

CUSTOMERS AS ASSETS

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ABSTRACT

Customers are important intangible assets of a firm that should be valued and managed. Although researchers and practitioners have recently emphasized customer relationships and customer lifetime value, these concepts have had limited impact on the business and investment community for two main reasons: (a) they require extensive data and complex modeling, and (b) researchers have not shown a strong link between customer and firm value. We address these two issues in this article. First, we show how one can use publicly available information and a simple formula to estimate the lifetime value of a customer for a publicly traded firm. We illustrate this with several examples and case studies. Second, we provide a link between customer and firm value. We then show how this link provides guidelines for strategic decisions such as mergers and acquisitions as well as for assessing the value of a firm even when the traditional financial approaches (e.g., price–earnings ratio) fail.

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Intangible assets, and in particular, brands and customers, are critical to a firm. On May 22, 2001, the *New York Times* reported that “Intangible assets are, by definition, hard to see and even harder to fix a precise value for. But a widening consensus is growing that the importance of such assets—from brand names and customer lists to trademarks and patents—means that investors need to know more about them.” This interest in intangibles arises from the recognition that market value of the largest 500 corporations in the United States is almost six times the book value (the net value of physical and financial assets as stated on the balance sheet). In other words, of every six dollars in the market value of a firm, only one dollar is represented in the balance sheet (Lev, 2001).

Although brands have been widely heralded as important assets for a firm (Aaker & Davis, 2000) and organizations such as Interbrand routinely evaluate them, the use of customers as assets has been limited. On one hand, scores of books and hundreds of articles have argued about the importance of creating a customer-centric organization (Seybold, 2001). Furthermore, the abundance of customer information and increasingly sophisticated information technology and statistical modeling have led to a revolution in areas such as customer relationship management or CRM (Winer, 2001). Yet some studies show that while investors implicitly capitalize product development and R&D expenditures, they expense marketing and customer acquisition costs (Demers & Lev, 2001).

In recent years, the marketing literature has developed and discussed the concept of customer lifetime value, which is the present value of all future profits generated from a customer (e.g., Berger & Nasr, 1998; Blattberg & Deighton, 1996; Blattberg, Getz, & Thomas, 2001; Jain & Singh, 2002; Rust, Zeithaml, & Lemon, 2000). Arguments for treating customers as assets that generate future profits, however, have had limited impact on the business and investment community for two main reasons. First, the concept and models of customer lifetime value originated in the field of direct and database marketing and continue to focus in this domain. Many applications require an enormous amount

of customer data as well as sophisticated models and concentrate on targeting customers with appropriate product or communication offers. While this is of great value to database marketing professionals, it appears to be of limited value to senior managers who are concerned with strategic decisions, or investors who do not have access to internal company data. Second, few attempts have been made to link customer value to the value of the firm—a link that is essential if investors are to view customers as assets.

In this article we address these two shortcomings. First, we show how one can use publicly available information to estimate the lifetime value of a customer for a publicly traded firm. We illustrate this with examples and case studies and show how it can be useful for a variety of managerial decisions. Second, we provide a link between customer and firm value. We show how this provides a useful guideline for strategic decisions such as mergers and acquisitions. We also show that this approach provides useful guidelines for assessing the value of a firm even when the traditional financial approaches (e.g., price–earnings ratio) fail, as in the case of Internet firms that had negative earnings.

LIFETIME VALUE OF A CUSTOMER

Customer lifetime value (CLV) is the present value of all future profits generated from a customer. One common approach is to assume we know how long a customer will be with a firm and then generate a discounted cash flow for that time period (Berger & Nasr, 1998; Blattberg et al., 2001; Jain & Singh, 2002):

$$CLV = \sum_{t=1}^n \frac{m_t}{(1+i)^t} \quad (1)$$

where m_t is the margin or contribution for each customer in a given time period t (e.g., a year), i is the discount rate, and n is the period over which the customer is assumed to remain active. This formulation assumes that a customer stays with a firm for n periods with certainty. In gen-

eral, a customer has a probability to switch or defect from the firm in any time period. While it is possible to model switching among multiple states, for example using a Markov chain (Pfeifer & Carraway, 2000), we follow Dwyer (1997) to simplify the analysis for two customer states: active or inactive. If r_j is the probability of customer retention in period j , the probability that a customer is still an active member of a firm at the end of time period t is $\prod_{j=1}^t r_j$. Therefore, equation (1) is modified as

$$CLV = \sum_{t=1}^n \frac{m_t \prod_{j=1}^t r_j}{(1+i)^t} \quad (2)$$

This seemingly simple formulation is quite data intensive, requiring per period margins and retention rates. In addition, it also leaves n , the length of projection period, to be determined subjectively or by industry norms. We therefore modify the above formulation by making the following assumptions: (a) margins are constant over time, (b) retention rate is constant over time, and (c) the length of the projection period is infinite. As we will show shortly, these assumptions allow us to create a very simple rule of thumb to assess customer lifetime value with minimal and generally available information. Before discussing this, we provide partial justification for our assumptions.

Constant Average Margins (m)

The average margin for each customer is simply annual revenue minus operating expenses divided by the number of customers. Over time, there are two opposing forces that shape average margins from customers. On the positive side, as customers stay longer with a company and become more comfortable doing business with a firm, they may buy more, generating a larger revenue stream over time. The company also has the potential of cross-selling its products to its customer base. In addition to increased revenue, in general the longer a customer stays with a company, the lower is the cost of doing business with that customer (Reichheld, 1996).

However, some recent studies show that profits for a customer may not necessarily increase over time (Reinartz & Kumar, 2000). Even if the margin for a particular customer increases, the customer mix for a firm also changes over time. In general, a firm starts by attracting customers who are most favorably disposed toward to firm's products and services. As the company expands its customer base, it tends to draw more and more marginal customers who do not spend as much money with the company as the original customers. Consequently average revenue per customer declines over time. This is especially true if the company's customer base expands very rapidly and if the company is either a single product company or a company that does not emphasize cross selling. For example, at CDNow revenue per customer fell from \$23.15 to \$21.16 in 1998. In the first quarter of 1999, it acquired a competitor, N2K, that further contributed to the decline in its revenue per customer from \$18.15 in Q1 of 1999 to \$14.42 in Q2 of 1999.

Using publicly available data, such as financial statements, we estimated quarterly margin per customer for Capital One and Ebay by dividing the total gross margin by the number of current customers in that quarter. Figure 1 shows that there is no systematic pattern or time trend for margins. A regression analysis confirmed this view.

Constant Retention (r)

It is possible for the retention probability of a customer to change every time period. For example, as a customer stays longer with a firm, he may become more loyal and therefore have a higher retention probability. At the same time, increasing competitive activity can reduce customer loyalty. In fact, recent research has argued that escalating loyalty programs may create a "prisoners' dilemma" and raise the cost of competing firms without affecting customer loyalty (Shaffer & Zhang, 2001).

Practically, retention rate is one of the most difficult metrics to empirically estimate. Therefore many applications either assume a retention rate or estimate a retention rate that is

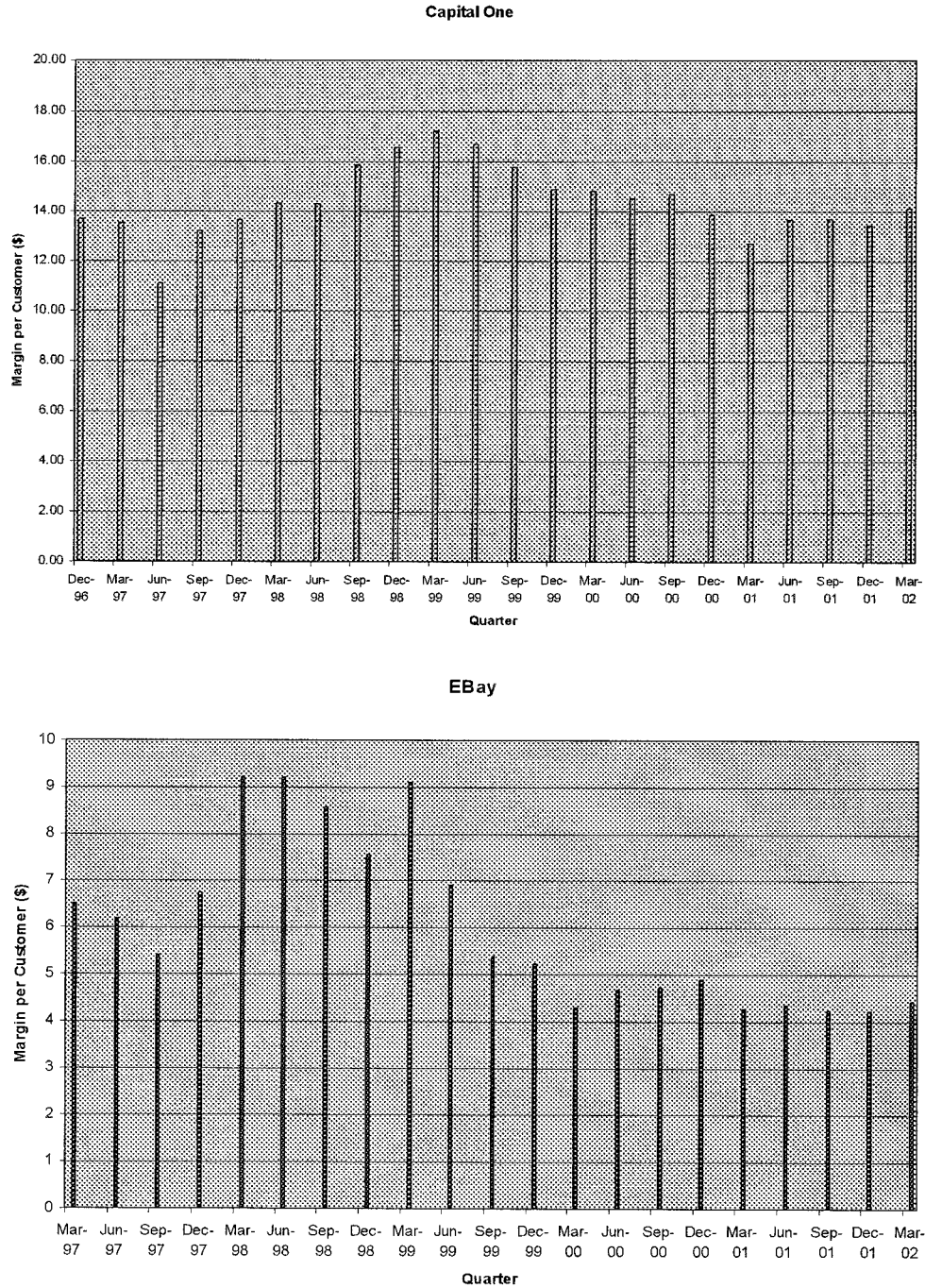


FIGURE 1
Quarterly Margin per Customer

constant over time (Blattberg et al., 2001). We obtained detailed account data for Ameritrade from Salomon Smith Barney. These data show

Ameritrade’s account retention rate to be reasonably constant at about a 94–95% annual rate (Figure 2).

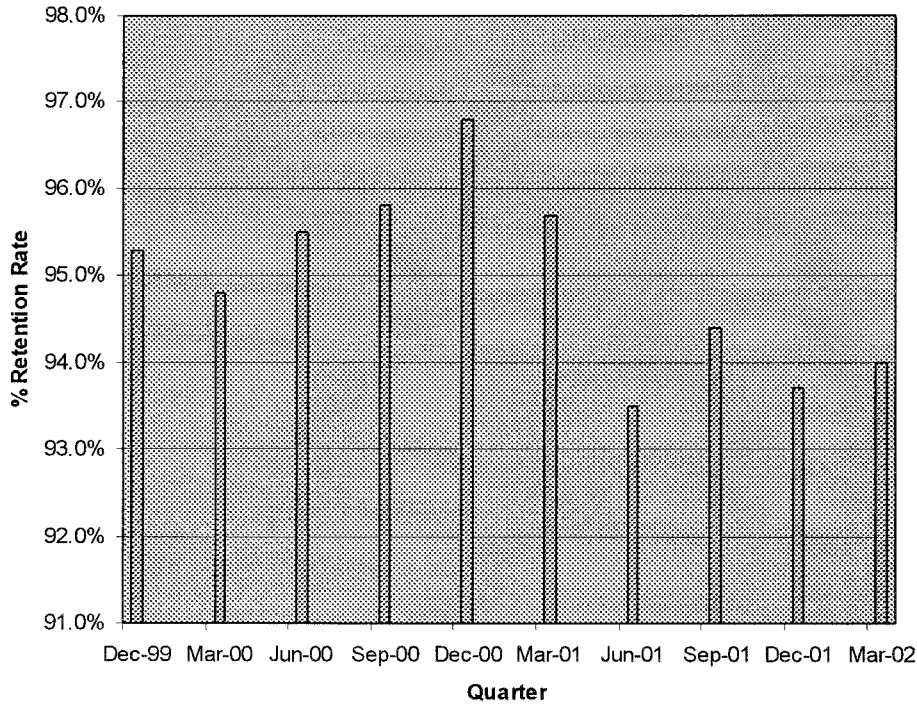


FIGURE 2
Customer Retention Rate at Ameritrade

Length of Projection

We do not need to arbitrarily specify the number of years or duration that the customer is going to stay with the company, since retention rate automatically accounts for the fact that the chances of a customer staying with the company go down over time. For example, if the retention rate is 80%, after 10 years the chance of a customer staying with the company is only $(0.8)^{10} = 0.10$, and after 20 years, this reduces to $(0.8)^{20} = 0.01$. In addition to a low chance of retention after 10 or more years, the margins generated in year 10 or later are also worth far less than the margin earned today.

In contrast to our approach, the typical method of converting retention rate into expected lifetime and then calculating present value over that finite time period overestimates lifetime value. For example, consider a situation where annual margin from a customer is \$100, retention rate is 80%, and discount rate is 12%. Our approach with an infinite time horizon suggests the lifetime value of this customer to be \$250. However, the finite time horizon approach suggests converting the 80% retention

rate into an expected customer life of 5 years. The present value of the \$100 stream of income for 5 years is \$360, an overestimate of about 44%.

Estimating Lifetime Value

With our simplifying assumptions of constant margins and constant retention rate, we can now write the lifetime value of a customer as:

$$CLV = \sum_{t=1}^{\infty} \frac{m \cdot r^t}{(1+i)^t} = m \left(\frac{r}{1+i-r} \right) \quad (3)$$

Note that **CLV is equal to margin (*m*) multiplied by a factor $r/(1+i-r)$. We call this factor the "margin multiple."** Table 1 shows that for the typical values of retention and discount rates the margin multiple ranges from 1.07 to 4.50. The margin multiple is low when the discount rate is high (i.e., for a risky company) and customer retention is low. Conversely, this multiple is high for low risk companies with high customer retention rate. For a company with 12% discount rate and 90% customer retention, the

TABLE 1
Margin Multiple

Retention Rate	$\frac{r}{1+i-r}$			
	Discount Rate			
	10%	12%	14%	16%
60%	1.20	1.15	1.11	1.07
70%	1.75	1.67	1.59	1.52
80%	2.67	2.50	2.35	2.22
90%	4.50	4.09	3.75	3.46

margin multiple is approximately 4. Therefore, an easy way to approximate the lifetime value of a customer for such a firm is to simply multiply the annual gross margin for a customer by a factor of 4.

It is easy to modify this formulation to account for changes in our assumptions. For example, if margins are expected to grow at a constant rate, g , per period, then the customer lifetime value changes to

$$CLV = m \left(\frac{r}{1+i-r(1+g)} \right) \quad (4)$$

Table 2 provides the margin multiple when margins grow between 0% and 8% and the discount rate is 12%. As this table indicates, margin multiple increases from 4 for a no-growth scenario to about 6 if margins are expected to grow at a rate of 8% per year. Note, a growth of 8% per year for an infinite horizon is a very optimistic assumption and is generally unlikely to hold. Therefore, in the following sections of the paper, we use a margin multiple of 4 unless otherwise specified.

USING LIFETIME VALUE FOR MANAGERIAL DECISION-MAKING

We now illustrate how our simple rule-of-thumb for estimating customer lifetime value can be used in many areas of decision-making such as customer acquisition and customer retention,

as well as mergers and acquisitions of companies.

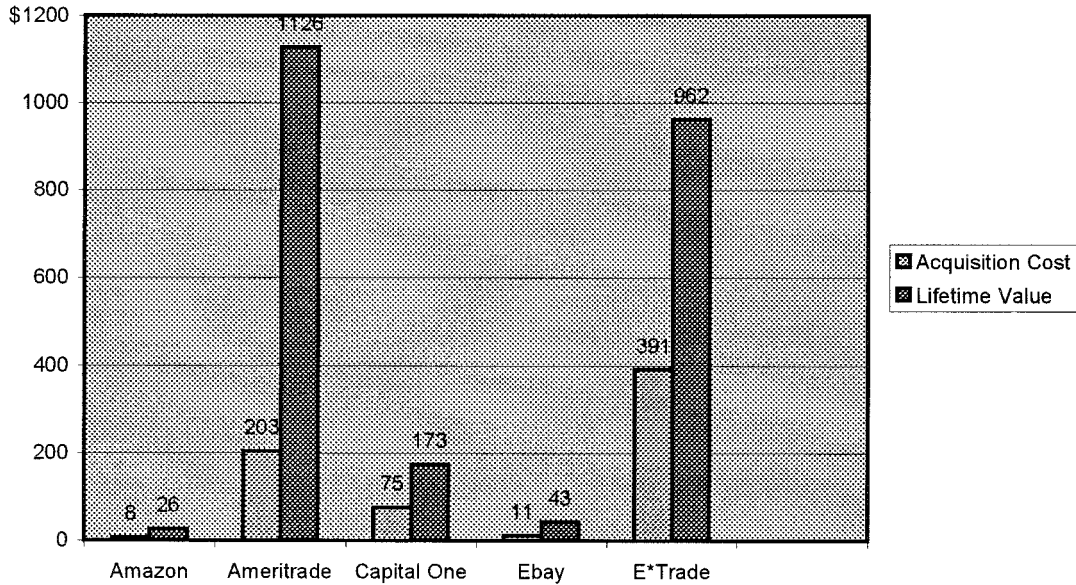
Acquiring Customers

In the late 1990s many companies, especially the dot-coms, went on a binge to acquire customers in the belief that customer acquisition and rapid growth of the firm was critical to success. This belief was so strong that several companies focused on acquiring customers regardless of the acquisition cost (*Wall Street Journal*, Nov. 22, 1999). Indeed some studies found that while valuation of many of these “new economy” firms was hard to justify on the basis of traditional financial measures such as P/E ratio, at least during their heyday (i.e., 1998–2000), customer-based metrics such as number of customers, page views, etc., were strongly correlated with the market value of these firms (Trueman, Wong, & Zhang, 2000). However, commonsense suggests that to acquire a customer, a company should not spend more than the lifetime value of that customer (Mulhern, 1999). While some companies followed this basic economic principle, others apparently did not.

Consider the case of E*Trade. Until 2000, E*Trade lured new customers by offering them \$75 to open an account. Advertising and other marketing expenses added significantly to the total acquisition cost. In March 2002, acquisition cost per customer was about \$391 for E*Trade, while average annual gross margin

TABLE 2
Margin Multiple With Margin Growth (g)

Retention Rate	$\frac{r}{1+i-r(1+g)}$				
	Margin Growth Rate (g)				
	0%	2%	4%	6%	8%
60%	1.15	1.18	1.21	1.24	1.27
70%	1.67	1.72	1.79	1.85	1.92
80%	2.50	2.63	2.78	2.94	3.13
90%	4.09	4.46	4.89	5.42	6.08



Source: Company Annual Reports and 10Q Filings

FIGURE 3
Customer Acquisition Cost and Lifetime Value (\$) (as of March 2002)

per customer was \$172.¹ Did it make sense for E*Trade to spend so much money on customer acquisition?

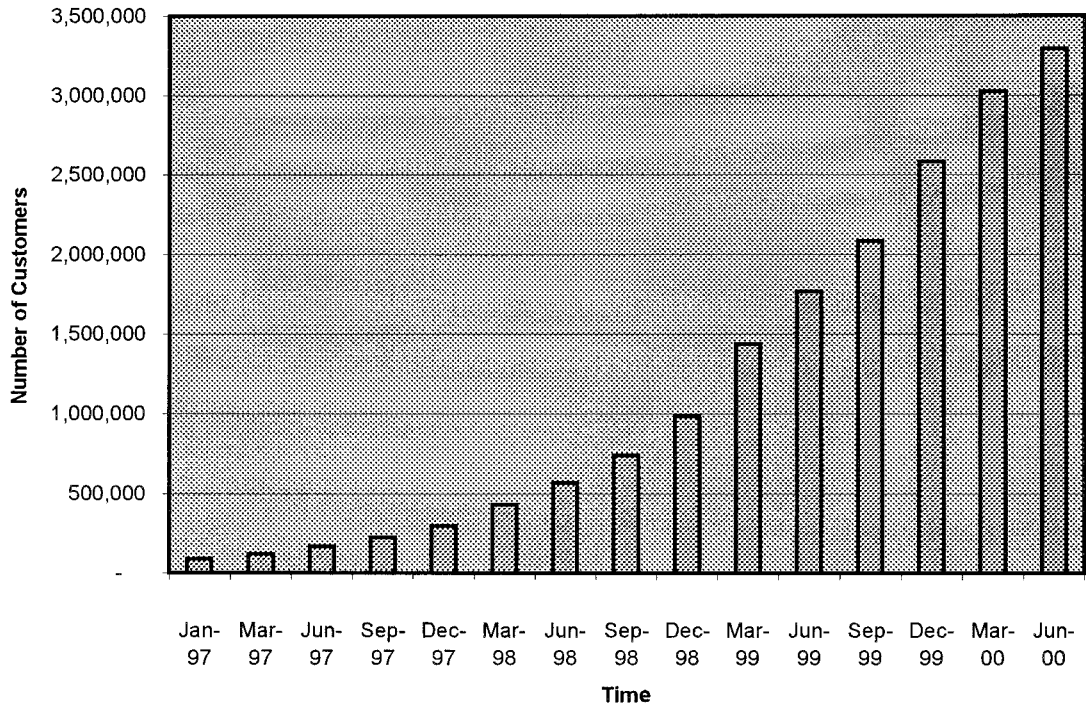
Assuming retention rate of 95%, similar to that of Ameritrade (Figure 2), and a conservative discount rate of 12%, E*Trade's margin multiple can be estimated using equation (3) as 5.59. Therefore, our best estimate of its customer lifetime value is \$961.48, significantly above its acquisition cost of \$391.

Figure 3 provides estimates of customer lifetime value for several firms. We again used companies' financial reports and related data to estimate customer acquisition costs, annual margins and retention rates. This figure suggests that all four companies in our example made sensible economic decisions for customer acquisition. Unfortunately this is not always the case as illustrated by the now-defunct CDNow.

¹ Based on annual reports and other financial statements, we estimated acquisition cost as total marketing expenditure in a period (e.g., a quarter) divided by the number of new customers in that period.

Customer Acquisition at CDNow

In August 1994, Jason and Matthew Olim launched CDNow in the basement of their parents' house in Ambler, Pennsylvania. Within a year, revenues reached \$2 million. Like most Web-based startup companies, CDNow focused heavily on acquiring new customers. Its customer acquisition strategy used many traditional instruments such as television, radio, and print advertising as well as some innovative programs. For example, in 1997 CDNow introduced Cosmic Credit—the Internet's first affiliate program where thousands of affiliate members effectively became a commissioned sales force for the company. The same year CDNow agreed to pay \$4.5 million to a large portal to become its exclusive online music retailer. In 1998, CDNow decided to merge with rival N2K, which doubled its customer base from 980,000 customers to more than 1.7 million. These efforts dramatically increased CDNow's customer base to more than 3 million customers within 5 years (Figure 4). The company was so successful in generating traffic on its Web site that in its advertisements, as well as its reports to financial analysts, it regularly high-



Source: Company Annual Reports and 10Q Filings

FIGURE 4
Number of CDNow Customers

lighted facts such as number of new customers, number of page views, and number of unique visitors.

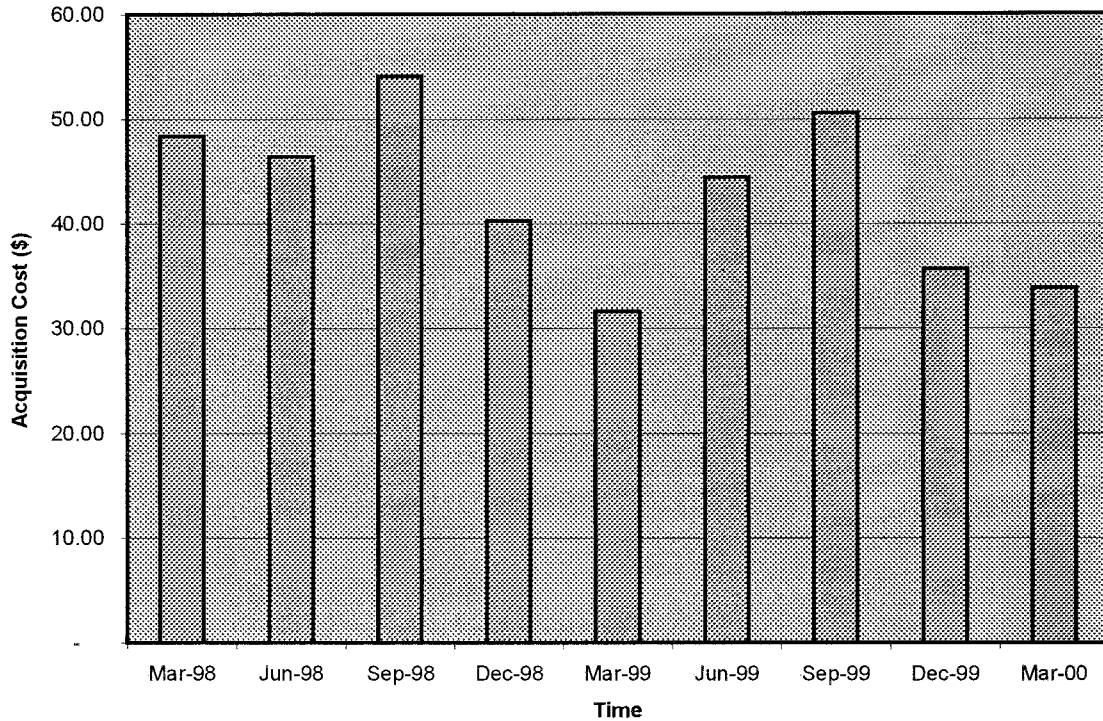
It is easy to appreciate CDNow's emphasis on customer acquisition; a startup has to acquire new customers to become a viable business. Heavy emphasis on customer acquisition was also driven by Wall Street. Several research studies show that without the benefit of traditional financial measures such as P/E ratios (which did not exist for many Internet companies with negative earnings), during 1998–99 financial markets started rewarding companies with strong non-financial measures such as number of customers.

Was the emphasis on customer acquisition by both CDNow and Wall Street misplaced? Although it is easy to rationalize things in hindsight, we believe our approach can provide the answer. For CDNow's customer ac-

quisition strategies to make economic sense, the lifetime value of its customers should be significantly more than their acquisition cost. Based on company reports, we estimate that during 1998–2000, average customer acquisition cost for CDNow ranged from \$30–55 (Figure 5).

During this same time, the annual gross margin per customer did not change significantly from an average of \$10–20 (Figure 6). If anything, there were signs of margin erosion during early 1999 (soon after the acquisition of N2K) and during March–June 2000 (when the company cut its overall marketing partly due to lack of resources).

During this period, CDNow reported an average customer retention rate in the range of 51–68%. Increased competition and the nature of the Internet (where shopping at a competitor is a mouse-click away) make it difficult to main-



Source: Company Annual Reports and 10Q Filings

FIGURE 5
Acquisition Cost per Customer at CDNow

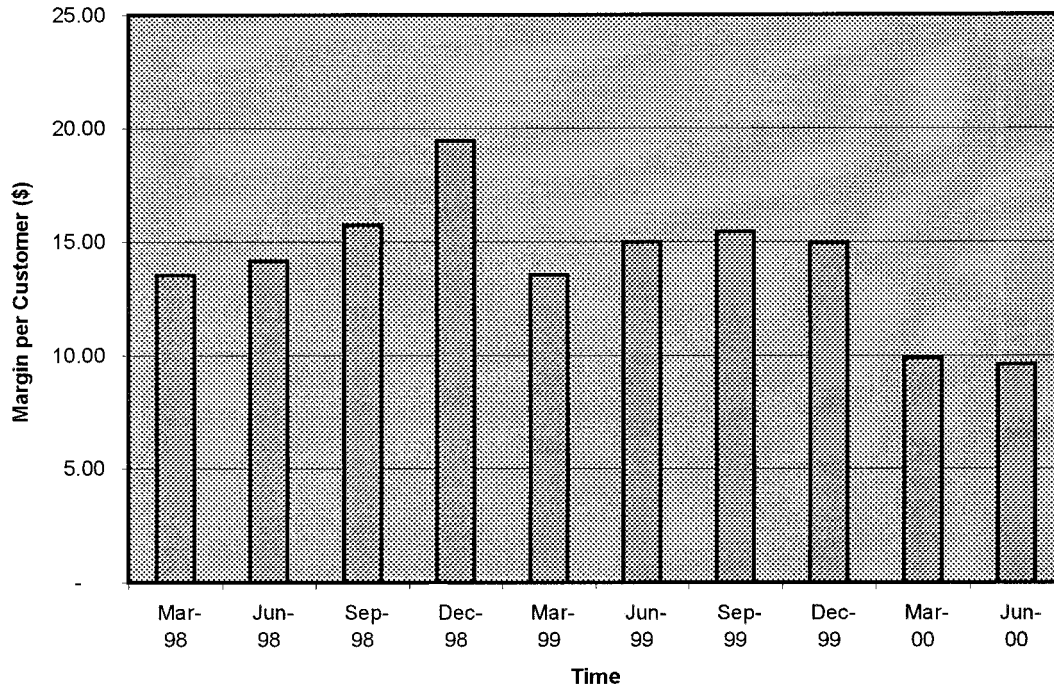
tain high customer retention. Some research studies show that while an increasing number of new visitors are coming to Web sites over time, there is a significant slowdown in the visit behavior of past users.

Our estimates of acquisition cost (\$30–55), annual margin (\$10–20), and retention rate (51–68%) enable us to evaluate the economics of CDNow's customer acquisition programs. Assuming a favorable discount rate of 12% and a higher than reported retention rate of 70%, we see from Table 1 that the lifetime value of a CDNow customer is 1.67 times its annual margin, or \$16.70–33.40. Therefore only for the most favorable margin and retention rate and the lowest estimate of acquisition costs are the economics profitable, and then just barely. Partly due to its expensive customer acquisition strategy, CDNow reported a loss of over \$100 million at the end of 1999.

Customer Retention

Many studies have emphasized the benefit of customer retention. For example, one study showed that a 5% increase in customer retention rate increases profits by 25% to 85% (Reichheld & Sasser, 1990). Our simple rule shows a dramatic increase of 22% to 37% in customer lifetime value for a 5% increase in customer retention for Capital One and E*Trade (Figure 7).

This analysis has two important implications. First, it highlights the importance of customer retention. Second, the lifetime value framework provides guidelines on how much a company should be willing to spend to improve its customer retention, customer satisfaction or customer relationship programs. For example, Capital One can afford to spend a maximum of $\$224 - \$173 = \$51$ per customer to increase its retention rate from its current 85% to 90%.



Source: Company Annual Reports and 10Q Filings

FIGURE 6
Annual Margin per Customer at CDNow

Customer Service

In principle, it is not optimal for a firm to raise its customer service level across the board. Instead companies should provide a differentiated level of service depending on the lifetime value of its customers. The idea of service discrimination is similar to the concept of price discrimination seen in many industries such as airlines. Several companies are already beginning to implement such a strategy (Rust et al., 2000). For example, the best clients of Charles Schwab never wait longer than 15 seconds to get a call answered, while other customers may wait for as long as 10 minutes (*Business Week*, October 23, 2000). Of course, implementing such service discrimination requires considerable care because it can generate a backlash from customers or regulators.

Assessing Marketing Programs

Banner advertising on the Internet has generated an interesting debate. Supporters of banner ads argue that they provide a cheap

and cost-effective way to reach a targeted group of people. Critics, on the other hand, point to dismal click-through and conversion rates of banner ads. Consider a manager's dilemma of choosing between an online banner ad and an offline marketing campaign such as direct mail. Assume that the cost of reaching a thousand (CPM) consumers is only about \$5 on the Internet while it is \$200 for direct mail. Therefore cost clearly favors online advertising.

However, the response rate for direct mail is about 1% while conversion rates for banner ads are much worse. Some studies suggest that only 1 in 200 consumers click on a banner ad and of those who click only 1 in 100 actually buy something (*The Economist*, February 24, 2001). How should this manager decide between these two options? To reach 2 million consumers, the online program would cost only \$10,000 whereas direct mail would cost \$400,000. However, due to its relatively high conversion rate of 1%, direct mail would generate 20,000 custom-

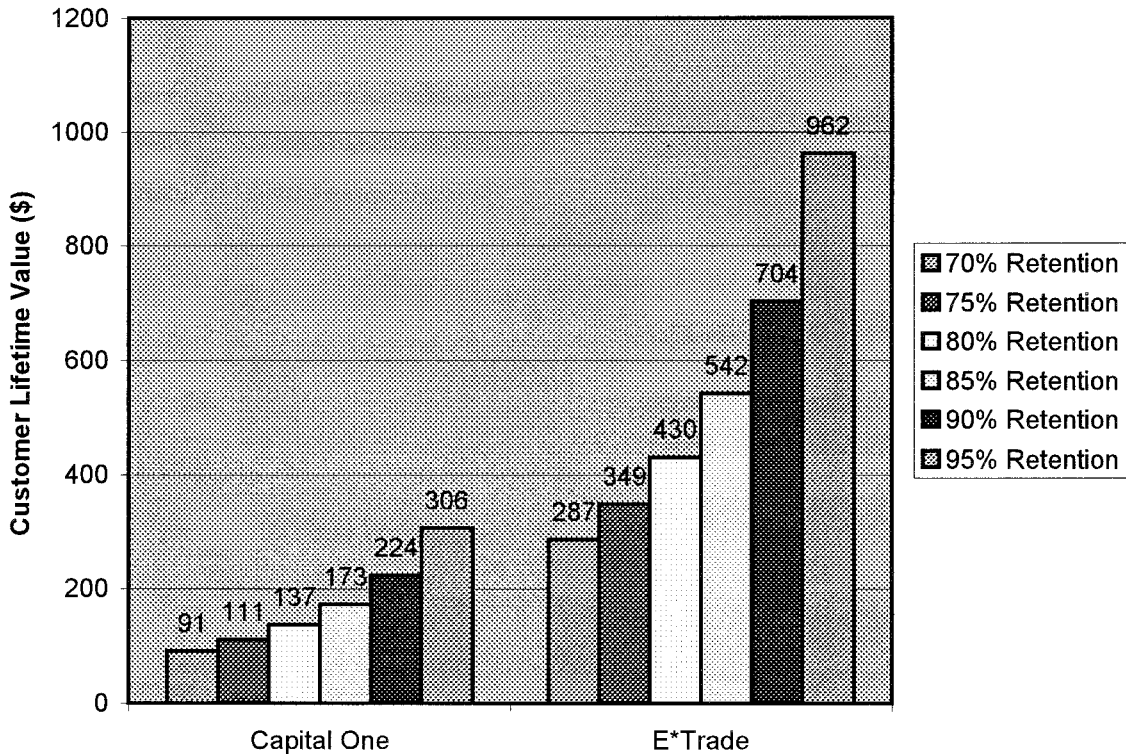


FIGURE 7
Impact of Retention on Customer Lifetime Value

ers while online ads would get only 100 customers, making the effective acquisition cost per customer \$100 for the banner ads and only \$20 for direct mail. If the annual margin from a typical buyer were \$60, then the manager might conclude that banner ads are not profitable and should be abandoned.

Acquisition cost analysis, however, focuses on the short term and ignores different retention rates from the two media. Some recent studies show that exposure to banner ads leads to purchases in the future (Manchanda, Dube, Goh, & Chintagunta, 2002). In other words, the positive brand equity effect of banner ads may lead to higher customer retention. How do different customer retentions for the two media change our conclusions? To see this, assume the customer retention rate from the Internet is 90% compared to 60% from direct mail.² Using a

² These retention rates are used to illustrate the approach rather than to reflect actual retention values.

12% discount rate and Table 1, we see that these retention rates imply customer lifetime value of about \$245 for banner ads and only \$69 for direct mail. Therefore, in our example, even with their high customer acquisition cost, banner ads are more profitable in the long run than direct mail.

MERGERS AND ACQUISITIONS

Mergers and acquisitions are common in almost all industries. Although the investment banking community specializes in evaluating them, our approach can also be used to provide insights about these strategic decisions. Essentially our premise is that customers are one of the most important assets of any firm. If we assess the value of customers of a firm, it provides a guideline for its overall value. We highlight this with two case studies.

Acquisition of CDNow by Bertelsmann

Earlier we discussed the expensive customer acquisition strategy of CDNow that was partly responsible for its loss of over \$100 million by the end of 1999. In early 2000, the company had merger talks with Columbia House that did not materialize. In March 2000, soon after the collapse of this deal, CDNow publicly announced that it had only enough cash to sustain another 6 months of operations. At this point in time, the German media giant Bertelsmann decided to enter into negotiations to acquire CDNow. How much should Bertelsmann have paid to acquire CDNow? While company acquisitions involve many complex issues, a quick and reasonable estimate for the firm value can be based on the value of its customer base. This is especially true in the case of companies like CDNow who do not have substantial physical assets and where customers are the major assets of the company.

In June 2000, CDNow had 3.29 million customers. Given the high customer acquisition cost compared to customer lifetime value, most of the firm value is already captured in the current rather than the future customer base. With an average annual margin of \$15 (range of \$10–20) and a customer retention rate of about 70%, the value of the current base was \$82.4 million.³ If Bertelsmann believes that due to its powerful position in the industry, better management and appropriate infusion of money it could improve customer retention to 80%, the value of CDNow's customer base was about \$123 million.

Interestingly, the next month, in July 2000, Bertelsmann bought CDNow for \$117 million in an all-cash deal.

AT&T's Acquisition of TCI and Media One

AT&T and its broadband strategy attracted a lot of attention—first when it paid \$110 billion dollars to acquire TCI and Media One, then for its

decision to break up AT&T Broadband as a separate entity, and more recently when Comcast made a bid for its broadband business. Although the broadband industry is fairly complex with its changing technology, evolving consumer trends, and a multitude of mergers and alliances, it is enlightening to briefly trace AT&T's broadband strategy and see that customer value plays a significant role in understanding this complex issue.

The Strategy. In recent years the U.S. cable industry has been going through consolidation. Only three years ago, the top three cable companies in the US controlled 49% of the subscribers. If the recent bid by Comcast to acquire AT&T's cable business succeeds, that figure will rise to 65%. In 1999 alone, 93 deals covering 29% of all cable subscribers were announced or completed in this industry (*The Economist*, July 14, 2001). AT&T contributed to consolidation in this industry by acquiring Telecommunications Inc. (TCI) and Media One for \$110 billion.

Industry experts and company executives state several reasons for this rush to consolidate. First, combining geographically fragmented markets into a national cable network helps achieve efficiency in infrastructure as well as marketing costs. Second, it improves bargaining power in negotiations with content providers such as HBO. Third, and perhaps most importantly, it puts the winners in a strategically enviable position in the battle for the "last mile" to consumers' homes to potentially beam voice, data, video on demand, interactive TV, and a host of other applications.

In addition to these strategic reasons for the industry as a whole, AT&T had even greater urgency to embrace cable and broadband. New regulations opened the local and long-distance phone business to more competition. AT&T decided to grab a piece of the local phone business, and cable telephony became a priority for it. At the same time, local Bell companies encroached upon AT&T's long-distance business. Consequently long distance, which historically was a cash cow for AT&T, began losing ground. AT&T's revenues from long distance

³ Lifetime value of a customer with 70% retention rate is 1.67 times the margin (see Table 1), i.e., $\$15 \cdot 1.67 = \25.05 . Therefore the value of 3.29 million customers is $3.29 \cdot \$25.05 = \82.4 m.

fell by 23.7%. Michael Armstrong, AT&T's CEO, anticipated this when he indicated that long distance is expected to make up only 13% of AT&T's revenue by 2004, down from 42% in 1998. This further intensified AT&T's urge to grow in other areas such as wireless and cable.

The Economics. Industry reports as well as financial analysts suggest that a key motivation for AT&T's acquisition of Media One and TCI was to gain access to 16.4 million subscribers and the 28 million houses passed by their system. In effect, AT&T spent \$4,200 to acquire each cable household (*The Economist*, Dec. 11, 1999). While acquiring these cable companies and securing access to several million households was consistent with AT&T's strategy, a critical question remains: Did AT&T pay too much?

To address this question, we again use the concept of customer lifetime value and our simple formula. For AT&T's decision to be economically meaningful, the lifetime value of its customers must be greater than their acquisition cost. However, by spending \$4,200 per customer, AT&T acquired both intangible assets (i.e., customers) as well as tangible assets (i.e., infrastructure such as cable lines). Some studies estimate that for a company building a new network, the infrastructure cost per home passed would be approximately \$1,000 (J.P. Morgan and McKinsey & Company, 2001). However, AT&T had to spend heavily to repair antiquated TCI systems as well as update the existing infrastructure to make it compatible for future applications such as voice and data. A study by Morgan Stanley estimated that each phone subscriber added to a cable network (to allow cable telephony) would cost about \$1,210. In sum, the value of existing infrastructure and the cost of updating it are about the same. Therefore it is reasonable to use the full \$4,200 as the cost of acquiring a customer.

Assuming a very optimistic margin multiple of 4 (which assumes 12% cost of capital and over 90% retention rate), this translates into annual profit per customer of \$1,050 for break even. Is it possible for AT&T to achieve this goal?

There are two immediate sources of revenue—cable subscription (\$50–60 per month) and high-speed Internet access (\$40 per month). Although household penetration for these services, especially Internet access, is likely to increase; prices and revenues from these two services are not likely to grow substantially due to increased competition from satellites and DSL. Additional sources of revenue include such applications as cable telephony, video on demand, interactive games, etc. Although it is hard to put a precise revenue estimate for these services, we optimistically estimate them to be \$100 per month. Therefore in an optimistic scenario the total revenue per customer would be about \$200 per month, or \$2,400 per year. In order to generate \$1,050 in profits to simply recoup acquisition cost and break even, this requires a profit margin of 43.75%.

The Reality. At first blush, the economics seem achievable since many firms in the cable industry have a profit margin of 30–45%. However, for AT&T this scenario is very optimistic for many reasons. First, we used a very optimistic retention rate of 90%. Industry estimates suggest a monthly churn rate of 1.7% in 2001 and 2.2% by 2005. This translates into an annual retention rate of 81.4% in 2001 and 76.6% in 2005. Second, by assuming a revenue of \$200 per month per customer, we implicitly assumed that all TCI and Media One cable customers will immediately start using multiple services including cable, Internet access, video on demand, and cable telephony. This is clearly an extremely optimistic and unrealistic assumption. For example, high-speed Internet access reached 25–35% of online users in 2000 and was expected to reach 57% of online users by 2005. Similarly, by the end of 2001 only 1.3 million customers were expected to receive phone service over cable lines (J.P. Morgan and McKinsey & Company, 2001). Third, in our estimates we used sources of revenue such as telephone, Internet access, and video on demand. This notion of convergence and cross selling is one of the main factors driving the consolidation in the broadband industry. However, it has been difficult for most companies to translate

this vision into reality. AT&T's decision to break down the company into four distinct businesses (wireless, broadband, consumer, and business) is an indication of this reality. Fourth, even with the most optimistic assumptions, AT&T barely recovers its acquisition cost of \$4,200 per customer. Finally, AT&T's current profit margin was around 20%, a far cry from the 44% margin it needs to break even.

By now most industry reports indicate that AT&T overpaid for its acquisition of TCI and Media One. Valued on a per-subscriber basis, some analysts believe that AT&T would fetch between \$53 billion to \$58 billion. On July 8, 2001, Comcast (which has an operating margin of 45%, among the highest in the cable industry) offered \$58 billion, including \$13.5 billion in assumed debt, to acquire AT&T's broadband business. About a week later AT&T rejected this offer. Later Comcast sweetened its deal to \$72 billion, which included AT&T's 25% stake in AOL.

LINKING CUSTOMER VALUE TO FIRM VALUE

In 1999 and part of 2000, many dot-coms had what now seems to be absurd valuations. Although many factors played a role in the "irrational exuberance" of investors, one key factor was the inability of Wall Street to use traditional financial methods to value these "new economy" firms. For example, it is hard to use a price-earnings or P/E ratio for a company that has no E! Similarly trusted methods such as discounted cash flow (DCF) could not be used for companies with no or negative cash flow. Consequently many new and arbitrary metrics (e.g., market value per page view, revenue per employee) appeared. Could we have done better? Although things always look easier in hindsight, we suggest that lifetime value of customers provides useful guidelines to investors.

The premise of customer-based valuation is simple: If the lifetime value framework can estimate the long-term value of a customer, and we can forecast the growth in number of customers, then it is easy to value the current and

future customer base of a company.⁴ To the extent that this customer base forms a large part of a company's overall value, it can provide useful insights to investors (Hogan et al., 2002; Kim, Mahajan, & Srivastava, 1995). Gupta, Lehmann, and Stuart (2002) used this approach along with published information from annual reports and other financial statements of several firms to estimate the after-tax value of their customer base. Figure 8 presents the results for five companies. This figure also shows the market value of these firms at the end of our analysis period (March 31, 2002).

These results show that customer value approximates market value of three firms (Capital One, Ameritrade and E*Trade) very well.⁵ In contrast, customer value for Amazon and Ebay is significantly below their market values, suggesting either that they have unaccounted for growth opportunities or that they were still overvalued. Although it is possible that customer value does not capture all the sources of market value for a firm (e.g., option value), it does provide a strong guideline.

SUMMARY

Measuring customer lifetime value encourages managers and employees to focus on the long term rather than the short term. This shifts the mindset from products to customers and from a transaction to a long-term relationship orientation. Perhaps the easiest way to improve customer service and customer retention is to inform employees that a typical customer is worth, say, \$1,000. Even if a particular transaction with this customer is for only \$5, treating the customer poorly generally means saying goodbye to \$1,000 of long-run profit. And not only do

⁴ Note that in the initial stages, a company may be spending a lot of money on customer acquisition that would make its cash flow negative and hence traditional DCF methods inappropriate. However, in these situations, the lifetime value can still be positive.

⁵ Market value is given as of March 31, 2002. However, there is significant variation in market value within a quarter. For example, for the first quarter of 2002 the low and high market value for Capital One was \$9.48 billion and \$14.31 billion respectively. Our customer value estimates are well within this range.

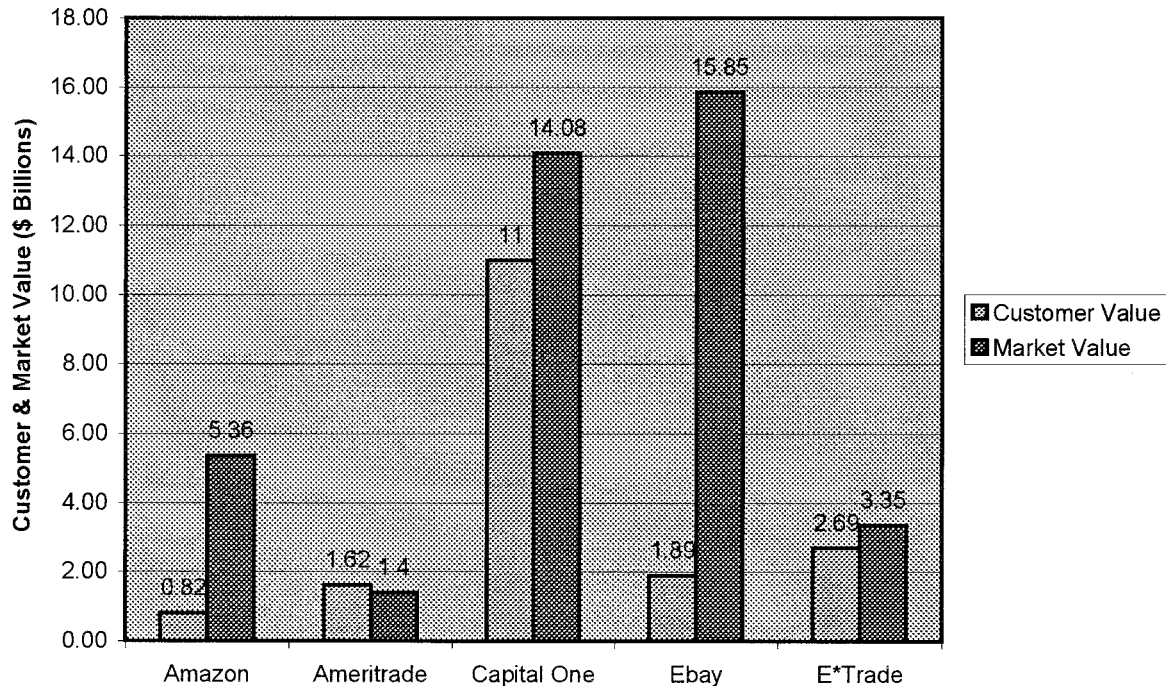


FIGURE 8
Value of Customers

dissatisfied customers not call and inform you that they are switching, their bad word of mouth has a strong negative effect on other customers as well.

The concept of the long-term value of customers and the value of relationships is not new. However, until now, estimating this value has entailed the use of intricate databases and complex models. In this article we provide a simple and intuitive formula that suggests that for most firms the lifetime value of a customer is simply his/her annual margin multiplied by a factor in the range of approximately 1 to 5—for many cases this factor is simply 4. We showed the power of this by demonstrating how it can be used in making managerial decisions from customer acquisition to firm acquisition. We also showed the value of this approach in assessing the overall value of a firm, thereby providing a new and useful guideline to investors.

In sum, customers are critical assets of a firm and their value should be measured and managed. Customer lifetime value is a fundamental and quantitative measure of the financial consequences of the relationship a firm has with its

customers. It provides a useful metric for judging both firm actions and financial market valuations. It also focuses attention on customers (and their acquisition, expansion, and retention) rather than products, in effect institutionalizing an external orientation. Given the increased availability of data at the individual customer level, customer lifetime value seems destined to play a major role in marketing and corporate strategy in the future.

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