Actually, we can arrive at the same point by taking a weighted average of the margins of the various products we offer, where the weights are sales dollars for each different margin. Let’s ignore the difficulty of projecting margins into the future by assuming that these margins are constant over time.) Still, how

³Frederick Reichheld and W. Earl Sasser, “Zero Defections: Quality Comes to Services,” *Harvard Business Review* (September–October 1990).

do we figure out the (lifetime) total dollars of a customer? Actually, we figure out an expected value of this quantity. We do this by using the average amount of total dollars per customer for each sale, multiplied by the number of repeats. We use our historical database to estimate the repeat rate. For example, in the case of a magazine subscription, we might simply assume that a constant percent of customers drop out each year. In a more general direct marketing situation, we may take a random sample of 200 customers and compute the average repeats per customer; for example:

(1) Number of Repeats	(2) Number of Customers	(1) × (2) Repeats • Customers
0	115	0
1	45	45
2	21	42
3	9	27
4	7	28
5	3	15
>5	0	0
	Total: 200	Total: 157

The average number of purchases per customer, n , then equals:

$$n = (200 + 157)/200 = 357/200 = 1.785$$

If it is possible that some of these customers will at some future time make another purchase, then this value could be a slight underestimate. By the way, we should take into consideration, and view as equivalent to repeats, any purchases that come from names of friends provided by the customer. Of course, we cannot always identify which purchases were based on the recommendations of other customers, or which purchases would not have occurred without the other customer; that is why some companies build in an added amount of sales accruing to them from an acquired customer, under the assumption that these "word of mouth" generated sales will occur. Ridgeway Fashions in Virginia assumes a referral rate of 5 percent in terms of assessing the value of a customer.⁴

To find the lifetime value of a customer one must project into the future. Courtheoux provides a methodology for projecting future customer performance, which involves seven steps:⁵

1. Segment customers into a manageable, but distinguishable number of cells, based on recency, frequency, or monetary considerations. Typically, there should be from 25 to 100 cells.
2. Choose a time period for tracking results. Six months is typical.
3. Estimate the contribution to overhead and profit by tracking all revenues and costs associated with all customers.
4. Describe movement of customers across cells.

⁴Arthur Hughes, "Evaluating Database Strategy by Lifetime Value," *Journal of Database Marketing* 1, no. 4 (1994).

⁵R. Courtheoux, "Estimating and Applying Customer Name Values," Direct Marketing Association, Release 620.2, January 1986.

5. Project the movement of 1,000 new customers over a number of periods into the future. Proceed enough into the future so that only a small amount of contribution is potentially remaining.
6. Use the number of customers projected for each cell (from step 5) and the financial performances for each cell (from step 3) to calculate the contribution for each period.
7. Apply the cost of capital and find the net present value of the contribution stream.

Courtheoux gives some examples of using this procedure and then goes on to incorporate the results into a variety of different decision-making situations.

PERFORMANCE MEASURES FOR PROFIT AND CONTRIBUTION

In addition to the concept of lifetime value, there are many traditional ratios and other performance measures used to evaluate a direct marketing campaign. Some of the more common performance measures are listed here:

$$\%R = \text{Percent response} = (\text{Numbers of orders}/\text{Total quantity mailed}) \times 100$$

$$\text{OPM} = \text{Orders per thousand} = \%R \times 10$$

$$\text{CPM} = \text{Cost per thousand} = \text{Total cost}/(\text{Quantity mailed}/1,000)$$

$$\text{CPO} = \text{Cost per order} = \text{CPM}/\text{OPM}$$

$$\text{ROP}(\%) = \text{Return on promotion} = [(\text{Contribution} - \text{CPO})/\text{CPO}] \times 100$$

$$\text{C\$R} = \text{Cost per dollar raised (in a fund-raising campaign)}$$

$$\text{DAP} = \text{Total dollar amount purchased}$$

We note here that some contributions are qualitative (not able to be quantified). This appears to be especially true in the telemarketing arena. An example of this is reported by Stone and Wyman, who evaluate the economics of a GE Answer Center, a free telephone service provided by General Electric that allows customers to call with questions or comments about products, either before or after a purchase is made.⁶ When Powell Taylor, then manager of the GE Center, was asked, "How do you know that the millions of dollars spent in building and maintaining the center have been worth it?" he answered, "Surveys have shown that 95 percent of surveyed dealers regard the GE Center to be a 'super idea.'" Obviously, there is no simple way either to quantify the value of the GE Center nor to have done a quantitative analysis prior to its being built. An a priori questionnaire about the center's impact on purchase behavior would have been speculative; likewise, an after-the-fact questionnaire to evaluate the incremental effect of having the center would also be of dubious value.

Costs

In the most general sense, contribution and profit are both defined as the difference between revenue and cost. Yet the terms are not interchangeable. Each is not defined consistently across disciplines, and often not even within the same discipline. The best and simplest working definition for us to use in the direct marketing environment is that *contribution is revenue less variable costs*, whereas *profit is contribution less fixed costs*. Fixed costs are those costs not affected by the amount of revenue (or number of orders or number of items); typical examples are rent and management salaries. Variable costs are costs that vary directly with items sold and are usually per order (e.g., paperwork), per item (e.g., wholesale cost of the item, postage), or per dollar of sale (e.g., taxes). Some fixed costs are called overhead.

⁶B. Stone and J. Wyman, "The Mathematics of Telemarketing," *Direct Marketing* (December 1986): 46–52.

One subtlety that needs mentioning is that some variable costs must be expressed as an expectation. For example, costs for bad debts (nonpayment) are incurred for some orders but not others. Yet, it is clear that if you had, for example, 20 weeks in which the number of orders were 200 per week, and another 20 weeks in which the number of orders were 400 per week, the average number of bad debts per week for the latter 20 would likely be about twice the average for the former 20. In other words, we cannot predict the cost for bad debt for a given order, but the total dollar cost surely varies, *on average*, with the number of orders. Bad debt cost, expressed as an expectation per order, is thus a variable cost. Costs for lost shipments, damaged items, and returned items are other variable costs that are expressed as expectations.

There are two key issues involved in correctly using costs in various decision-making situations. One is to make sure that all relevant costs of servicing the customer are included. The other is to include or exclude the fixed costs as relevant costs, as appropriate.

The list of all relevant costs for a direct marketing activity depends on the particular activity. In fact, there are different levels or hierarchies of costs. Consider, for example, a catalog operation. A higher level of costs might be the traditional costs, including the cost of the products sold, cost of shipping and handling, cost of bad debts, costs associated with returns, and so forth. One of the costs could be “cost of producing the catalog.” At a level deeper in the hierarchy, we could list the detailed costs of producing the catalog: paper, printing, envelope, photography, consultants to produce copy, and others. At yet a deeper level in the hierarchy, we could detail the costs of the photography (say, into a time component, a black-and-white versus color component, or some other distinction) for purposes of making specific decisions about the catalog.

The most frequent error made in terms of wrong use of costs involves including the fixed cost in a decision situation in which it is unwarranted. (The converse—not including the fixed cost in a situation in which it is appropriate to include it—does not occur often.) This is a problem that pervades not only direct marketing decision making, but one that affects many areas of decision making. The entire notion of a “sunk cost” needs to be understood. Once a (nonrefundable) cost is incurred, it is no longer a consideration in deciding upon strategies for the future. Simon says this well by noting the adage, “Sunk costs are sunk.”⁷

ILLUSTRATIVE EXAMPLE OF USE AND MISUSE OF FIXED COSTS

A typical example in which an inferior decision may be reached by misuse of the role of fixed costs is the decision regarding how deep into a segmented list to mail. Consider the following greatly simplified description of the parameters involved. Suppose we have rented a list to which we apply our proprietary segmentation algorithm. Anticipated response rates for the segmented list, rank-ordered by decile, are as follows:

<i>Decile</i>	<i>Response Rate</i>	<i>Decile</i>	<i>Response Rate</i>
0-10	.050	40-50	.027
10-20	.042	50-60	.024
20-30	.036	60-70	.021
30-40	.031	70+	.019

⁷Simon, *How to Start a Mail-Order Business*. 136.

Further, suppose that there is only one product offered for \$50 per unit, there are no multiple orders, no returns, no “deadbeats,” and no consideration of repeat business is relevant. The product cost is \$22 per unit, and all other variable costs (front end and back end, including those that are expectations) total \$10 per order. Thus, per order contribution to overhead is $\$50 - \$22 - \$10 = \18 . Finally, suppose that the in-the-mail cost per thousand pieces mailed is \$400.

The correct analysis to determine how deep into this list to mail is reasonably straightforward, given the simplified assumptions being made. In essence, we should mail any decile (we assume, without loss of generality for the point about to be made, that there is no way to segment more finely than by decile) for which the response rate, P , satisfies

$$18 \times (1,000 \times P) > 400$$

or

$$P > .022$$

This result corresponds to mailing the top 60 percent of the rank-ordered list; the 50–60 decile response rate is .024 (higher than .022), whereas the 60–70 decile response rate is .021 (lower than .022).

Now suppose that the decision how deeply into the list to mail is made by somebody who mistakenly includes some fixed (sunk) costs in the calculation. More specifically, suppose that the list rental cost is included, \$63 per thousand names, with some selects. After all, one might reason, this is a cost that is associated “directly” with a name and is thus a variable cost. Of course, this reasoning is faulty, and does not reflect the realization that the (rental) cost is a sunk cost—it does not vary with the number of names we choose to mail from (i.e., how “deep we dip” into) the list. Suppose further that an additional \$36 per thousand names is allocated to cost to cover such (other) traditional fixed costs as rent, management salaries, copy design expenses, and so forth. The cost figure that would now mistakenly replace the \$400 value of the earlier analysis is

$$\$400 + \$63 + \$36 = \$499$$

With this value as input, we should mail any decile for which the response rate, P , satisfies

$$18 \times (1,000 \times P) > 499$$

or

$$P > .028$$

This result corresponds to mailing (only) the top 40 percent of the rank-ordered list. The 30–40 decile response rate is .031 (higher than .028), whereas the 40–50 decile response rate is .027 (lower than .028).

Note that the mistaken use of the fixed costs has resulted in mailing the top 40 percent of the rank-ordered list rather than the top 60 percent. Dollar contribution is reduced (i.e., money is lost!). Assume that the rented list consists of one million names. By not mailing the 40–50 decile, with response rate .027, and by not mailing the 50–60 decile with response rate .024, the number of orders forgone is

$$\begin{aligned} (100,000 \times .027) + (100,000 \times .024) &= 2,700 + 2,400 \\ &= 5,100 \end{aligned}$$

This represents a lost contribution (excluding the in-the-mail cost) of

$$\$18 \times 5,100 = \$91,800$$

The in-the-mail cost is

$$200,000 \times (\$400/1,000) = \$80,000$$

and thus the resulting loss in *net contribution* is

$$\$91,800 - \$80,000 = \$11,800$$

In percentage terms, this \$11,800 represents a decrease in net contribution of 8.6 percent, from \$138,000 (if the top 60 percent of the rank-ordered list is mailed) down to \$126,200 (mailing only the top 40 percent). In terms of the number of orders, the decrease is far more dramatic—28.3 percent, from 21,000 orders (if the top 60 percent of the rank-ordered list is mailed) down to 15,900 orders (mailing only the top 40 percent).

If there were a meaningful opportunity for repeat sales (which might suggest the use of customer lifetime value as a decision criterion, rather than the one-time contribution), the loss would be greater than \$11,800.

Situations exist that illustrate when one would want to use the “fixed” list rental cost, and possibly other fixed costs (e.g., management salaries), in making a strategic decision. Suppose (somewhat hypothetically) that you have an opportunity to borrow the list at no cost, and note your segmentation results, before having to commit yourself to renting the entire list. The decision whether to rent the (entire) list would use the same optimal net contribution (excluding the rental cost) of \$138,000 (by mailing the top 60 percent of the rank-ordered list), and subtract from it the total rental cost of \$63,000 (a million names at \$63 per thousand); this gives a value of \$75,000. Because this amount (not the \$138,000!) is greater than zero, the correct decision is to rent the list.

Now suppose (very hypothetically) that the entire business of this firm consists of the use of 10 lists, each identical to the one being discussed. At a \$75,000 contribution per list, this results in a total contribution of \$750,000. The decision whether this company should continue in business would be decided by taking the \$750,000 and subtracting from it the total of all fixed costs (e.g., management salaries, utility bills); it should continue in business only if this difference (not the \$750,000) is greater than zero.

If all relevant costs are included in a cost calculation, and fixed costs are not included when inappropriate, the analysis has an excellent chance of leading to the truly best decision. However, the actual implementation of decision analysis still requires adapting to the particulars of the decision situation. Decisions about how deeply into a list to mail involve very different costs and benefits than decisions about the number of products to include in a catalog, or decisions having to do with other areas of direct marketing.

Profit and Loss Statements

The most useful way to represent the results of many direct marketing activities is through a profit and loss worksheet or statement. This is a detailed table of sales (or revenue) and costs. It can also be used as the springboard for a spreadsheet analysis when different sets of assumptions are to be tested or explored. To construct a profit and loss statement one must be able to identify all relevant revenue sources and cost sources. (Note: the importance of the word *relevant* is the core of the previous cost section.) The statement is really just an organized format for assessing the prospects or results of an operation (e.g., promotion or offer,

decision whether to rent a list, change of design for a warehouse). Indeed, producing a profit and loss statement is a general business tool that greatly transcends the field of direct marketing. In reality, it is a more narrowly focused version of what is called an *income statement*, a venerable part of any business's profitability summary for a period of time, usually a year.

There is no one design for a profit and loss statement; it depends on the operation being detailed. In fact, even for the same operation, two different people working independently would not arrive at the same exact design. Figure 9.1 lists the categories of a detailed profit and loss statement worksheet for a direct mail offer of one item, according to Pierre Passavant.⁸ Passavant goes on to say that this list is too detailed and cumbersome if the objective is a quick review, so he proposes the categories of Figure 9.2 (p. 188) as a summarization.

1. Cash selling price
2. Deferred payment price
3. + Shipping and handling
<hr/>
4. Average gross order value
5. – Returns (10%)
<hr/>
6. Average net sale
7. Cost of goods per sale
8. per unrefurbished return
9. Order receipt and processing
10. Business reply postage
11. Order process and customer setup
12. Credit card fee (3.5%)
13. Credit check
14. Installment billing
15. Customer service
16. Shipping and handling
17. Returns postage
18. Returns handling
18A. Returns refurbishing
19. Bad debt (3%)
20. Collection effort
21. Premium
22. Promotion (cost per order)
23. Overhead
<hr/>
24. Total expense
25. Profit before taxes
26. Profit % to net sales

FIGURE 9.1 Detailed Profit and Loss Statement

Source: Adapted from Pierre Passavant, "Direct Marketing Economics and Budgeting," Direct Marketing Association, Release 600.1, October 1979.

⁸Pierre Passavant, "Direct Marketing Economics and Budgeting," Direct Marketing Association, Release 600.1, October 1979.

1. Selling price
 2. + Shipping and handling
 3. Gross order value
 4. – Returns (10%)
 5. Net sales
 6. Cost of goods
 7. Order process, shipping, return costs,
customer service, credit fee
 8. Bad debt (3%)
 9. Premium
 10. Promotion (cost per order)
 11. Overhead
-
12. Total expenses
-
13. Profit
 14. Profit % to net sales

FIGURE 9.2 Summary Profit and Loss Statement

Source: Adapted from Pierre Passavant, "Direct Marketing Economics and Budgeting." Direct Marketing Association, Release 600.1, October 1979.

Figure 9.3 presents the categories of a profit and loss statement put forth by David Shepard for a similar operation.⁹

Whereas the illustrations in Figures 9.1 and 9.2 are from about 19 years ago, the Figure 9.3 illustration is of more recent vintage (1995). Yet the two detailed profit and loss statements (Figures 9.1 and 9.3) are quite similar, although far from identical. It is natural that they are very much alike—after all, they are modeling the same operation. However, the fact that both statements include 26 entries is more a coincidence than something to be clearly anticipated; in fact, Figure 9.1 really has 27 entries, one being entry 18A. The two statements do differ in some ways. The precise names of the categories are not the same; for example, "Gross sales" on one statement has "Average gross order value" as its counterpart on the other statement. The order of the entries differ as well: "Gross sales" is the first entry on one statement, whereas its "Average gross order value" counterpart is the fourth entry on the other statement. The hierarchy of the categories is not identical on the two statements, either. Figure 9.3 lists all costs (e.g., product costs, order processing costs) as subsets of "Cost of sales," whereas Figure 9.1 has each major cost category in equal status to sales, with subset costs within each category on a lower level. Finally, each statement covers categories that the other does not; in Figure 9.3 there is no listing of profit as a percent of sales (category 26 in Figure 9.1); on the two statements the position of overhead differs, so that in Figure 9.1 the first profit or contribution measure (entry 25) has overhead already subtracted out, whereas in Figure 9.3, contribution (i.e., before overhead is subtracted out) is separately listed as entry 24, and profit is listed as entry 26.

The key point is that the profit and loss statement is for the user's benefit and should be designed to include not only all relevant revenues and costs but also any other costs or

⁹David Shepard. *The New Direct Marketing*, 2nd ed. (New York: Richard D. Irwin, 1995).

1.	Gross sales
2.	Shipping and handling
3.	Total revenue
4.	Returns
<hr/>	
5.	Net sales
<hr/>	
6.	Cost of sales
7.	Product
8.	Net shipments
9.	Nonreusable units
10.	Order processing
11.	Reply postage
12.	Setup costs
13.	Credit card costs
14.	Bad check expense
15.	Shipping and handling
16.	Return processing
17.	Postage
18.	Handling
19.	Refurbishing
<hr/>	
20.	Premium
21.	Total cost of sales
<hr/>	
22.	Operating gross margin
23.	Promotion expense
<hr/>	
24.	Contribution to overhead and profit
25.	Overhead allocation
<hr/>	
26.	Profit

FIGURE 9.3 Profit and Loss Statement for a Single-Shot Promotion

Source: Adapted from David Shepard, *The New Direct Marketing*, 2nd ed. (New York: Richard D. Irwin, 1995).

combination of entries the user believes would be enlightening (e.g., “Profit % to net sales” in Figure 9.1, which is just the ratio of entry 25 to entry 6).

The important qualities for a profit and loss statement are (1) that it should correctly represent the relevant costs and revenues and (2) that the user understand precisely what assumptions correspond with the derivation of the “bottom line” profit measure, as yielded by the profit and loss statement. How costs are treated can totally turn around a go or no-go decision. Some of the potential confusion arises because of the different purposes for which (and different time frames over which) profit and loss statements are used. Assigning—and, thus allocating—overhead to operations is called *full costing*. For a wide variety of purpos-

es, this is appropriate. Accountants argue that each operation must bear its “fair share” of costs, even if some of these costs are not *directly* connected to the operation. After all, if none of the operations were “charged” for items such as rent, salary of the company president, and so forth, every operation would be profitable, but the company would lose money! As noted earlier, however, there are many situations in which treating overhead as an expense against an operation can lead to a significantly reduced profit realization from what is optimal. At best, any allocation of fixed costs is arbitrary.

An alternative is to use what is called *direct costing*, which removes all indirect costs from an operation. This may often be more useful in the majority of decision-making situations. However, for routine reporting purposes, the Accounting Board of the American Institute of Certified Public Accountants has not sanctioned the use of direct costing.

What do and should companies do? They will often keep two sets of profit and loss statements; this may sound like the proverbial “keeping two sets of books,” but it is exactly what they should do to capture all sides of the decision-making activity. In the long run, overhead expenses must be accounted for. In the short run, direct costing will more often lead to the correct decision.

As a final point, the reader should be reminded that the profit and loss statements presented were for situations in which no long-term profit considerations were present. For decision making in situations in which customers have lasting value (e.g., if you are examining the profitability of a particular rented list and you are permitted to enter on your house list all names who respond), the customer lifetime value, and not the net contribution or profit from sales on just this one promotion, could be the relevant consideration for the optimal decision to be reached. We treat CLV in detail in an appendix to this chapter.

Summary

Profitability analysis is a matter of considering the appropriate revenues and costs and determining the resulting contribution or profit. This analysis can be performed on a promotion-by-promotion (or list-by-list, item-by-item) basis or by grouping elements together. For example, we might evaluate three rented lists as a tandem. For catalogs, it is often considered more strategically useful to group items by merchandise category, and construct an aggregated profit and loss statement. Also, it may be beneficial in general to aggregate profit and loss statements by profit or cost center.

Profitability analysis potentially is both prospective and retrospective. As noted by John Groman more than a decade ago,¹⁰ combined with the modern computer, profitability analysis can enable you to make outdated the famous quote attributed to Lord Leverhume: “I know I’m totally wasting half of my advertising expenditure but no one can tell me which half.” Since then, there has been an increasingly strong movement toward the use of Customer Lifetime Value for the purpose of further refining the definition and delicacy of the concept of profitability.

The role of costs in affecting direct-marketing decision making is major, and is well illustrated by the common use of sending direct response ads through the fax machine. It is now routine for restaurants to fax menus to offices in the area and for florists to fax ads to various corporations. The key to this activity is cost. First of all, the cost of fax machines has

¹⁰John Groman, “Database Driven Marketing,” *MDM Review* (April 1986).

been dropping dramatically. Second, “just about everyone” has a fax machine, far exceeding all predictions. Third, the customer pays a small portion of the transmission cost; the sender, of course, pays any expenses associated with the telephone call, but the receiver (customer or prospect) pays for the paper and cost of his fax. Compiled lists for fax machines are now routinely available. According to the *1997 DMA Statistical Fact Book*, fax marketing in 1995 accounted for 1 percent of all direct marketing budgets. Indeed, in 1996, the Operations Benchmark Report sponsored by *Catalog Age* reported that 85 percent of all catalogers who responded received 1 percent to 30 percent of their orders by fax, and 8.7 percent of the responding catalogers received 31 percent to 60 percent of their orders by fax. There already exists a spate of unlisted fax numbers!

As we revise this text, direct (“interactive”) marketers are having spirited debate about how to assess the profitability and cost of Internet marketing; should Web sites and Web pages be paid for on the basis of “clicks” (i.e., essentially, inquiries) or on the basis of actual orders? What about folks who might inquire about products on the Web, but not order through the Web, perhaps using another vehicle? Do Web browsers and Web orderers have the same average profit margins as those who inquire or order through other channels? Are the back-end costs the same? We don’t yet have a strong handle on these issues, but research is taking place to answer them. The ultimate marketing, ordering, and other uses of the Web, or any vehicle, depend on the profits and costs involved. How could it be otherwise?

Discussion Questions and Exercises

1. Give three examples in which it would clearly be incorrect to include fixed costs in a decision analysis. Give three in which it would clearly be correct to do so.
2. Explain the role of cost of capital in determining the lifetime value of a customer. If the cost of capital were larger, would the lifetime value of a customer rise or fall?
3. Give three examples of a business in which direct marketing customer acquisition decisions would dramatically change, depending on whether the company used Customer Lifetime Value or simply the one-time profitability of the initial purchase. Give three examples of a business in which there would be absolutely no change in direct marketing customer acquisition decisions.
4. Give three examples in which the contribution of a direct marketing activity is qualitative.
5. For the numerical example discussed in the Cost section of the chapter, why is it that mailing 33 percent fewer names than was optimal (mailing the top 40 percent rather than the top 60 percent) resulted not in a 33 percent drop in contribution but in only an 8.6 percent drop in contribution?
6. Discuss the similarities and differences between a profit and loss statement and the traditional income statement.

Suggested Readings

- Blattberg, Robert C., and John Deighton. “Manage Marketing by the Customer Equity.” *Harvard Business Review* (July–August 1996): 136–144.
- Gale, Bradley T. *Managing Customer Value*. New York: The Free Press, 1994.
- Geller, Lois. “Customer Retention Begins with the Basics.” *Direct Marketing* (September 1997): 58–62.
- Hughes, Arthur, and Paul Wang. “Media Selection for Database Marketing.” *Journal of Direct Marketing* 9, no. 1 (winter 1995): 79–84.

Appendix: Customer Lifetime Value

Customer Lifetime Value (CLV) has been a mainstay concept in direct marketing for many years and has been increasingly considered in the field of general marketing. However, for the most part, what has been written about it has (1) extolled its use as a decision-making criterion, (2) put forth isolated numerical examples of its calculation and determination, and (3) discussed in general terms its proper role in customer acquisition decisions and customer acquisition or retention trade-offs. There has been little, if any, discussion of CLV from a systematic modeling perspective.

This appendix presents a series of models for determination of CLV and considers various insights about its use. The choice of which precise circumstances and models we describe is based on a systematic categorization and on assumptions grounded in customer marketing behavior. Specific selected managerial applications of CLV in the direct marketing arena are also offered.

Since the early 1980s, the field of marketing has undergone a major directional change in both its theory and practice, for the most part embracing many common direct marketing principles, especially that of relationship marketing.¹¹ At the core of relationship marketing is, of course, the development and maintenance of long-term relationships with customers rather than simply a series of discrete transactions. This is to be achieved by creating superior customer value and satisfaction; ideally, a “loyalty” that benefits both parties is fostered.

However, being overly enthusiastic about the concept of relationship marketing, many practitioners have become involved in losing relationships. Relationship marketing is costly. It might not pay to maintain long-term relationships, at least not all the time and not with all customers. Customers with low switching costs and short time horizons might not be financially attractive to the firm.¹²

Ultimately, marketing is the art of attracting and keeping profitable customers;¹³ this is certainly true of direct marketing. A company should not try to pursue and satisfy every customer. What makes a customer profitable? Philip Kotler and Gary Armstrong define a profitable customer as “a person, household, or company whose revenues over time exceed, by an acceptable amount, the company costs of attracting, selling, and servicing that customer.” This excess is exactly what Customer Lifetime Value is! Robert Blattberg and John Deighton acknowledge that *marketing talk is beginning to sound like direct-marketing talk*.¹⁴ The 1997 *Direct Marketing Statistical Fact Book* reported that, in 1996, 30 percent of the responders to the Annual List Usage Survey use CLV in their decision-making processes. Also, 50 percent of the responders to the *Catalog Age Marketing Benchmark Report* indicated that their CLV exceeded \$200. In 1995, this had been indicated by only 42 percent of the responders.

DETERMINATION OF CLV

Determining the customer lifetime value, or economic worth of a customer, is, in principle, a straightforward exercise. To calculate customer lifetime value, you project the net cash flows that your firm expects to receive from the customer over time. Next, you calculate the

¹¹R. Morgan and S. Hunt, “The Commitment—Trust Theory of Relationship Marketing,” *Journal of Marketing* (July 1994): 20–38.

¹²B. Jackson, *Winning and Keeping Industrial Customers* (Lexington, MA: Lexington Books, 1985).

¹³P. Kotler and G. Armstrong, *Principles of Marketing*, 7th ed. (Upper Saddle River, NJ: Prentice Hall, 1996).

¹⁴Robert C. Blattberg and John Deighton, “Manage Marketing by the Customer Equity,” *Harvard Business Review* (July–August 1996): 136–144.

present value of that stream of cash flows. In practice, however, estimating the net cash flows to be received from that customer can be a very challenging task. The questions to be answered before making the necessary computations are not always easy to handle: How many customers you can attract, given specific acquisition spending? How large will be the initial sale to a customer? What is the probability that a customer will buy additional products or services from your company over time? How does this probability change with the spending you make on promotion? When will a customer completely stop buying from your company? Some specific situations require yet additional sets of questions.

TYPES OF CUSTOMER BEHAVIOR

Jackson groups industrial buyers into two major categories: (1) “lost-for-good” and (2) “always-a-share.”¹⁵ Her lost-for-good model assumes that a customer is either totally committed to the vendor or totally lost and committed to some other vendor. In the second model, always-a-share, the customer can easily experiment with new vendors. The customer’s cost to switch vendors (switching costs), which can be essentially zero, or can be very expensive (e.g., if you had previously bought large amounts of Macintosh equipment, consider the cost of switching to IBM), constitutes a major factor in implying one behavior or the other. R. Dwyer applied Jackson’s ideas in direct marketing and showed its implications for CLV.¹⁶ A customer retention model is used to model lost-for-good situations. In this model, a retention rate (or retention probability) is estimated, traditionally based on historical data. The retention rate is the probability that the account will remain with the vendor for the next purchase, provided that the customer has bought from that vendor on each previous purchase.

A customer migration model characterizes the always-a-share case. In it, the recency of last purchase is used to predict the possibility of repeat purchase in a period. The argument that one may use purchase history, including recency, to predict repeat purchase behavior is plausible. In the customer retention model, a customer who stops dealing with a company is considered as lost-for-good. Returning customers are therefore treated as new ones. Although this model might be more applicable in cases in which switching costs are higher and customer commitment is long term, other cases, in which customers may discontinue their purchase of a particular product or brand only temporarily, also exist. A migration model is likely more applicable in such cases.

CUSTOMER LIFETIME VALUE MODELS

The CLV models described in this appendix include typical cases of customer behavior. The two models offered by Dwyer are considered.¹⁷ The first three discussed in this appendix address customer retention situations. Case 4 deals with a customer migration model. Case 1 is the simplest; it assumes yearly cycles of purchase (e.g., purchases every Christmas or yearly charitable solicitations). Of course, for many products, the relevant purchase cycle is not one year (e.g., automobile purchases or leases). The two parts of case 2 are direct extensions of case 1, for which the cycle is assumed to be shorter (case 2a) or longer (case 2b) than one year.

¹⁵Jackson, *Winning and Keeping Industrial Customers*.

¹⁶R. Dwyer, “Customer Lifetime Valuation to Support Marketing Decision Making,” *Journal of Direct Marketing* 8, no. 2 (1989).

¹⁷*Ibid.*

Profits per customer are not necessarily constant per cycle. A major advantage in retaining customers is that the profits generated by them tend to accelerate over time. Reichheld and Sasser reported examples of accelerating profits in credit card use and other products and services.¹⁸ They attributed the acceleration in customers' profits to four reasons. First, revenues from customers typically grow over time. For example, customers who newly acquire a credit card use it slowly at the beginning; in the second year and subsequently, if they stay with that company and card, they become more accustomed to using the credit card and balances grow. Second, existing customers are more efficient and this usually results in cost savings. Their familiarity with the company's products makes them less dependent on its employees for advice and help. Third, satisfied customers act as referrals who recommend the company to others (recommending, in addition, to *themselves* by cross-buying). Fourth, for some products, old (i.e., existing) customers pay effectively higher prices than new ones. This is sometimes due to the trial discounts available only to brand-new customers; this is extremely common in soliciting magazine subscriptions, for example. Case 3 specifically addresses situations in which profits per customer change over time.

Although acquisition costs, the costs incurred to attract (i.e., acquire) a customer, are obviously an important input value for a variety of direct marketing decision-making contexts, they are not specifically considered in our determination of CLV here. Direct marketing managers can, however, consider CLV as we compute it as the maximum value they are willing to incur as the acquisition cost per customer. Acquisition costs exceeding this value indicate the existence of unprofitable customers. We also do not consider fixed costs in determining CLV. To compute CLV, we discount the difference between the revenues and both "cost of sales" and promotion (e.g., direct mail) expenses incurred to retain customers. Cost of sales includes the cost of goods sold and the cost of order processing, handling, and shipping. Promotion costs incurred to retain existing customers, such as sending personalized greeting cards and gifts and general promotional expenditures, excluding those directly oriented toward acquisition, are referred to as retention costs.

Case 1

We start with a simple case to illustrate the concept. In this case we make three assumptions: (1) sales take place once a year, (2) yearly spending to retain customers and the customer retention rate both remain constant over time, (3) revenues achieved per customer per year remain the same. In subsequent cases, we relax assumptions 1 and 3, as well as the fixed retention rate in assumption 2.

In this case, as in the other cases with constant yearly net contribution margin per customer (cases 2a, 2b, and 4), we assume a specific timing of cash flows. Revenues from sales and the corresponding cost of sales both take place at the time of sale; the first sales transaction occurs at the time of the determination of CLV, which may be thought of as the "moment of customer acquisition." All promotional expenses (except for case 2b) are approximated relative to uniform dispersion to occur at the middle of the purchase cycle. This assumption results in slightly different discounting of these two sets of cash flows, as the models in the constant net contribution margin cases show.

¹⁸Reichheld and Sasser, "Zero Defections."

NOTATION

GC is the (expected) yearly gross contribution margin per customer. It therefore equals revenues minus cost of sales.

M is the (relevant) promotion costs per customer per year.

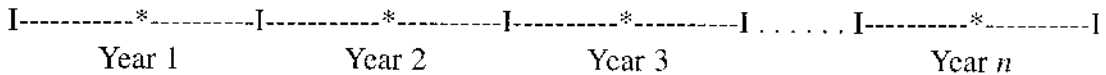
n is the length, in years, of the period over which you want to project the cash flows.

r is the yearly retention rate—the proportion of customers expected to continue buying the company’s goods or services in the subsequent year.

d is the yearly discount rate (appropriate for direct marketing investments).

An illustration of cash flows in this case follows:

Now



where the I 's denote cash flows (both inflows and outflows) pertaining to sales transactions (i.e., GC). The asterisks indicate the approximate timing of promotional expenses. Therefore,

$$CLV = \left\{ GC \times \sum_{i=0}^n \left[\frac{r^i}{(1+d)^i} \right] \right\} - \left\{ M \times \sum_{i=1}^n \left[\frac{r^{i-1}}{(1+d)^{i-0.5}} \right] \right\} \quad (1)$$

The length of the projection period, n , highly depends on the industry or product. The GC and M cash flows are discounted differently because, as mentioned previously, they are assumed to take place at two different time instants. The exponent 0.5 in equation (1) reflects the approximation of the promotion expenses to all occur at the middle of each purchase cycle.

Numerical Example: A typical example of this case could be an insurance company trying to estimate its CLV. Suppose that the company pays, on average, \$50 per year per customer on promotional expenses (e.g., mailing reminder cards and policy updates, retention-oriented commercials). The yearly retention rate is 75 percent. The period of cash flows projection is 10 years. The yearly gross contribution per customer is expected to amount to \$260. An appropriate discount rate for marketing activities is 20 percent. Then, according to equation (1),

$$CLV = \left\{ 260 \times \sum_{i=0}^{10} \left[\frac{(.75)^i}{(1+.2)^i} \right] \right\} - \left\{ 50 \times \sum_{i=1}^{10} \left[\frac{(.75)^{i-1}}{(1+.2)^{i-0.5}} \right] \right\} = \$568.78$$

Case 2

Here we relax the assumption of case 1 that sales occur annually. The following cases are concerned with time periods that are shorter (case 2a) or longer (case 2b) than one year. The time periods are, however, still assumed to be equal in length.

Case 2.a We consider first the case in which sales occur more frequently than once a year. Let p be the number of cycles (i.e., “transactions” or sales) per year. For instance, $p = 2$ for

semiannual sales, and $p = 4$ for quarterly sales; that is, p equals 12 divided by the cycle time in months. Then,

$$CLV = \left\{ GC' \times \sum_{i=0}^{pn} \left[\frac{(r')^i}{(1 + d)^{i/p}} \right] \right\} - \left\{ M' \times \sum_{i=1}^{pn} \left[\frac{(r')^{i-1}}{(1 + d)^{(i-0.5)/p}} \right] \right\} \quad (2)$$

NOTATION

- GC' is the (expected) gross contribution margin per customer per sales cycle.
- M' is the promotion costs per customer per sales cycle.
- r' is the retention rate per sales cycle.

As in case 1, d is the yearly discount rate (appropriate for marketing investments). The number of periods is pn ; although it is not necessary that p be an integer (e.g., $p = 2.4$ for 5 purchase cycles per year), we assume that n has a value such that pn is an integer; this simply assures that the projection period does not conclude in the middle of a purchase cycle. The power of $(1 + d)$ is divided by the number of periods per year because d is indeed still the annual discount rate. The adoption of a nonannual discount rate would imply a change in the financial market; that is not the case here. The 0.5 is used in equation (2) because promotion expenditures in a cycle are assumed to occur in the middle of that cycle.

Numerical Example: A typical example of this case could be a health club trying to estimate its CLV. Suppose that customers subscribe for services on a semiannual basis. The company pays \$25 per customer semiannually on promotion. The semiannual retention rate is 80 percent. The period of cash flows projection is $n = 4$ years. The gross contribution margin per semiannual subscription amounts to \$125. An appropriate discount rate for marketing activities is 20 percent. Then, based on equation (2),

$$CLV = \left\{ 125 \times \sum_{i=0}^8 \left[\frac{(.8)^i}{(1 + .2)^{i/2}} \right] \right\} - \left\{ 25 \times \sum_{i=1}^8 \left[\frac{(.8)^{i-1}}{(1 + .2)^{(i-0.5)/2}} \right] \right\} = \$354.69$$

Case 2.b In this case, sales transactions occur less frequently than once a year. In cases of durables, replacements often occur only every few years. Let q be the length of a cycle or the number of years between two consecutive sales. For example, if a car is leased every three years, then $q = 3$. Then,

$$CLV = \left\{ GC' \times \sum_{i=0}^{n/q} \left[\frac{(r')^i}{(1 + d)^{iq}} \right] \right\} - \left\{ M' \times \sum_{i=1}^n \left[\frac{(r')^{(i-1)/q}}{(1 + d)^{i-.5}} \right] \right\} \quad (3)$$

We assume in this case that (1) promotion costs are approximated to occur at the middle of each year of the cycle, and (2) sales and the corresponding cost of sales occur once per purchase cycle, with the first transaction taking place at the time of the acquisition or determination of CLV . Cash flows are illustrated as follows (note that the number of purchase cycles, equals n/q):

Now

I---*---x---*---x . . . x---*---I---*---x---*---x . . . x---*---I . . . I---*---x---*---x . . . x---*---I
 Year 1 Year 2 Year q Year q+1 Year n

where the I 's, the beginning of purchase cycles, denote cash flows (both inflows and outflows) pertaining to sales transactions (i.e., GC). The asterisks show the approximate timing of promotional expenses (assumed to be the middle of each year). One may relax the assumptions concerning the timing of cash flows without major changes in the model. The value of r' pertains to a full cycle.

Numerical Example: Consider the case of a car dealership where customers lease cars for three years. The company pays \$95 per year per customer on promotion. The cyclical retention rate is only 30 percent. The average gross contribution margin per car lease per cycle is \$7,000. An appropriate discount rate is 20 percent. The company wants to project its CLV for the next 12 years ($12/3 = 4$ purchase cycles). In this case,

$$CLV = \left\{ 7,000 \times \sum_{i=0}^4 \left[\frac{(.3)^i}{(1 + .2)^{3i}} \right] \right\} - \left\{ 95 \times \sum_{i=1}^{12} \left[\frac{(.3)^{(i-1)/3}}{(1 + .2)^{i-.5}} \right] \right\} = \$8,273.31$$

Note that the lessee likely pays the lease cost monthly. However, the lessor receives payment up front, irrespective of the lessee's financial choice.

To use equation (3), n/q , as noted in case 2a for pn , should be an integer. Again this corresponds with the projection period not concluding in the middle of a purchase cycle. The values of p and q are not chosen by the manager, but are based on the nature of the product and its related purchase cycle. However, the manager can always set n , the number of years over which he wants to project cash flows, in a manner that leads to the required integer value. Given that the manager is likely interested in estimating CLV for a certain number of complete purchase cycles, this "restriction" is generally a minimal one.

Case 3

In cases 1 and 2 (a and b) we assume that the gross contribution margin (GC) per purchase cycle and relevant promotion costs (M) per year per customer remain constant. In case 3, we address situations with GC and M per customer potentially nonconstant over time. For example, in the case of accelerating profits, one could have an S-shaped (increasing) customer life-cycle profit ($GC - M$) pattern—that is, one that first increases at an increasing rate (i.e., convex), and then, at some point, increases at a decreasing rate (i.e., concave).

Of course, to estimate customer lifetime value in this situation, one needs to estimate the specific customer profit function over time, $\pi(t)$. The example function for this case first grows at an increasing rate (up to point g), then at a decreasing rate, and has an upper asymptote. The upper asymptote reflects a ceiling that profits are not expected to exceed. (Note: $\pi(t)$ represents profit at time t and is not cumulative.)

$$\begin{aligned} \pi(t) = \pi_1(t) &= ht^2 + v && \text{for } t \leq g \\ \pi(t) = \pi_2(t) &= \pi_1(g) + [N(1 - e^{-t+g})] && \text{for } t > g \end{aligned} \tag{4}$$

where h , g , v , and N are all positive constants. The rate at which profit grows over time affects the value of h . The value g is the time at which the inflection point in the profit curve occurs, and $[\pi_1(g) + N]$ is the expected ceiling for profits reached asymptotically. Companies typically use historical data to estimate those values. The intercept v is the company's gross contribution margin from the *first* sale. Sometimes, this value is not especially high; in some cases, it might even be near zero, and on rare occasion, negative. (Recall that we are

not including acquisition costs; if we did include them, first year “profit” would often be negative.)

The *CLV* in this case is computed as follows:

$$CLV = \sum_{t=0}^n \left\{ \pi(t) \times \left[\frac{r^t}{(1+d)^t} \right] \right\} \quad (5)$$

where $\pi(t)$ is the profit per customer in year t . In this case, as in case 1, we assume a yearly cycle. Applications to shorter or longer periods, as in cases 2a and 2b, are straightforward.

Based on equations (4) and (5), with g being an integer, we have

$$CLV = \sum_{t=0}^g \left\{ [ht^2 + v] \left[\frac{r^t}{(1+d)^t} \right] \right\} \\ + \sum_{t=g+1}^n \left\{ [(hg^2 + v) + N(1 - e^{-t+g})] \left[\frac{r^t}{(1+d)^t} \right] \right\} \quad (6)$$

The case of accelerated profits was purposely chosen as the example of cases in which profits per customer change over time. This choice is based on the fact that increased profit over time was singled out by previous researchers as a frequently occurring case.¹⁹ The same general approach of equation (5) can be applied to other cases for which change in profit over time exhibits other patterns, including decreasing ones.

As noted earlier, *profits* means *net contribution margin*. For simplicity, we did not separate gross contribution margin, *GC*, from promotional expenses, *M*. Given separate functions for *GC* and *M*, one can follow the same procedure applied in this case to discount *GC* and *M* separately, and then combine them, as in the previous cases.

Numerical Example: Consider the case of a credit card company that expects its profit per newly acquired customer to accelerate over time. Profit per customer starts at a low level of \$20. This profit is, however, expected to grow at an increasing rate until year 5. Afterward, profit will continue to grow, but at a decreasing rate. Profit is not expected to exceed a ceiling of \$200. The retention rate is 90 percent, and the discount rate is 20 percent. Profit per customer can be approximated as a function of time as follows:

$$\pi(t) = 4t^2 + 20 \quad \text{for } t \leq 5$$

$$\pi(t) = 120 + [80(1 - e^{-t+5})] \quad \text{for } t > 5$$

Note that $\pi(5) = \$120$. If this company is projecting its cash flows for the next eight years, then its *CLV* is computed as follows:

$$CLV = \sum_{t=0}^5 \left\{ (4t^2 + 20) \left[\frac{(.9)^t}{(1+.2)^t} \right] \right\} \\ + \sum_{t=6}^8 \left\{ [(4 \times 5^2 + 20) + 80(1 - e^{-t+5})] \left[\frac{(.9)^t}{(1+.2)^t} \right] \right\} = \$212.163$$

¹⁹Frederick Reichheld, *The Loyalty Effect* (Boston: Harvard Business School Press, 1996).

TABLE A9.1 Purchase Probabilities—Customer Migration Model

<i>Recency Cell</i>	<i>Probability of Purchase (P_{t-j}) (for the current year, t)</i>
1 if last purchase was in year (t - 1)	0.30
2 if last purchase was in year (t - 2)	0.20
3 if last purchase was in year (t - 3)	0.15
4 if last purchase was in year (t - 4)	0.05
5 if last purchase was in year (t - 5)	0.00

Source: Adapted from R. Dwyer, "Customer Lifetime Valuation to Support Marketing Decision Making," *Journal of Direct Marketing* 8, no. 2 (1989): 73-81.

Cases with accelerating customer profit show the importance of retaining customers. Any change in retention rate is expected to have a greater effect on CLV when profit per customer is accelerating than cases when profit per customer is constant over time. This is mainly due to the fact that the compounded retention rate is multiplied by a growing profit value in computing CLV. A. Hughes and P. Wang have shown the dramatic effect of a lower retention rate on CLV in the case of credit card customers.²⁰ In this example, dropping the yearly retention rate from 90 percent to 80 percent results in a drop of 37 percent in CLV (new CLV = \$134.68).

Case 4

The previous cases assume a shrinking customer base over time, in which lost customers are treated as new ones if they return. In case 4, we use purchase history, particularly recency, to predict repeat purchase behavior. In his "Customer Migration Model," R. Dwyer uses the recency of last purchase to predict the probability of repeat purchase for the next period.²¹ For ease of presentation, we first use Dwyer's example to present the case under discussion. We then provide the necessary equations to compute CLV. The sales cycle is assumed to be annual. The length of the cycle is not, however, a critical factor in constructing the model. We drop from Dwyer's model data on costs and earnings, and focus on the most critical factor in the model: the number of customers per year.

The model uses empirical evidence of purchase recency to predict repeat purchase behavior. From past data, the purchase propensities of each recency cell have been estimated. Table A9.1 summarizes the probability of purchase for members of each recency cell.

Figure A9.1 (p. 200) shows the number of customers over a four-year period after acquisition, starting with a base of 1,000 customers.

Equation (7) shows how to compute C_i , the number of customers in year i :

$$C_i = \sum_{j=1}^i \left[C_{i-j} \times P_{t-j} \times \prod_{k=1}^j (1 - P_{t-j+k}) \right] \text{ with } P_t = 0 \quad (7)$$

²⁰A. Hughes and P. Wang, "Media Selection for Database Marketers," *Journal of Direct Marketing* 9, no. 1 (1995): 79-84.

²¹Dwyer, "Customer Lifetime Valuation," 73-81.

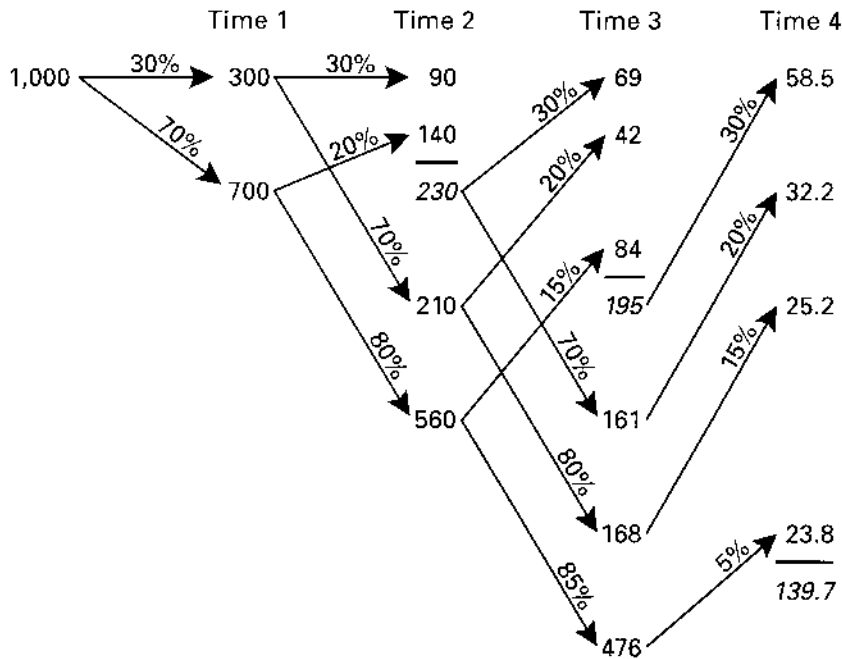


FIGURE A9.1 Number of Customers—Customer Migration Model

Source: Adapted from R. Dwyer, “Customer Lifetime Valuation to Support Marketing Decision Making,” *Journal of Direct Marketing* 8, no. 2 (1989): 73–81.

For instance, the number of customers in year 4 in the example of Figure A9.1 is:

$$\begin{aligned}
 C_4 &= [C_{4-1}P_{t-1}(1 - P_{t-1+1})] + [C_{4-2}P_{t-2}(1 - P_{t-2+1})(1 - P_{t-2+2})] \\
 &\quad + [C_{4-3}P_{t-3}(1 - P_{t-3+1})(1 - P_{t-3+2})(1 - P_{t-3+3})] \\
 &\quad + [C_{4-4}P_{t-4}(1 - P_{t-4+1})(1 - P_{t-4+2})(1 - P_{t-4+3})(1 - P_{t-4+4})] \\
 &= [C_3P_{t-1}(1 - P_t)] + [C_2P_{t-2}(1 - P_{t-1})(1 - P_t)] \\
 &\quad + [C_1P_{t-3}(1 - P_{t-2})(1 - P_{t-1})(1 - P_t)] \\
 &\quad + [C_0P_{t-4}(1 - P_{t-3})(1 - P_{t-2})(1 - P_{t-1})(1 - P_t)] \\
 &= [195(.3)(1 - 0)] + [230(.2)(1 - .3)(1 - 0)] \\
 &\quad + [300(.15)(1 - .2)(1 - .3)(1 - 0)] \\
 &\quad + [1,000(.05)(1 - .15)(1 - .2)(1 - .3)(1 - 0)] \\
 &= 58.5 + 32.2 + 25.2 + 23.8 \\
 &= 139.7
 \end{aligned}$$

Then, in general, in the always-a-sale case, applying the same assumptions of cash flow timing of case 1, company CLV is computed as follows:

$$\begin{aligned}
 CLV = & \left\{ GC \left\{ C_0 + \left[\sum_{i=1}^n \sum_{j=1}^i C_{i-j} P_{t-j} \times \prod_{k=1}^j (1 - P_{t-j+k}) \right] / (1 + d)^i \right\} \right. \\
 & \left. - M \left\{ \frac{C_0}{(1 + d)^{.5}} + \left[\sum_{i=1}^n \sum_{j=1}^i C_{i-j} P_{t-j} \times \prod_{k=1}^j (1 - P_{t-i+k}) \right] / (1 + d)^{i-.5} \right\} \right\} / C_0,
 \end{aligned}$$

with $P_t = 0$ (8)

where C_0 is the initial customer base at the time of the determination of CLV (acquisition). Note that, in this case, we assume that sales, and the corresponding cost of sales, take place once a year; the first transaction is at acquisition. Promotion expenses occur at the middle of each year.

CONCLUSIONS

Companies are realizing that when operating in mature markets and facing stiffer competition, the development of a profitable relationship with customers is a critical success factor. To know whether a relationship is profitable, one needs to be able to quantify this relationship. CLV does this.

Determining CLV can help managers in making decisions through determining the impact of different courses of action on the value of CLV, including obtaining the difference in profitability among various market segments (e.g., different lists, different sources of customers, customers "reached" through different media—whatever the direct marketer wishes to consider a segment). The CLV determination can also help determine the effect of adopting a marketing strategy, with its resulting acquisition and retention rates, costs, and trade-offs. For example, the adoption of a price-skimming strategy typically results in a lower acquisition rate. Although fewer in number, however, these acquired customers might show a higher degree of persistence in their choice of a seller. The comparison of expected CLV in the case of price penetration to that of price skimming would enable a direct marketer, or any manager, to make a more informed pricing choice. CLV determination can also be used to decide how to allocate promotional budgets between acquisition and retention spending. Blattberg and Deighton have presented a procedure to determine the optimal acquisition and retention costs, based on the maximization of customer lifetime value.²²

The basic insight that comes from looking at the economics of customer lifetime value is that one begins to view customers as ongoing relationships rather than transactions. Techniques that focus on a short-term impact of marketing strategies do not necessarily draw a correct picture for managerial use.

²²Blattberg and Deighton, "Manage Marketing by the Customer Equity."